

# Overview of Water / Wastewater Treatment and Recycling Equipment

Human being draws water as life essential from water bodies such as rivers, lakes and springs. When fewer people lived in a vast land during earlier time, water was plentiful and easy to obtain. Recent progressive civilization, land development, clustering and urbanization, agricultural and animal husbandry as well as business and industrial activities, however, have led pollution to water. While advancement in business and industrial activities demands a higher quality water supply, at the same time it also generates wastewater which further deteriorates the environment, necessitating a sophisticated wastewater treatment. Moreover, the fast economic development has caused water supply shortage problems. As a result, water conservation becomes critical, which evolves into the need to reuse and recycle water. With increasing water cost, water conservation as well as water reuse and recycle have now emerged as an important and integral part of all economic activities. It is further noted that, Taiwan has unique geological features of short rivers and few lakes, making it difficult to store natural water. Water resource development in most cases tends to fall behind economic progress. Effective and efficient use of available water resources has thus become a critically important practice.

## I、Water and Wastewater Treatment Technology

The water treatment technology can be classified in two major categories, i.e. water treatment and wastewater treatment. Both use physical, chemical and biological processes to remove the undesirable substances or pollutants to achieve the objective of purified water quality. Generally speaking, the treatment can be carried out in a combination of pre-treatment, primary treatment, secondary treatment and advanced treatment. The choice and selection of combined technologies depend on the raw water characteristics, desired final water quality as well as economic considerations.

Water use can be either domestic or industrial. The treatment equipment usually includes raw water pumping, grit removal, coagulation, sedimentation, filtration, softening, demineralization, ultra purification, sludge management, chemical dosing, pipe networking and system control.

For wastewater treatment, the raw wastewater can be of either industrial or municipal sources. The treatment technology can also be used to remediate groundwater pollution, ocean and port pollution, as well as reservoir and lake pollution. The equipment generally includes bar screen,

grit removal, oil and grease removal, sedimentation, filtration, biological treatment, sludge dewatering, chemical dosing, and advanced treatment.

Classification of commonly used water and wastewater treatment technology and equipment is shown in Figure 1.

## **II 、 Commonly Used Water and Wastewater Treatment Equipment**

### **1. Preliminary Treatment**

Preliminary treatment covers removal of large suspended solids and heavy inorganic particulates through mechanical bar screening, gravitational sedimentation and flotation, to enable the subsequent units perform the designed functions. Commonly used preliminary treatment equipment includes bar screen, fine particle sieving, grit chamber, pre-aeration, grease well, scraping chamber, etc.

### **2. Primary Treatment**

Primary treatment uses physical sedimentation or flotation to remove the majority of water-borne settle able substances, or 40 - 60% of suspended particles. When coagulants are applied, colloidal substance can also be removed. The primary treatment equipment consists of primary clarifier, flotation chamber, chemical coagulation and sedimentation, as well as special clarifier, e.g. inclined plate sedimentation, double-layer sedimentation. Domestic companies are capable of manufacturing equalization equipment, primary clarifier, dissolved air flotation (DAF) equipment, mixer, aerator, diffuser, etc.

### **3. Secondary Treatment**

Secondary treatment refers to the biological process that grows microorganisms in a controlled manner, and uses them to degrade organic substances in the wastewater, to be followed by separation of microorganisms from the treated liquid and blowing down the excess sludge, to achieve the objective of water purification. The biological treatment can be either aerobic or anaerobic. Aerobic systems include contact aeration, trickling filter and rotary biological disc, etc. while anaerobic systems consist of up-flow anaerobic sludge blanket reactor. Whether aerobic or anaerobic, domestic companies are capable of manufacturing most of the equipment types, for which the technologies are well developed in Taiwan.

#### **4. Tertiary and Advanced Treatment Equipment**

Advanced treatment refers to the process that further removes nitrogen, phosphate, solids, ion, color and odor from the biologically treated effluent as well as to conduct disinfection. Advanced treatment is also called “Tertiary Treatment”.

- 4.1 Nitrogen Removal: to remove nitrogen from wastewater using biological nitrification, biological de-nitrification, biological nitrification/de-nitrification, ammonia stripping ammonia purification chlorination and ion exchange, etc.
- 4.2 Phosphate Removal: to remove phosphates from wastewater using biological phosphorus removal, chemical precipitation and combination of biological and chemical processes, etc.
- 4.3 Solid (Colloid) Removal: to remove suspended and dissolved solids. Suspended solids include fine particles and colloids which cannot be removed efficiently by gravitational sedimentation. They are removed by using centrifuge, dissolved air flotation (DAF), diatomaceous earth filtration, coagulation sedimentation plus rapid sand filtration, while dissolved solids are removed by ion exchange, ultra-filtration, activated carbon adsorption, and chemical oxidation.
- 4.4 Ion Removal: Commonly removed by ion exchange, electro-dialysis, reverse osmosis, freezing, evaporation and distillation.
- 4.5 Color and Odor Removal: Commonly removed via oxidation, absorption and activated carbon adsorption.

#### **5. Recovery and Reuse Equipment**

Recently, domestic and industries have begun emphasizing the effective reuse of water resources. In addition to reducing wasteful water consumption in the production system, the wastewater effluent is also recycled and reused after treated by advanced treatment systems such as MF, UF, NF and RO.

#### **6. Pumping and Other Equipment**

Commonly used pumping equipment can be classified into: centrifuge, vortex, axial, reciprocal, vacuum type, and screw types. For pumping sludge, centrifuge, vortex, screw type and plunger are often used. The domestic companies are skillful in forging, foundering, lathing and planning, and thus can produce equipment of high quality.

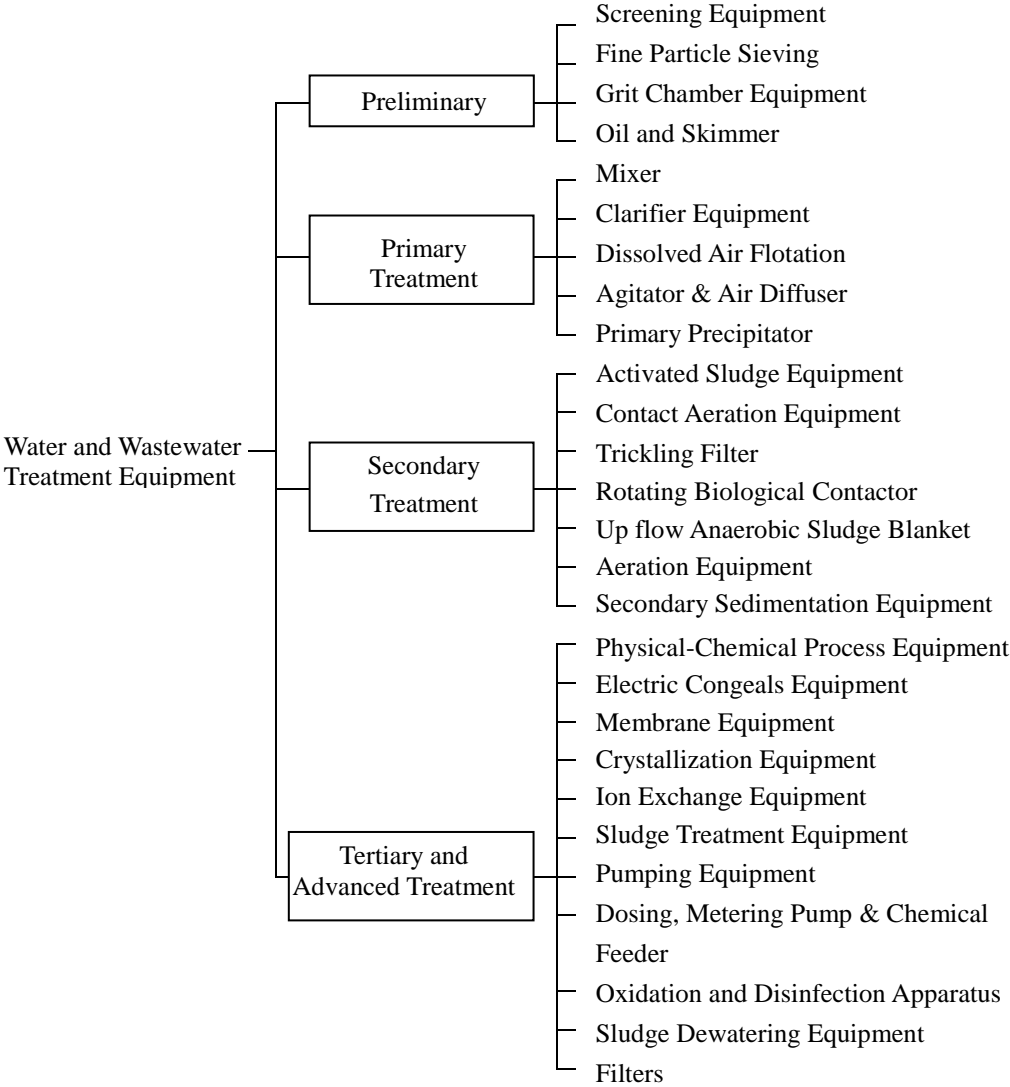


Figure 1 : Classification of Commonly Used of Water and Wastewater Treatment Technology and Equipment



# LFC FAN-FREE COOLING SYSTEM

## 1. Structure and Principle

- (1) The system is a jet-flow semi-closed cooling tower without mechanical driving apparatuses like fan or motor. This system does not rely on external power to achieve cooling.
- (2) This system uses a jet-flow unit nozzle to trigger hot water dynamics, converting the heat into pressure differentiation that draws external air into the tower for heat exchange to attain cooling.
- (3) Once the spray mist settles, the collected water undergoes a second heat exchange with fresh air inducted from the bottom and then stored for recycle.

## 2. Purpose

- (1) For cooling air-con circulation water.
- (2) For industrial manufacturing that requires temperature reduction.

## 3. Features

- (1) Ultra low-noise, no vibration, environmentally conscious.
- (2) Free of conventional cooling towers' and mechanical and electromagnetic noises, the equipment is built of static components. Except for water sound during operation, it produces no noise and no cooscillation effect-complies with noise control requirements.

- (3) Water saving, free of public hazards.
- (4) For the low ventilation rate, it is designed with an effective water/gas separator that curtails splatter loss to merely 0.001 - 0.009 %, yielding considerable saving in water and deterrent of splatter accumulation that causes fungus, algae growth that pose public health hazards.
- (5) Excellent thermal dynamics.
- (6) Low maintenance cost, no consumable parts, requires minimum maintenance (keeping the circulation water clean).

## 4. Specification and Functions

- (1) Fitted with patented diffuser, arc plate.
- (2) Equipped with 5-fold high-efficiency water and gas separation stopper.
- (3) Facilitate multi-set jet pipes and high-density nozzle according to client treatment volume.
- (4) Patented in many nations.

## 5. Product Photo



良機實業股份有限公司 LIANG CHI INDUSTRY CO., LTD.

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## CJAS SCRAPER AUTOMATIC FILTER

### 1. Structure and Principle

The scrapers work with a speed reducing motor to clean the impurities off the surface of the screen. The scraped impurities settle at the purge chamber and discharged by both Timer and Press difference detector.

### 2. Purpose

It's used in the in-line processing in the industries which need to handle high processing amount and constantly filtering.

### 3. Features

- (1) Automatic control system.
- (2) Cleaning time and impurity discharging time can be set in advance so that the equipment can keep good working efficiency.
- (3) We use European stainless steel wedge wire screen which are perfectly filtering and not easily broken.

### 4. Product Photo



## CJD DOUBLE FILTER

### 1. Structure and Principle

Making parallel connection of 2 sets of single filter and work in a "One in use, one in backup" system. Under normal filtering conditions on 1 set of single filter process, but when the filter in use is found clogged or decreased capacity, the clients should turn on the backup filter to keep on the filtering work and turn off the clogged filter to clean it. Through the repeating procedure, it can achieve the constant filtration.

### 2. Purpose

For the filtering work in industries.

### 3. Features

- (1) Fast installation and uninstallation; easy to clean.
- (2) "One in use, one in backup" system; constant filtering.
- (3) We use European stainless steel wedge wire screen which are perfectly filtering and not easily broken.

### 4. Product Photo



**國際過濾工業有限公司 FILAD FILTRATION INDUSTRY CO., LTD.**

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## CJM MULTIPLE FILTER

### 1. Structure and Principle

The design of this model can parallel connect by using a set of two or more single filters and manual ball valves, and clients can choose how they want to collocate filters to fit their needs by the processing amount or the tube diameter. Even if one or more sets of filters become clogged or the filtering efficiency is unsatisfactory, the clients only use a backup filter screen to change the clogged one. The clients don't need to turn off the whole system.

### 2. Purpose

For the filtering work in industries.

### 3. Features

- (1) High processing amount with constant filtering.
- (2) Manual operating backwash system.
- (3) We use European stainless steel wedge wire screen which are perfectly filtering and not easily broken. °

### 4. Product Photo



## CJS SINGLE FILTER

### 1. Structure and Principle

CJS Single Filter is the basic form of several different types of filter equipment, using European stainless steel wedge wire screen, the exactness of the filter is as fine as 0.025mm (450Mesh), and can use either gripper or flange type for in-outlet. According to the different working pressures, the clients can choose different specifications. There are two pressure detectors which makes it possible to check the change of in-outlet pressure, then clients can clean the filters.

### 2. Purpose

For the filtering work in industries.

### 3. Features

- (1) Fast installation and uninstallation.
- (2) We use European stainless steel wedge wire screen which are perfectly filtering and not easily broken.
- (3) Easy to maintain.

### 4. Product Photo



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# SELF-CLEANING FILTER-FAB SERIES (BRUSH TYPE)

## 1. Structure and Principle

It is controlled by Timer and Pressure Difference Detector.. As the pressure difference between inlet and outlet flows reaches the set value, a pressure difference detector will send a signal to the control system to start the motor. A brush driven by the motor will then brush away impurities on the screen by making rotational movements. A discharge tube will then be open, from which eddying water driven by the brush's movement will carry all impurities washed off from the screen out of the filter..

## 2. Purpose

For the in-line processing and security filtration equipment before house.

## 3. Features

- (1) Fully automatic control system.
- (2) The filter is provided with a motor-driven brush device for more effective filter cleaning operations.
- (3) We use European stainless steel wedge wire screen which are perfectly filtering and not easily broken.

## 4. Product Photo



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# PLC AUTOMATIC BACKWASHING FILTER

## 1. Structure and Principle

Using the design of inside backwash. In the multi-tube system, there is a set of backup screen, and the backup screen shares filtering work. And the system uses filtered liquid to clean screen one by one, and the others still work to maintain constant filtering.

## 2. Purpose

It's used in the in-line processing in the industries which need to handle high processing amount and constantly filtering.

## 3. Features

- (1) High processing amount.
- (2) Fully automatic backwash function.
- (3) Constantly filtering.
- (4) We use European stainless steel wedge wire screen which are perfectly filtering and not easily broken..

## 4. Product Photo



**國際過濾工業有限公司 FILAD FILTRATION INDUSTRY CO., LTD.**

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# SPS FILTER- PROTECTION BEFORE WATER TOWER

## 1. Structure and Principle

FILAD SPS Filter-Protection before water tower, different from other plastic filtration equipment on the market, is all made of stainless steel. It is non-consumable with European SUS 316L stainless steel wedge wire screen. The clients can choose manual or automatic types. Impurity drain is a necessary measure to keep the filter system from precipitation. The suction produced by discharge tube opening generates instantly the power that draws off impurities stuck on the screen.

## 2. Purpose

For the in-line processing and the protection before water tower.

## 3. Features

- (1) With an absolute filter rating of  $80\mu\text{m}$ , it effectively keeps water towers, water storage tanks and household water pipes away from impurities, such as rust, sediments, suspended solids and so on, carried by running water. And it effectively protects them from blocks and erosion damages.

- (2) We use European stainless steel wedge wire screen which are perfectly filtering and not easily broken.

## 4. Product Photo



**國際過濾工業有限公司 FILAD FILTRATION INDUSTRY CO., LTD.**

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# POSITIVE PRESSURE AIR

## 1. Structure and Principle

- (1) Suitable for turbidity feed water ( up to 500 NTU ) with outside-in flow and wide space ( 3.5 mm) between membranes.
- (2) Low fouling hydrophilic PVDF membrane ( 0.03 um) for easy cleaning and good chemical resistance.
- (3) Permeate flow rate is proportional increasing membrane pressure.
- (4) Round type membrane, durable disk structure, robust element can be backwash by clean water, design with light weight and compact construction, no leakage and no breakage.
- (5) No Pre-filter required! Suitable for high turbidity feed water (up to 500 NTU).
- (6) Low power requirement due to short flow path & low transmembrane pressure, high flux, and low back wash flow.
- (7) Dead-End filtration operation, no friction on membrane surface.
- (8) Designed with internal air distribution tube for optimum air scrubbing effect.
- (9) Small foot print, lower running cost & better filtration quality than conventional filtration.

## 2. Purpose

- (1) Pre-treatment for Reverse Osmosis - seawater, brackish water, surface water, effluent from secondary treatment of industrial and municipal wastewater.
- (2) Pre-treatment for ion, exchange - reduce resin plugging, lower regeneration cost, and length useful life resin life.

## 3. Features

- (1) The UPVC vessel is designed for ease of operation while optimizing the advantage of M - 50 with positive pressure.

## 4. Specifications and Functions

Membrane Polymer/MWCO	PVDF/100K
Pore size( $\mu$ m)	0.03
Configuration	Disk-Plate
Element Membrane Area(m <sup>2</sup> )	5.0
Element flow rate(LPH) @ 1bar, 25°C	1500
Operation Pressure	2bar
Max, TMP(bar)	2
Filtrate Turbidity(NTU)/DSI	$\leq 0.2 / \leq 2$ bar
Max, Feed Turbidity(NTU)	500
Operating Temperature(°C)	5-45
Max, chlorine Tolerance(ppm)	200
Operating PH	2-11
Backwash Volume(Liter)	6-8
Max, Backwash Pressure(bar)	1.0
Dimensions	
Membrane Module Length(mm)	508
Guide Plate OD(mm)	215
Membrane Module OD(mm)	185.0
Connector OD(mm)	30
Weight(kg)	1.7

## 5. Product Photo



新世膜科技股份有限公司 NEW CENTURY MEMBRANE CO., LTD

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# NEGATIVE PRESSURE AIR

## 1. Structure and Principle

- (1) The M-80 UF element is designed for use in submerged (suction) mode of operation, with the membrane installed horizontally for more effective cleaning by back wash and air scrubbing.
- (2) Suitable for high turbidity feed water (up to 20,000 NTU) with 3.5mm space between membranes.
- (3) Low fouling hydrophilic PVDF membrane ( 0.03  $\mu\text{m}$  ) for easy cleaning and good chemical resistance.
- (4) Low power requirement due to low trans-membrane pressure, high flux and low backwash flow.
- (5) Permeate flow rate is increasing when suction pressure is increased.

## 2. Purpose

- (1) Suitable for high S.S. feed water.
- (2) For larger flow rate operation modules are connected in parallel.

## 3. Features

- (1) The UPVC vessel is designed for ease of operation while optimizing the advantage of the M - 80 UF element.
- (2) Inside the vessel installed with air distribution tube for optimum air scrubbing effect.

- (3) Outside-in flow results in less fouling and easier cleaning.

## 4. Specifications and Functions

Membrane Polymer/MWCO	PVDF/100K
Pore size( $\mu\text{m}$ )	0.03
Configuration	Disk-Plate
Element Membrane Area(m <sup>2</sup> )	5.0
Element flow rate(LPH) @ 1bar, 25°C	1,500
Operation Pressure	2 bar
Max, TMP(bar)	2
Filtrate Turbidity(NTU)/DSI	$\leq 0.2 / \leq 2\text{bar}$
Max, Feed Turbidity(NTU)	500
Operating Temperature(°C)	5 - 45
Max, chlorine Tolerance(ppm)	200
Operating PH	2 - 11
Backwash Volume(Liter)	6 - 8
Max, Backwash Pressure(bar)	1.0
Dimensions	
Membrane Module Length(mm)	508
Guide Plate OD(mm)	215
Membrane Module OD(mm)	185.0
Connector OD(mm)	30
Weight(kg)	1.7

## 5. Product Photo



新世膜科技股份有限公司 NEW CENTURY MEMBRANE CO., LTD

台中市西屯區甘肅路二段 110 號 No.340, Futian 2nd St., South District, Teaching City, Taiwan

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# AUTO SELF-CLEANING FILTERS

## 1. Structure and Principle

When leaving the dirty filter pressure resistance up to a certain pressure rise within the backwash is initiated when the pipeline, the use of each of the outlet of the pressure for backwashing of the filter to backwash, so that each filter can stay with good filtering performance.

## 2. Purpose

Wastewater treatment (to reduce SS), refrigeration and air conditioning, RO filter prior to treatment, recycled water filtration, spray equipment, anti-blocking filter, machining of the cutting fluid circulation and filtering, before the pre-filtered water tower.

## 3. Features

- (1) Automatic backwash filter blocking exclusion, reverse wash water without interrupting the continuous time filter.
- (2) Pull-back design, without removal of piping to check the internal decomposition.

- (3) Pressure design, suitable for high pressure use.
- (4) Filter for the 316SS material, suitable for a variety of fluids.

## 4. Product Photo



綠灣機械有限公司    ARCADIA FILTER LTD.

桃園市中壢區金鋒五街 47-1 號 9F    9F., No.47-1, Jinfeng 5th St., Zhongli City, Taoyuan County, Taiwan  
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# EDI ULTRA PURE WATER SYSTEM

## 1. Structure and Principle

This system combines ED & resin technology. It can easily remove ions from pure water to produce ultra pure water up to  $17\text{M}\Omega$  depending on feed without resins regeneration.

## 2. Purpose

Refining treatment for ultra pure water.

## 3. Features

- (1) No chemical regeneration.
- (2) Steady product quality.

## 4. Specifications and Functions

- (1) Product water :  $0.2\text{ m}^3 / \text{hr}$  up.
- (2) Resistivity : up to  $180\text{ M}\Omega\text{-CM}$ .
- (3) Discharge : 0.

## 5. Product Photo



成順工業有限公司 SEPARATION PROCESS TECHNOLOGY INC

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# PRO PURIFICATION SYSTEMS

## 1. Structure and Principle

- (1) RO module : TFC spiral Wound.
- (2) Centrifugal high pressure pump.
- (3) PLC controller.

## 2. Purpose

- (1) Water Purification.
- (2) Waste recovery.
- (3) Dewatering.

## 3. Features

- (1) Software system design from supplier.
- (2) PLC controller.

## 4. Specifications and Functions

- (1) Semi-auto control.
- (2) Auto flushing design.
- (3) Pump protection.
- (4) Product quality meter.
- (5) CIP apparatus.
- (6) Shut down flushing.

## 5. Product Photo



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# PUFF ULTRAFILTRATION UNIT

## 1. Structure and Principle

- (1) Module : Spiral-Wound, Disc, Hollow Fiber, Tubular.
- (2) MWCO : 10,000 up.
- (3) Mochas : Dead-end Cross flow.
- (4) Material : Organics or in organics.

## 4. Representative Attainments

- (1) Taiwan Sugar Bio-Tech Plant.
- (2) Industrial Technology Research Institute.
- (3) Institute Of Unclean Energy Research.

## 2. Purpose

- (1) Concentration or recovery of valuable materials from products.
- (2) Purification or pretreatment of RO.

## 3. Features

- (1) Co-operation with membrane suppliers.
- (2) Co-operation with worldwide consultants.

## 5. Product Photo



PUF

**成順工業有限公司**    **SEPARATION PROCESS TECHNOLOGY INC**

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# PURE AND ULTRAPURE WATER PURIFICATION FACILITY FOR THE GENERAL AND ELECTRONICS INDUSTRY

## 1. Structure and Principle

The facility is composed of automatic PLC controlled filters (including sand filter, activated carbon filter, soft water filter and 2B3T system), RO ( Reverse Osmosis) module, EDI / CEDI electrodialysis module, automatic mixed bed filter, rear end ultrapure water supply system, PLC central control system, man-machine interface operating system and central monitoring system.

## 2. Purpose

Soft, pure and ultrapure water purification.

## 3. Features

Provide water purification total solution through membrane technology and engineering technique integration. Close relationship with the customer starting from the planning stage with best return on investment for the customer in mind. Yeameei provides total engineering solution from planning, design to construction and offer complete information and service to the customer regardless of contract types.

Yeameei utilizes advanced design software to integrate the overall engineering operations from research evaluation, design planning, simulation, test run to operation and maintenance with precision calculation to the individual nodality. Provide feasible hardware construction planning for the customer with precision construction control through solid engineering methods to achieve perfect quality.

## 4. Product Photo



亞美先進科技股份有限公司

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# FIXED-BED ULTRA PURE WATER PURIFICATION FACILITY

## 1. Structure and Principle

The most advanced manufacturing process is adopted by using ion balanced resin to purify water to industrial grades of over 1 MΩ-CM, and mixed-vat model can achieve over 10 MΩ-CM purification.

## 2. Purpose

Manufacturers requiring large volume of industrial-grade pure water such as power plant, petrochemical plant, steel mill, semiconductor plant, and biotech industry.

## 3. Features

- (1) Simple equipment structural design.
- (2) Minimum control valves.
- (3) Require no flushing.
- (4) Minimum solvent requirement close to theoretical level, large process capacity.
- (5) Minimum wastewater.
- (6) Simultaneous regeneration and neutralization that meets release pH standards to minimize the cost of wastewater treatment.
- (7) Short regeneration time ( 2 ~ 3 hours).

## 4. Specifications and Functions

No standard specification, design and building are customized according to client requirement of water quality and volume.

Model	Capacity	Draw Capacity /cycle
2B3T-50	50 m <sup>3</sup> /hr	1,000 m <sup>3</sup>
2B3T-100	100 m <sup>3</sup> /hr	2,000 m <sup>3</sup>
2B3T-150	150 m <sup>3</sup> /hr	3,000 m <sup>3</sup>
2B3T-200	200 m <sup>3</sup> /hr	4,000 m <sup>3</sup>
2B3T-250	250 m <sup>3</sup> /hr	5,000 m <sup>3</sup>
2B3T-500	500 m <sup>3</sup> /hr	10,000 m <sup>3</sup>

Remark : To accommodate water type, preliminary treatment equipment can be fitted, such as activated carbon filter as well as backend treatment equipment like mixed-vat and external flusher and solvent tank.

## 5. Product Photo



尚磊科技股份有限公司

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# REGENERATION-FREE PURE-WATER EQUIPMENT

## 1. Structure and Principle

This pure-water equipment is engineered with a simple structure, which requires no regeneration at the client end. Regeneration can be performed at our company; it offers low cost, small equipment space, manpower saving, no wastewater treatment for high purity 18 M $\Omega$ -CM water.

## 2. Purpose

Applicable for small to medium high-tech plants, manufacturers requiring only small amount of high-purity water such as biotech, IC packaging, testing, photoelectric, electroplating, surface treatment, and pharmaceutical manufacturing.

## 3. Features

- (1) Free of manual operation.
- (2) Saving in initial setup cost.
- (3) Low space requirement, easy relocation.
- (4) No wastewater.
- (5) For small to medium water requirement.
- (6) High water purity.

## 4. Specification and Functions

- (1) Treatment capacity : 0.1 ~ 3.0 m<sup>3</sup>/hr.
- (2) Purity : 10 ~ 18 M $\Omega$ -CM.

## 5. Product Photo



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SUNRAY SCIENCE & TECHNOLOGY CO.,LTD.

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# WASTEWATER RECOVERY SYSTEM

## 1. Structure and Principle

Using advanced waste and sewage treatment and recycling equipment, such as filtration, ultrafiltration, reverse osmosis, etc., the discharged water that has been processed to meet the standards is further removed from the remaining impurities and ionic substances in the water for recycling.

## 2. Purpose

After purification, the recovered water can be used in the process or as supplementary water for the pure water system and other purposes.

## 3. Features

- (1) According to the water quality, use various water recovery equipment to select the best combination of treatment systems.
- (2) Combined design, to provide the most suitable configuration in accordance with the available installation location.
- (3) Membrane cleaning service can be provided after completion, and subsequent operations are guaranteed.

## 4. Specification and Functions

Processing capacity: 10~10000 CMD, can be customized design.

## 5. Representative performance

- (1) OPTC Petrochemical Wastewater Recovery Project.
- (2) Water treatment project of Fengxing Steel's new steel bar workshop.

## 6. Product Photo



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# AUTOMATIC BAR SCREEN

## 1. Structure and Principle

- (1) The reciprocating cleaning grab takes the solid waste away from the screen to waste basket.
- (2) An automatic operation device makes the grab move smoothly to clean the waste out.

## 2. Purpose

This machine is equipped in the open channel to clean the solid and floating waste up to waste disposal.

## 3. Features

- (1) Big volume of cleaning grab.
- (2) All made of stainless steel that forms solid structure and it is enough to against corrosion.
- (3) Automatic operation is set by PLC panel.
- (4) Easy operation.
- (5) No movable mechanism is under the surface of water that makes it easy to maintain..

## 4. Product Photo



山亞環境科技股份有限公司

SHAN YA ENVIRONMENTAL TECHNOLOGY CO., LTD.

台中市北區忠明二街 39 號 No.39, Zhongming 2nd St., North Dist., Taichung City, Taiwan

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# AERATED GRIT AND GREASE REMOVAL MACHINE

## 1. Structure and Principle

- (1) The machine is equipped above open channel and used to remove grit, grease and scum from raw wastewater.
- (2) By aeration that grit sinks down, but grease and scum float up to surface of the wastewater in the channel.
- (3) The bridge travels back and forth on the channel. The submerged pump fixed beneath the bridge draws grit into a sink to separate from wastewater.
- (4) A skimmer moves follow the bridge over the surface of wastewater and scrapes the grease and scum into the drain pipe at end of the channel.

## 2. Purpose

The machine is equipped for eliminating grit, grease and scum from raw wastewater.

## 3. Features

- (1) The forced aeration accelerates grit, grease and scum to be eliminated.

- (3) It is no need to clean grit that can be disposed directly.
- (4) All movable mechanism are set above the channel so that the machine is easy to maintain.
- (5) Automatic operation by means of programed logic control

## 4. Product Photo



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# AUTOMATIC BAR SCREEN (BACK RACK TYPE/STEEL CABLE TYPE/ROTARY TYPE)

## 1. Structure and principle

The back rake bar screen uses the drive device to drive gears and chains to move the rake teeth fixed on the chain to move up and down and rotate. The rake teeth descend along the back of the trash rack to the bottom of the groove, and remove the dirt stuck on the trash rack. Rake up the objects, and wait for the rake teeth to rise to the discharge opening to drop the dirt into the receiving bucket. The steel rope trash rack uses a driving device to drive the rake teeth fixed on the steel rope to move up and down. The rake teeth descend along the front of the trash rack to the bottom of the groove, and rake up the dirt stuck on the trash rack. The tooth rises to the apex to bring the dirt into the receiving bucket. The rotary bar screen moves in one-way linear motion, and moves the tooth rake up and down through the crank side rod mechanism, pushing the dirt to the dirt discharge port step by step, and automatically unloading the slag.

## 2. Purpose

- ( 1 ) Solid-liquid separation at the entrance of shallow water channels, such as water supply and drainage pumping stations, sewage and rainwater lifting pumping stations, sewage treatment plants, water purification plants, etc.
- ( 2 ) Suitable for solid removal of sewage treatment, textile printing and dyeing, leather making, paper making, slaughter, sugar making, wine making, and food processing wastewater treatment.
- ( 3 ) It is applied to water inlets of urban sewage treatment plants, water plants, and power plants to automatically intercept and remove floating objects in the water to ensure the normal operation of the next process.

## 3. Features

- ( 1 ) The whole set is made of stainless steel, corrosion resistance, acid and alkali resistance, chemical resistance, sturdiness and durability.
- ( 2 ) Use torque limiter protection device. When the torque generated by the machine load or mechanical failure exceeds the set value,

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## Water /Wastewater Treatment and Recycling Equipment Physical Treatment Equipmen

- ( 3 ) the torque of the transmission system will be limited in a sliding manner to prevent deformation or damage of the parts, and avoid maintenance or replacement of parts.
- ( 4 ) Use a small output motor to save electricity.
- ( 5 ) Suitable for waterways with little change in water level.
- ( 6 ) It can effectively reduce the load and equipment capacity of subsequent wastewater treatment facilities.

### 4. Specification and Functions

- ( 1 ) Continuous and effective interception and removal of fine/medium solids, floating and suspended substances in wastewater.
- ( 2 ) There are long fibers, long hair or rope-like substances in the waste (contaminated)
- ( 3 ) water. This model is not applicable, so please pay special attention.
- ( 4 ) Set at the water intake end of the pumping station or treatment site, first remove the floating objects in the water to protect the subsequent pumping equipment

and effectively reduce the load and equipment capacity of the subsequent wastewater treatment facilities.

### 5. Representative Performance

- ( 1 ) Water Resources Bureau, Kaohsiung City Government– Central District WWTP 2019.
- ( 2 ) Water Resources Bureau of Taichung City Government - Pozi Water Resources Recycling Center 2013/2017.
- ( 3 ) Relay station of Jhongli Industrial Park WWTP 2010.

### 6. Product Photo



### 7. Award (Certification) Project

ISO 9001:2015 Quality System  
Certificate

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# INDUSTRIAL WASTE LIQUID EVAPORATION CONCENTRATION REDUCTION OR RECYCLING & REUSING EQUIPMENT

## 1. Structure and principle

The vacuum distillation method is to automatically suck the waste liquid into the concentration tank, and then vaporize it by boiling at low temperature through a heater, and then turn it into condensed water through a cooling device.

Using the working principle of the heat pump to heat the oil and water waste liquid, the vacuum pump pumps negative pressure to reduce the boiling point and increase the evaporation capacity. The cold water system condenses and evaporates the vapor to achieve a reduction effect, and the condensed water can be filtered and reused through membrane filtration. The main components of the heat pump evaporation equipment include refrigerant compressors, heat exchangers, vacuum pumps and other units. The concentrated waste liquid in the concentration tank is repeatedly concentrated and stored in the concentrated liquid tank. The required temperature is lower, a lower temperature heat source can be used, and the operation is safer and energy-saving.

## 2. Purpose

- (1) Dewatering of industrial wastewater and municipal sewage sludge.
- (2) Sludge dehydration in food, beverage and brewing industries.
- (3) Metal processing and cutting oil and water waste liquid concentration reduction.
- (4) Surface treatment, electroplating waste water concentration reduction or recycling treatment.
- (5) Degreasing, leather industry, dyeing and finishing wastewater concentration reduction.
- (6) Inorganic and organic wastewater containing organic pollutants and mixed wastewater containing inorganic substances.
- (7) Concentration of food processing waste liquid, chemical waste water, and papermaking waste water.

## 3. Features

- (1) Dewatering of industrial wastewater and municipal sewage sludge.
- (2) Sludge dehydration in food, beverage and brewing industries.

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## Water /Wastewater Treatment and Recycling Equipment Physical Treatment Equipment

- (3) Metal processing and cutting oil and water waste liquid concentration reduction.
- (4) Surface treatment, electroplating waste water concentration reduction or recycling treatment.
- (5) Degreasing, leather industry, dyeing and finishing wastewater concentration reduction.
- (6) Inorganic and organic wastewater containing organic pollutants and mixed wastewater containing inorganic substances.
- (7) Concentration of food processing waste liquid, chemical waste water, and papermaking waste water.

### 4. Specification and Functions

- (1) Low-temperature vacuum distillation operation mode, the equipment occupies a small area and the lowest operating cost, which greatly reduces the COD value.

- (2) Realize the recycling and reuse of reclaimed water, which not only greatly reduces the total amount of waste liquid discharge, but also greatly reduces the cost of discharge treatment. At the same time, the reuse of condensed and filtered water also saves water resources.

### 5. Representative Performance

- (1) Hai Lu Jya He Co., Ltd. 2018.
- (2) Sunshine Industrial Co., Ltd. 2020.
- (3) Huayan Industrial Co., Ltd. 2020.

### 6. Product Photo



### 7. Award (Certification) Project

ISO 9001 : 2015 Quality System Certificate.

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# POLYMER POWDER DISSOLUTION AUTOMATIC DOSSING MACHINE

## 1. Structure and principle

The preparation of dry powder solution is completed step by step through the classification of each solution tank. The solution tanks are separated to ensure the best reaction time and constant concentration in each solution tank. There is an overflow path between the prefabricated tank and the liquid storage tank, and the automatic control system. It is connected to the liquid level controller on the storage tank. Once the liquid level reaches a low level, the electric water-inlet ball plug valve is triggered to open, the dosing machine is started, the dosing amount and the installation of the water inlet setting are set to obtain accurate concentration.

## 2. Purpose

- ( 1 ) Suitable for municipal sewage treatment plants, industrial wastewater treatment and industries that need to use flocculants solutions.

- ( 2 ) Widely used in sludge dewatering, waste water treatment and various manufacturing processes such as food, chemical, dyeing and finishing, papermaking and other industrial powder dissolution and dosing occasions.
- ( 3 ) It is suitable for the dissolution and dosing of various dry powders, granules, flocculants and concentrated liquid powders.

## 3. Features

- ( 1 ) With powder or liquid (optional) dual feeding function design, it can meet different needs.
- ( 2 ) The powder supply tank has the function of anti-coagulation heating and heat preservation, which can prevent the powder from being damp, agglomerated or deteriorated.

This machine is uniquely designed with stand-by time, automatic intermittent and paused cross-stirring functions, so that the solution can be uniformly blended, and it will always be kept in the best state of use.

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- ( 3 ) When the powder supply trough reaches a low stock level, the function assistance of the inductive detection device's light warning and machine shutdown is more perfect for the overall control of the machine. (Optional equipment).
- ( 4 ) It can be evenly brewed to avoid waste of powder and unnecessary maintenance costs.

#### 4. Specification and Functions

- ( 1 ) It can be formulated into diluent for use as polymer dry powder or concentrated liquid.
- ( 2 ) The storage hopper has a closed design to prevent the powder from being wet.
- ( 3 ) Innovative design of wet mixing device can prevent agglomeration and uneven mixing.
- ( 4 ) The screw conveying equipment is equipped with a heater to continuously heat.

- ( 5 ) and maintain the temperature to make the powder dry and not agglomerate.
- ( 6 ) The three-tank design can quickly brew, mature and store for continuous use.
- ( 7 ) Dry powder or concentrated liquid can be used for brewing.

#### 5. Representative Performance

- ( 1 ) Panasonic Taiwan Co., Ltd. 2011.
- ( 2 ) Nan Ya Plastic Corporation 2000-2019.
- ( 3 ) AU Optronics Corp. 2003-2017.

#### 6. Product Photo



#### 7. Award (Certification) Project

- ( 1 ) ISO 9001:2015 Quality System Certificate.
- ( 2 ) CE Safety Certification.

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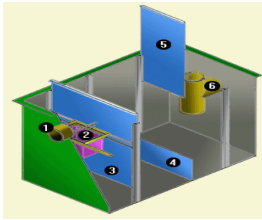
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# INTERCEPTION TANK

## 1. Structure and Principles



- ① InFlow
- ② Moveable Filtration Tank
- ③ Flow Rate Adjustment Board
- ④ Partition
- ⑤ Flow Rate Adjustment Board
- ⑥ Outflow

## 2. Purpose

It can be used to prevent hard-to-treat materials in wastewater from flowing into the pipe lines. There are two types for different purposes:

- (1) For Oil : it is used to prevent water with excess oil released by households or commercial kitchens from congesting the water-exhaust system after it is cooled and solidified in the flowing path; therefore, it is called the Oil Intercepting Tank.

- (2) For Petroleum : it is used to intercept wastes with gasoline, oil, and sand released by auto repair shops, processing plants, gas stations, and car parks. Therefore, it is called the Sand-setting Oil Remover Tank or Petrol Supply Tank.

## 3. Features

- (1) Leftovers, floating oil, floating contaminants, and solidified animal fats can be creamed or solidified and extracted simultaneously.
- (2) It only uses electricity of a 1/2hp motor and no frequently-replaceable parts.
- (3) Animal fats are not dissolved by heating, therefore, no worries of methane explosion.
- (4) It is highly effective for treatment of solidified pork fat or cooking oil.
- (5) The oil scraper is made of stainless steel (not rubber); therefore, it does not harden-very durable.

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**SUN HOME INTERNATIONAL DEVELOPMENT CO., LTD.**

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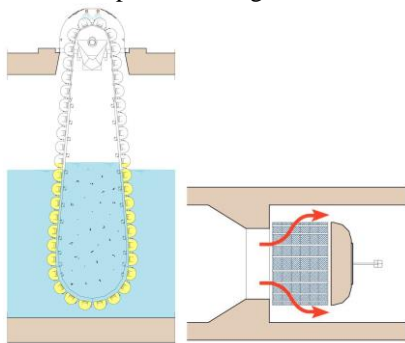
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# CENTER FLOW TRAVELLING BAND SCREEN



## 1. Structure and Principle

The center flow traveling band screen is an unique design for screening the inlet cooling water in power and de-salination industries. The machine utilizes the -center flow principle and semi-circular basket design. The floating, fishes and marine life in inlet water shall be screened, retained in baskets and trapped in the intake structure. All indicators are that TBS is the best available screening unit for protecting those living organisms. Rather than causing this marine life to impinge on the screen, the TBS actually scoops them out of water by its basket-shaped screening element.



## 2. Purpose

The system is installed after the coarse bar screen for screening the solids or marine life which passed the coarse bar screen in order to protect the following pumping equipment and utilities.

Scope of Application :

- (1) Power plant inlet cooling water screening
- (2) Wastewater inlet pre-treatment
- (3) Desalination plant feed water screening

## 3. Features

- (1) Driving chain maintenance free.
- (2) High efficiency ---about triple of through flow design in same dimension.
- (3) Wide range mesh size (0.1 to 10 mm).
- (4) Less spray wash water.

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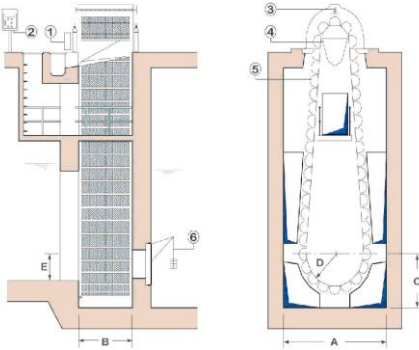
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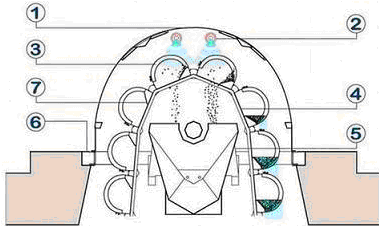
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#### 4. Specifications and Function



- ①Driving unit ②Control panel  
③Spray wash system ④Debris trough  
⑤Screen basket ⑥Bypass valve  
(Option)



- ①Protection Cover.  
②Spray water pipe.  
③Baskets.  
④Chain.  
⑤Debris trough.  
⑥Base frame.  
⑦Retaining plate.

#### 5. Product Photo



#### 6. Award (Certification) Project

- (1) The product is ISO-9001: 2000 certified for design, manufacturing and installation.
- (2) Taiwan Environmental Manufacturers Association certified the product for environmental protection quality standard in 1999.
- (3) The product was certified the award from IDB for environmental protection equipment application benchmark in 2018.

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# DRUM SCREEN & MICRO SCREEN

## 1. Structure and Principle

Screening is a necessary process in a wastewater treatment plant.

The purposes of removing floating and suspended materials are as follows :

- (1) Prevent the clogging or damage in downstream pipe lines and equipment.
- (2) Minimize the downstream mechanical loading.
- (3) Prevent the sludge accumulation in downstream.
- (4) Reduce the oxygen demand in downstream.
- (5) Polishing of secondary treatment.

The screens are separated into two categories :

- A. Bar screen : widely used for intake water screening.
- B. Mesh screen : widely used for fine particle or debris removal.

## 2. Purpose

- (1) For removal of floating and suspending solids.
- (2) Drum screen : This screen is installed behind the Bar Screen to remove suspended materials for prevent clogging and reduce the loading in the downstream. Micro screen : This screen is designed to polish the effluent from secondary treatment for S.S removal.

## 3. Features

- (1) Easy installation, time and labor cost saving.
- (2) All driving units are above the water level for easy maintenance.
- (3) Low head loss.
- (4) Water lubricated supporting bearing, low maintenance cost.
- (5) The spray nozzles are furnished to maintain the screen meshes in good condition.
- (6) The spray nozzles can be back-washed and brushed for cleaning without dismantlement, minimum spray water is required under operating pressure of 3 ~ 4 bar.

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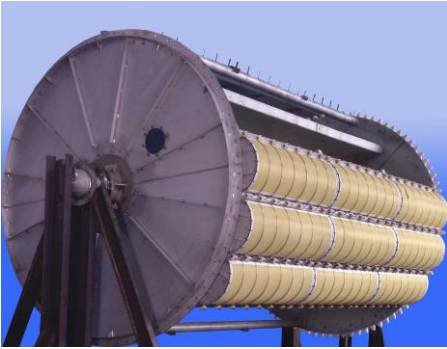
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- (7) The drum surface is composed by multi-semi-circular mesh baskets which increase more than 20 % filtration area compared to flat meshes and easy replacement without dismantlement of other components.
- (8) Two rotation speeds controlled by water level sensor to keep the facility in best efficiency.

#### 4. Product Photo

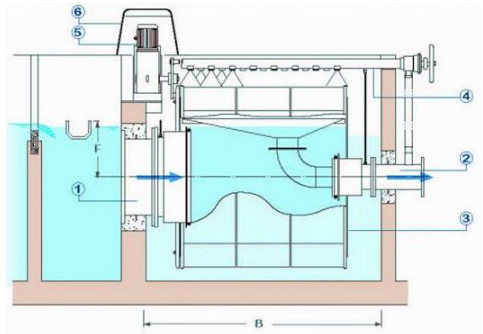


#### 5. Award (Certification) Project

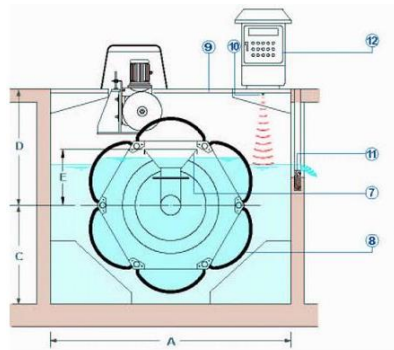
- (1) The product is ISO-9001 : 2000 certified for design, manufacturing and installation.
- (2) Taiwan Environmental Manufacturers Association certified the product for environmental protection quality standard in 2001.

#### 6. Specifications and Functions

Material : Except some parts of ABS, the rest of the unit is made of SUS304 grade stainless steel.



- ①Raw water inlet ②Debris discharge
- ③Main frame ④Spray water pipe
- ⑤Driver ⑥Protection cover



- ⑦Debris trough ⑧Screening basket
- ⑨Cover ⑩Level controller
- ⑪Over flow weir ⑫Control panel

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# CABLE OPERATED BAR SCREEN

## 1. Structure and Principle

The cleaning grab is semicircular in shape, travelled on lateral guide rails. By suspension on three cables (two for lifting / descending and one for opening / closing the grab), this unit can be brought into operation at any depth. In automatic operation the cleaning sequence is repeated continuously until all suspended solids are removed. Grab opening and closing is achieved by turning of the swiveling rollers, whereby the length of control cable is automatically altered.

On the downward travel, the grab runs in open position on the guide rails to the chamber floor whereby the blade of the grab is approx. 500mm distant from the grid.

When reaching the chamber floor or scum layer, the grab movement is reversed by the automatic control of the slack line sensor; the closed grab travels upward with the screenings. Above floor, the screens are discharged by a wiper into a receptacle or onto a belt conveyor. The rest position of the cleaning grab is above the discharge chute.

The nominal operating velocity when chamber depths are greater than 6m is about 10m/min. The usable load is minimum 100kg per running meter of grab length.

In order to achieve a satisfactory cleaning of the screen, the designed flow velocity through screen bars shall be less than 0.8m/sec at lowest water levels.

## 2. Purpose

The cable operated bar screen is fully automatic, suitable for removing large floating matters in water.

## 3. Features

- (1) Large hoist capability.
- (2) Rigid structure.
- (3) Capable of grabbing floating matters at any depth.
- (4) Capable of continuously dredging of deposits at the bottom.
- (5) The driving mechanism is equipped with two driving units.

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## 4. Specifications and Functions

Specification and application

Material	General Application	Seawater application
Steel structure	Carbon steel	Stainless steel
Cable drum	Cast iron	Cast iron
Cable drum shaft	Carbon steel	Carbon steel
Wire rope	Galvanized wire rope	Stainless steel wire rope
Protection cover	Galvanized wire rope	FRP or Stainless steel
Guide roller	PA6G	PA6G
Roller pin	Stainless steel	Stainless steel
Submerged bolts	Galvanized	Stainless steel

Driving Motor ( 10m/min lifting speed )

Channel Width ( KW )	Lifting Motor ( KW )	Grab Open/Close
$\leq 1.0$	0.55	0.75
$\leq 1.6$	0.75	0.75
$\leq 2.0$	1.10	0.75
$\leq 3.0$	2.20	0.75
$\leq 4.0$	3.00	0.75
$\leq 5.0$	4.00	0.75

## 5. Product Photo



## 6. Award (Certification) Project

- (1) The product is ISO-9001: 2000 certified for design, manufacturing and installation.
- (2) Taiwan Environmental Manufacturers Association certified the product for environmental protection quality standard in 1999.
- (3) Industrial Development Bureau of MOEA certified the product for environmental protection quality standard in 2004.

**健鑫環境工程股份有限公司**

**H PLUS R ENVIRONMENTAL ENGINEERING CO., LTD**

桃園市楊梅區高青路 39 號 No.39, Gaocing Rd., Yangmei Dist., Taoyuan City, Taiwan

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## GENERAL LIFTING DEVICE

### 1. Structure and Principle

The lifting device set consists of the a plate, lifting device, motor with reducer, hand wheel, opening indicator, rack rod ( optional ) , emergency descending level, cam switch and necessary driving mechanisms.

### 2. Purpose

The device can be applied to drive the stop gate for opening adjustment.

### 3. Features

- (1) Easy Operation / Maintenance.  
Package design with indicating lamps and alarm, accessible operation and maintenance.
- (2) Easy manual operation.  
The designed manual operating force is lower than 10 kg.  
Non-return device is furnished for safety.
- (3) Self descending function.
  - A. The stop gate can be descended by graving under auto or manual mode, the centrifugal braking device is provided for safety.
  - B. Can be operated on site through the self descending level.
  - C. Can be operated remotely by press the push button.

- (4) Can be matched with the level gauge or earthquake detector.

- (5) Protection  
Limit switches provided for over-torque protection during descending and lifting travel.

Approximate switches provided for full open and full close control.

- (6) High efficiency  
High efficiency gear reducer.

- (7) Double speed design  
The operating speed is designed to run under slow speed during initial and ending stages and under fast speed during the mid-stage of travel.

- (8) Tailor made  
The system can be tailor made for special requirement.

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#### 4. Specifications and Function

##### (1) Single Cables lifting device

Specification					
Model	SWGLO3	SWGLO5	SWGLO7	SWGLO9	SWGLO12
Lifting capacity Kg	3000	5000	7000	9000	12000
Driver HP	1/4	3/4	3/4	1	1.5

##### (2) Single rod lifting device



Specification					
Model	SGL03	SGL05	SGL07	SGL09	SGL12
Lifting capacity Kg	3000	5000	7000	9000	12000
Driver HP	1/4	3/4	3/4	1	1.5

##### (3) Double rods lifting device



Double rods lifting device

##### (4) Double Cables lifting device



Double Cables Lifting device

Specification											
Model	DWGL03	DWGL05	DWGL07	DWGL09	DWGL12	DWGL16	DWGL22	DWGL30	DWGL40	DWGL50	
Lifting capacity Kg	3000	5000	7000	9000	12000	16000	22000	30000	40000	50000	
Driver HP	1/4	3/4	3/4	1	1.5	1.5	3	3	4	5	

#### 5. Product Photo



##### Specification

Model	DGL03	DGL05	DGL07	DGL09	DGL12	DGL16	DGL22	DGL30	DGL40	DGL50
Lifting capacity Kg	3000	5000	7000	9000	12000	16000	22000	30000	40000	50000
Driver HP	1/4	3/4	3/4	1	1.5	1.5	3	3	4	5
Dimension YA	Designed per gate dimension									

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# AERATED GRIT AND GREASE REMOVAL EQUIPMENT

## 1. Structure and Principle

This aerated Grit and Grease Removal Equipment can be installed and traveled on the rectangular tank. By forced aeration, grease and scum float to the surface of the liquid then skimmed into the grease/scum pit by a surface skimmer for further treatment. Organic matters attached on the solids can be detached by aeration.

Grits accumulated on the bottom of the tank can be pumped to the grit washer for washing and the liquid in the grit washer is returned to the tank for further treatment. The cleaned grit can then be collected in a cart for disposal.

## 2. Purpose

For grit and grease removal.

## 3. Features

- (1) Pre-aeration, improve BOD & SS removal in followed facilities.
- (2) Removal of inorganic solids.
- (3) Collected grits can be disposed directly, no further treatment is required.
- (4) All moving and operation parts are installed on the top of the tank.
- (5) The operation sequence can be set manually.
- (6) The driving roller is made of special rubbers, no sliding concerns.

健鑫環境工程股份有限公司

**H PLUS R ENVIRONMENTAL ENGINEERING CO., LTD**

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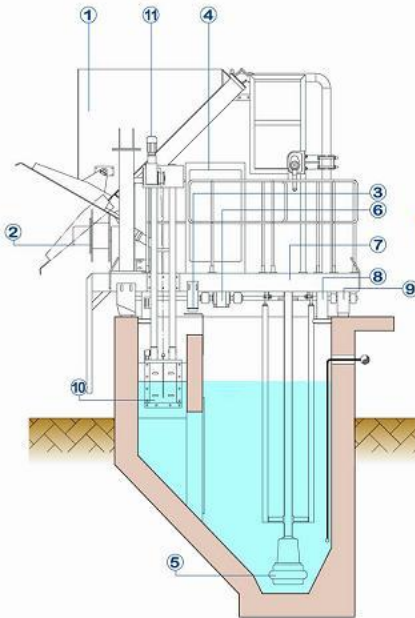
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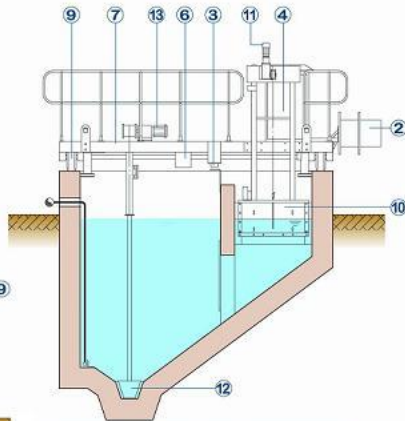
## 4. Specifications and Function

### Construction ▶

#### ■ Suction Scraper Type



#### ■ Blade Scraper Type



- |                             |                               |
|-----------------------------|-------------------------------|
| ①— Grit washer. (※)         | ⑦— Traveling bridge.          |
| ②— Cable reel.              | ⑧— Guide roller.              |
| ③— Limit switch.            | ⑨— Traveling roller.          |
| ④— Control panel.           | ⑩— Scum/Grease skimmer. (※)   |
| ⑤— Grit pump. (※)           | ⑪— Skimmer driver. (※)        |
| ⑥— Traveling bridge driver. | ⑫— Grit collector. (※)        |
|                             | ⑬— Skimmer lifting motor. (※) |

※ : option device

## 5. Product Photo



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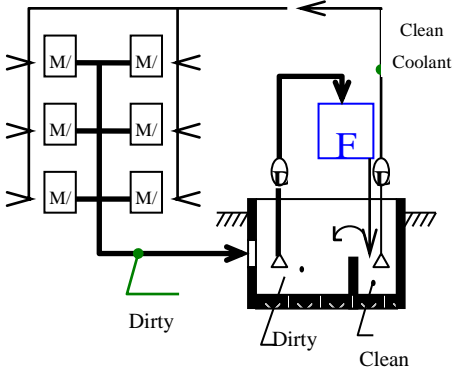
## 6. Award (Certification) Project

- (1) The product is ISO-9001:2000 certified for design, manufacturing and installation.
- (2) Taiwan Environmental Manufacturers Association certified the product for environmental protection quality standard in 1999.

# COOLANT FILTRATION, DEODORIZATION & WASTE REDUCTION SYSTEM

## 1. Structure and Principle

This system employs pressurized filtering, settling, and full blending to prevent bacteria growth by first separating wastes from dirty liquid. Settling and remove the floating grease to reuse the clean liquid.



Benefits :

- (1) Excellent filtering effectiveness for high precision machining.
- (2) Minimize odor.
- (3) Long service life of coolant, low coolant replacement requirement.
- (4) Low treatment cost of spent coolant.

## 2. Purpose

- (1) Remove impurities from coolant.
- (2) Recycle and minimize environment pollution.

## 3. Features

- (1) Reduce requirement of coolant (cost saving) .
- (2) Prolong coolant service span.

## 4. Specifications and Functions

Equipment can be customized according to site requirement.

光騰工業科技股份有限公司

**EASTON ENGINEERING INTERNATIONAL CORP.**

新北市三重區重新路五段 609 巷 14 號 7 樓之 9

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# WATER TREATMENT SYSTEMS

## 1. Structure and Principle

Hydron's ecAOP is an electrochemical advanced oxidation process system for water treatment. It employs an electrolysis combined ozonation, further hybridized with photocatalysis to effectively degrade organic pollutants into  $\text{CO}_2$  &  $\text{H}_2\text{O}$ .

## 2. Purpose

- (1) Degrading the organic pollutants in the wastewater on site, so that the treated water reaches the discharge water standard.
- (2) Discharge water recycling and reuse.

## 3. Features

- (1) No chemicals added.
- (2) No sludge produced.
- (3) Negligible effects of turbidity and chromaticity.
- (4) Low electrode degradation.
- (5) Only electricity needed.

## 4. Product Photo



## 5. Specifications and Functions

ITEM	HOR-100	HOR-1000	HOR-5000
Capacity	100 L/H	1000 L/H	5000 L/H
Influent pressure	> 2.0 kg / $\text{cm}^2$	> 2.0 kg / $\text{cm}^2$	> 2.0 kg / $\text{cm}^2$
COD reduction	60 ~ 90 % (1)	60 ~ 90 % (1)	60 ~ 90 % (1)
Power consump	1.0 kw	5.0 kw	21 kw
Inlet	3/8 inch	1 inch	2 inch
Outlet	3/8 inch	1 inch	2 inch
Noise	< 60 dB	< 80 dB	< 100 dB
Temp	4 ~ 60 $^{\circ}\text{C}$	4 ~ 60 $^{\circ}\text{C}$	4 ~ 60 $^{\circ}\text{C}$
Acidity	3 ~ 10ph	3 ~ 10 ph	3 ~ 10 ph
Weight	85 kg	190 kg	320 kg
Dimension(cm)	50 × 60 × 105	145 × 85 × 135	215 × 125 × 135

- (1) COD reduction is very dependent on influent quality. The system is mainly for degradation of organic pollutants. Typical COD treated is about 500 mg/L.

氫創股份有限公司      HYDRON INNOVATION INC.

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TEL : 03-287-3267    FAX : 03-287-3507

E-mail : Sherry.huang@hydron-inno.com.tw    <http://www.hydron-inno.com.tw>

# ASP WASTEWATER TREATMENT SYSTEM

## 1. Structure and Principle

Three Major Principles of Electrochemical Electro- dialysis System :

- (1) Changing the electric charge property of impurities.
- (2) Rearranging the configuration.
- (3) Electrically neutral separation.

Three Major Reactions of Wastewater Treatment by Electrochemical Electro-dialysis System :

- (1) Polarization.
- (2) Two-Way Flow Control Polymerization.
- (3) Dissociation.

## 2. Purpose

Capable of completely removing the oil and the color in the wastewater and high. Removal rate for S.S., COD and BOD of wastewater. It ensures all effluent after treating meets The Department of Environment (DOE) Standard.

## 3. Features

- (1) High removal rate for impurities of wastewater.
- (2) Capable of completely removing the color in the water.

- (3) Close system does not produce bad smell or generates noises.
- (4) Possessing disinfecting effect.
- (5) Instantly finish the process.
- (6) Equipment occupies small area.
- (7) Capable of testing in advance to avoid wrong investment.
- (8) This equipment is still applicable when moving the plant.

## 4. Specification and Functions

Examination project	Examination value		Module
	Original Wastewater	After Processing	
Fat	2,050.0	6.5	mg/L
Chroma	1,870.0	110.0	Color Unit
Nickel	30.8	0.1	mg/L

## 5. Product Photo



煒懋實業有限公司      SUN RISE TOP INDUSTRIAL CORP.

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# ECO COOLING WATER DE-SCALING PURIFICATION EQUIPMENT

## 1. Structure and Principle

**Principle of Anti-Scaling :** The nature of the water molecule hydrogen bonds between water molecules closely formed a cluster structure. Such water after flown through magnetic field treatment, the bonded phenomenon is destroyed, increases the number of single water molecules liberalization, they can be absorbed on the molecular particles just created microcrystalline form. Due to static electricity, it is difficult to form a dense molecular particles of crystalline state, but a loose needle-like crystalline state, mutual adhesion and accumulation characteristics has been destroyed so that does not adhere to the piping and heating surfaces.

**Principle of De-Scaling :** Magnetic de-scaling involves passing the water through a magnetic filed. This has the effect of re-arrangement of atoms, or ions in the water; changing the shape of crystallization from "spherical or round crystals" to "acicular" thus unable to settle on surfaces.

Principle of Preventing : Corrosion  
 $3\text{Fe}_2\text{O}_3 \cdot n\text{H}_2\text{O} + 2e^- \rightarrow 2\text{Fe}_3\text{O}_4 + \frac{1}{2}\text{O}_2 + n\text{H}_2\text{O}$   
Water carry negative power particle after flown through water optimizer (due to Lorentz Force effects); which as rapid speed and carry away most substances during the flow before any precipitation.

**Elimination of microbial growth :**  
Solubility increases and more oxygen allowed after flown through water optimizer.

Oxygen is toxic to some bacteria and these are called anaerobic. Magnetic fields causes disorder to the physical condition.

**Principal of Water Purificationl :**  
Repeating filtration better the water quality. Purified water increases the efficiency of the cooling systems.

全澤股份有限公司      MOLYKEM CHEMICAL CORP.

高雄市大寮區和業六路 8 號      No. 8, Heye 6th Rd., Daliao Dist., Kaohsiung City, Taiwan

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E-mail : molykem@yahoo.com.tw      [http:// www.molykem.com.tw](http://www.molykem.com.tw)



## 2. Purpose

- ( 1 ) Cooling tower de-scaling 、 anti-scaling and purification water to inhibit microorganism growth.
- ( 2 ) Suit for green architecture cooling tower system treatment to substitute for traditional dosing chemical way and adopt the long effect physical environmental protection scale technology.

## 3. Features

- ( 1 ) Physical Property environmental protection energy saving technology products, Zero dosing chemical substitute for traditional dosing chemical way, Achieve the goal of green environmental protection energy saving.
- ( 2 ) Cooled discharge water non chemical pollution. Suitable for Water Cooling Recycling Systems. Removal & anti-scaling in heat exchangers. Radiating material to curb pipelines corrosion. Eliminate deposition in systems. Inhibition of Microorganism growth.

- ( 3 ) Effective Saving the electricity expense of above 10%.
- ( 4 ) Removal the suspended solid and corrosion substance in the water. Don't need acid pickling to remove the scale in the Heat exchanger.
- ( 5 ) Lengthen cooling systems service life. Reduce maintenance and stoppage. No chemical pollution problem.

## 4. Specification and Functions

Tube type / outer box type according to system requirement to design.

## 5. Product photo



全澤股份有限公司      MOLYKEM CHEMICAL CORP.

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# LONG FIBER FILTRATION EQUIPMENT

## 1. Structure and principle

- ( 1 ) Adopted long bundle fiber PP as filter media
- ( 2 ) When untreated water is passed downwards, the long fibers are compressed. The space between of fibers become denser and formed the high deep layer interception dirt filter that have the effect of filter and adsorption which can remove suspended solid 、 colloid and iron in the water.

## 2. Purpose

- ( 1 ) Perfect substitution to conventional sand filtration and Manganese equipment, increased the effect of the filter 、 saved backwash water volume and operation cost, solved the bad filter effect 、 high operation cost 、 large backwash water volume, unable to discard the filter material of the conventional sand filtration.
- ( 2 ) Removal the suspended solid 、 colloid 、 organic material 、 grease 、 iron 、 manganese, and other pollutants in the water, effect to purify the water quality of the system.
- ( 3 ) Generally suit for each kind water system in filter purified and recycle.

- ( 4 ) Suit for the pre-treatment of recycle water treatment equipment and effect protect the behind system and increased recycle effect.

## 3. Features

- ( 1 ) Excellent Filtration Efficiency, High Filtration Accuracy, Fast Flow Rate
- ( 2 ) High capacity interception, Space Saving, Light Weight
- ( 3 ) Low Operating Cost, Low backwash water volume, Filter material can be used for long-term
- ( 4 ) No fiber detachment, Filter material can be cleaned by chemicals, Excellent oil absorption
- ( 5 ) Excellent interception of iron-manganese, Excellent interception of colloid, Disposable Filtering material.

## 4. Product photo



全澤股份有限公司

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## U.A.S.B. ( UP FLOW ANAEROBIC SLUDGE BLANKET )

### 1. Structure and Principle

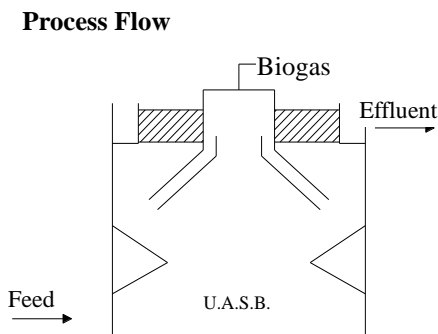
Anaerobic granular sludge is employed to decompose organic substances in wastewater into  $\text{CH}_4$  and  $\text{CO}_2$ , no oxygen or power supply required. It utilizes stirring to produce methane, which mixes wastewater with organisms for effective biodegradation.

### 2. Features

- ( 1 ) Simple structure, easy operation.
- ( 2 ) Require no power consumption.
- ( 3 ) Complete biodegradation.
- ( 4 ) Biogas produced may be reused.
- ( 5 ) Minimize sludge production, only 1/10 of aerobic treatment.

### 3. Award (Certification) Project

Sunray Science & Technology is ISO-9000 and ISO-14001 certified since 2000.



尚磊科技股份有限公司

**SUNRAY SCIENCE & TECHNOLOGY CO., LTD.**

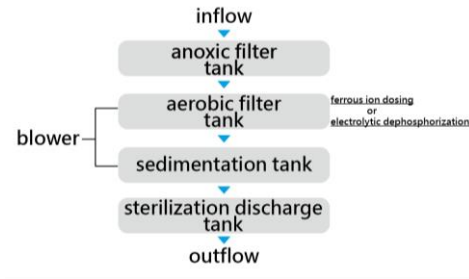
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# FRP ELECTROLYTIC DENITRIFICATION AND DEPHOSPHORIZATION JOHKASOU WASTEWATER TREATMENT PLANT

## 1. Structure and Principle



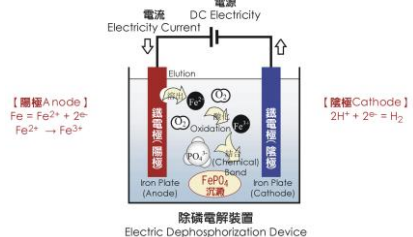
## 2. Specification and Functions

The equipment adopts the stable anaerobic filter contact aeration process. Its principle is to immerse the contact filter material in the anaerobic and aerobic filter tanks, to serve as a film (biofilm) for the attachment and growth of microorganisms. The blower is used to enforce to provide air volume, which serves to stir tank wastewater and to provide dissolved oxygen for decomposing organic matter in the water.

Denitrification method uses nitrite nitrogen ( $\text{NO}_2^-$ ) and nitrate nitrogen ( $\text{NO}_3^-$ ) to return to the anaerobic tank and the organic matter and denitrifying bacteria in the sewage to decompose and denitrify ( $\text{N}_2$ ).

Dephosphorization can also be done by microorganisms, but it is difficult to control. According to the structural standard, the method of adding molysite precipitation

or using two iron plates to be electrolyzed by a weak direct current can dephosphorize by reacting with the phosphate ions ( $\text{PO}_4^{3-}$ ) in the sewage.



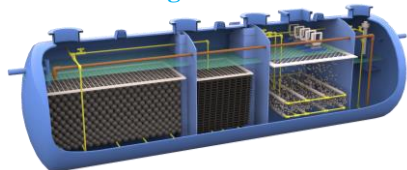
## 3. Purpose

The treatment of domestic sewage produced in water source protection areas, reservoir catchment areas, and various types of buildings in order for the sewage discharge water quality meets the discharge water standards.

## 4. Representative Performance

- (1) Daxi Shunshipu Water Quality Improvement Project.
- (2) Baiji Area Water Quality Improvement Project.
- (3) Baling Area Water Quality Improvement Project.
- (4) Amuping Ecological District Water Reuse Treatment Project.

## 5. Product Image



昇鴻國際開發有限公司

SUN HOME INTERNATIONAL DEVELOPMENT CO.,LTD.

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# VERTICAL CELLULAR-TYPE BIO-FILTER

## 1. Structure and Principle

The open-contact cellular structure yields excellent strength. The sink/protruding surface expands the surface in contact with fluids, as well as stirring water flow into turbulence for higher efficiency of oxidation, making it an excellent system for organic wastewater treatment.

## 2. Purpose

Eliminate BOD in water.

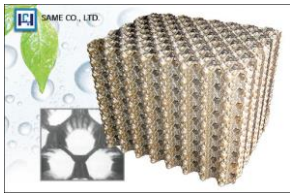
## 3. Features

- (1) Broader surface for excellent treatment capability.
- (2) Low cost, high performance, economic efficiency.
- (3) Low water resistance, more crevices, no clogging.
- (4) Excellent mechanical strength and durability, no distortion, no bending.
- (5) High plankton capture rate.
- (6) Apposite membrane attachment.
- (7) Excellent strength and operating safety.

## 4. Specifications and Functions

Model	Crevice (mm)	Surface (m <sup>2</sup> /m <sup>3</sup> )	Porous Rate (%)	Single Sheet Gauge (mm)	Standard Size (mm)		
					L	W	H
CM-80	80	53	99.2	0.55	1,000	500	1,000
CM-56	56	72	99.2	0.5	1,000	500	1,000
CM-40	40	105	90.0	0.4 ~ 0.45	1,000	500	1,000
HCM-80	80	45	99.3	0.55	1,000	500	1,000

## 5. Product Photo



相同企業有限公司      SIMILAR ENTERPRISE CO.,LTD

台中市烏日區溪南路一段 506 巷 485 號  
No. 485, Lane. 506, Sec. 1, His Nan Rd., Tong Yang Village, Wu Jih District, Taichung City, Taiwan  
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# WAVY GRADIENT BIO-FILTER

## 1. Structure and Principle

The contact filter is made of PVC in cellular form with crisscross waves, and the surface is specially frosted to promote organism growth.

## 2. Purpose

General sewage treatment.

## 4. Specifications and Functions

Spec	Size (mm)	Crevice (mm)	Porous Rate (%)	Material (mm)	Sheet Gauge (mm)	Contact Surface (m <sup>2</sup> /m <sup>3</sup> )	Seating Strength (kg/m <sup>2</sup> )
HCM-60	1,200×600×600	58	98.7	PVC	0.4 ~0.45	135	1,500

## 5. Product Photo



相同企業有限公司      SIMILAR ENTERPRISE CO.,LTD

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# ROTATING BIOLOGICAL CONTACTOR



## 1. Structure and Principle

The rotating biological contactor is a biological contactor model formed by a horizontal array of circular mesh. Half of the unit is immersed in wastewater and the other half is exposed in the air. The biological contactor alternately rotates in the air and submerged into water. Organisms cultivated in the wastewater attach to the unit and form a film. When organism film comes in contact with wastewater, it decomposes or digests the oxygen-dependent contaminations, and when the film is exposed in the air, it refills oxygen favored by aerobic organisms. The cycle continues to progressively reduce oxygen-dependent contaminations in the wastewater achieve the purpose of water purification.

## 2. Purpose

Most effective and economical for treating living wastewater containing high level of BOD, chlorides and carbides as well as industrial wastewater.

## 3. Features

- (1) High flexibility: General wastewater varies greatly in both quality and volume, thus requiring highly flexible equipment to accommodate the needs.
- (2) Small space requirement: Of all treatment methods, biological contactor takes up the least space.
- (3) Power saving: As the helical twirls at a rather low speed (2rpm), it requires little power, only 1 / 5 of power required for active sludge.
- (4) Easy maintenance: Bio-contactor approach requires nearly no maintenance, only regular lubrication for the axle.
- (5) Easy operation: Regular technician will be able to operate competently after training.

**相同企業有限公司      SIMILAR ENTERPRISE CO., LTD**

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No. 485, Lane. 506, Sec. 1, His Nan Rd., Tong Yang Village, Wu Jih District, Taichung City, Taiwan

TEL : +886-4-2335-2827 FAX : +886-4-2335-2659 E-mail : same66@ms16.hinet.net <http://www.similar.com.tw>

- (6) Flexible capacity: Its resistance against organic load and toxic overflow is better than conventional method, and as the time for wastewater to stay is shorter, it's more expedient in recovering accidental toxic leak.
- (7) Low sludge volume and odor, high concentration
- (8) High efficiency: Elimination of BOD<sub>5</sub> can reach 90-98%.
- (9) Quick recovery: At the inception or following suspension, it requires only 3 - 5 days for recovery.

#### 4. Specifications and Functions

Model	SAME-30
Surface Area	2,350 m <sup>2</sup> /m <sup>3</sup>
Disk Form	Mesh
Disk Diameter	3,000 mm (size can be customized)
Membrane Material	HDPE
Axle	Seamless steel pipe
Speed	Main axle operates at 2 turns per minute; peripheral speed is 18.85m per minute
Motor	2 hp
Decelerator	CYCLO 2-phase, or HELICAL model
Bearing	Auto bearing adjustment
Anti-Corrosion Treatment	Steel parts are covered with epoxy (except for SUS304 grade)

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# MESH BIO-FILTERS

## 1. Structure and Principle

HDPE high-density environmental friendly material.

## 2. Purpose

High ammonia, nitrogen elimination rate.

## 3. Features

- (1) Capable of forming membranes in a very short time.
- (2) Large mechanical strength, each m<sup>2</sup> base withstands more than 8 tons.
- (3) High organism elimination rate, reduce space requirement, overall low investment cost.
- (4) Mesh formation offers excellent penetration.
- (5) Diverse formats (e.g.: mobile float, percolate, immersed types), any required length.

## 4. Specifications and Functions

Model	Effective Surface ( m <sup>2</sup> /m <sup>3</sup> )	Penetration Rate ( % )	Porous Rate ( % )	Pipe Diameter ( m/m )	Unit Capacity ( kg/d )
Same-66	155	63	88	66	1 ~ 3

## 5. Product Photo



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# COMPOSITE POROUS FILTER

## 1. Structure and Principle

With ExtreMem, Inc.'s breakthrough heat treatment technology, a ceramic selective porous layer with uniform, smaller pores is created on the surface filter media, and also exceeds competitions' filtration performance and efficiency by folds. ExtreMem, Inc. has a wide selection of filter products targeted for different environment usages, (ie: high temperature, corrosion, viscosity, etc.), and has proved to maintain high performance and precision under environmental stress..

## 2. Purpose

- (1) Wastewater management
- (2) Powder recycling/collection
- (3) Heavy metal recycling/collection
- (4) Precious metal recycling/collection
- (5) Cutting fluid/oil recycling/collection
- (6) Purification
- (7) High-temperature exhaust gas recycling/collection
- (8) Other membrane filtration operation (solid-liquid separation or solid-gas separation).

## 3. Specification and Functions

- (1) Base Filter Media: Titanium alloy, Hastelloy series, Inconel series, polymer, etc.
- (2) Selective Layer: Ceramics, catalysts
- (3) Pore Size:  $1\mu\text{m} \cdot 0.45\mu\text{m} \cdot 0.2\mu\text{m}$  (Absolute filtration @ 99% retention rate)

## 4. Product Photo



承鴻工業股份有限公司 EXTREMEM, INC.

桃園市龍潭區工二路一段 211 號 No.211, Sec. 1, Gong 2nd Rd., Longtan Dist., Taoyuan City, Taiwan

TEL : +886-3-480-1798 FAX : +886-3-499-1729

E-mail : Simon.Chen@extremem.com [http : //www.extremem.com](http://www.extremem.com)

# INNO-ULTRA HIGH EFFICIENCY GREEN ENERGY HYDROLYSIS SYSTEMS

## 1. Structure and Principle

Normally, the sludge generated by wastewater treatment plants contains materials having cell walls that are difficult to decompose, which blocks biological decomposition. However, the Inno-Ultra hydrolysis system can resolve this problem because of its application of high-energy physical waves. This quickly produces huge positive pressure and negative pressure oscillations in the wastewater, producing high temperatures and high pressures resulting in cell wall destruction.

## 2. Purpose

- (1) Reduce sludge
- (2) Increase biomass production.

## 3. Features

- (1) Improve water quality and nitrogen removal rate.
- (2) Reduce costs in wastewater treatment plant of construction and operation.
- (3) Reduction in digested sludge mass, up to 30 %.
- (4) Decrease in digested time, up to 60%.
- (5) Increase biogas produced by sludge, up more than 50 %.
- (6) Improve ammonia and nitrogen reduction's processing performance, up more than 20 %.
- (7) No chemicals. Extremely efficient sludge hydrolysis.
- (8) Improve dewatering, up to 15%.
- (9) Commercialization success cases in advanced countries.
- (10) Small size.
- (11) Easy to install. (Plug & Play).
- (12) Module structure design.
- (13) High intensity horns.
- (14) Stainless steel structure.
- (15) Low maintenance costs.

高識能股份有限公司

HIGH VIEW INNOVATION CO., LTD.

新竹市牛埔路 251 號 No.251, Niupu Road, Hsinchu City, Taiwan

TEL : +886-3-538-4063 FAX : +886-3-538-9467 E-mail : wisdom@hviglobal.com <http://www.global.com>

#### 4. Specifications and Functions

- (1) Reactor container with oscillating unit : The reactor container includes oscillating units each equipped with an aerating pipe. The oscillating units move the ultrasound energy onto the streaming medium (sewage sludge, biomass).
- (2) Rack with five generators KS1000/2000 : The energy for the oscillating units is produced in these five generator modules . The supply voltage of 230 V / 50 - 60 Hz is transformed into an electrical sinusoidal oscillation of 20 kHz and applied via the HF-line to the oscillating units. Each generator produces a continuous output of up to 1,000 Watts.

#### 5. Product Photo



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# BIO-MEMBRANE CONTACTOR

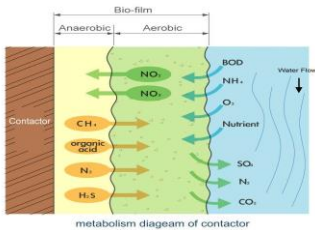
## 1. Structure and Principle

By submerged the bio-film contactor under the wastewater with aeration, the micro-organisms will adhere and grow on the surface of contactor then decompose organic substances in the wastewater. Durable material, easy adhesion of micro-organism, high strength and back wash system are the key features of the treatment efficiency of this system.

## 2. Purpose

Wastewater treatment.

- (1) Domestic wastewater treatment.
- (2) Low concentration wastewater treatment.
- (3) Tertiary treatment.
- (4) Small scale wastewater treatment.
- (5) Low bio-degradable wastewater treatment.



## 5. Award (Certification) Project

Taiwan Environmental Manufacturers Association certified the product for environmental protection quality standard in 1999.

健鑫環境工程股份有限公司

H PLUS R ENVIRONMENTAL ENGINEERING CO., LTD

桃園市楊梅區高青路 39 號 No.39, Gaocing Rd., Yangmei Dist., Taoyuan City, Taiwan

TEL : +886-3-478-5478 FAX : +886-3-478-5537

E-mail : hplusr@ms15.hinet.net <http://www.hplusr.com.tw/first.htm>

## 3. Features

- (1) No return sludge required; easy operation and maintenance.
- (2) High micro-organism retaining capability; high treatment capability.
- (3) Can decompose low bio-degradable substances efficiently.
- (4) High adaptability of fluctuation in temperature.
- (5) High adaptability of fluctuation in influent rate and content.
- (6) Aerobic and anaerobic decomposition processed simultaneously.
- (7) Low sludge generation.
- (8) High transparency of treated water.
- (9) No sludge bulking trouble.

## 4. Specifications and Functions

Model	Dimensi on ( mm ) L×W×H	Opening (mm)	Specific Surface (m <sup>2</sup> /m <sup>3</sup> )	Strength (kg/m <sup>2</sup> )
W-60	1,160×580×550	58	135	900

## 6. Product photo



# JET AERATION AND MIXING SYSTEM

## 1. Structure and Principle

- (1) Jet aeration system : Consisted of jet aerator, recirculation pump and blower, the recirculation pump transferred the liquid through the liquid pipe, inner nozzle to the mixing chamber, homogenized with the air then discharge the jet plume horizontally. For maintaining the high efficiency, the liquid and air inlets were separated and one air manifold is matched with one liquid manifold.
- (2) Jet aspiration system : Consisted of jet aspirator and recirculation pump, the function is same as the jet aerator but the air is not forced supplied.  
The vacuum will be caused by different nozzles and high velocity of circulation liquid, sucking air through air pipe from atmosphere.
- (3) Jet mixing system : Consisted of jet mixer and recirculation pump, by double nozzle educator technology, the liquid in the basin will be sucked into the mixer and discharged after well mixing in the mixing

## 2. Purpose

- (1) For equalization tank and aerobic treatment facilities such as activated sludge process, oxidation ditch, oxidation pond or SBR; moreover through control of air volume, nitrification and de-nitrification can be carried out.
- (2) For equalization tank, flash mixing tank, coagulation tank, neutralization tank, chemical oxidation tank, disinfection tank, sludge storage tank, de-nitrification tank, chemical reactor, air stripping system and heat exchanger system.

## 3. Features

- (1) High oxygen transfer rate.
- (2) Complete mixing function : can be used in standard or extended SRT, high MLSS and activated sludge process.
- (3) Oxygen supply and mixing function can be controlled separately.
- (4) Low power consumption.
- (5) The inner and outer nozzle were all constructed in one piece by molding to ensure the smooth plume.

健鑫環境工程股份有限公司

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chamber.

- (6) Can be used in deep basin and high MLSS for space saving.
- (7) All fittings were corrosion resistant.
- (8) Low maintenance cost because of no rotation part submerged in water except submersible pump.
- (9) Low installation cost.
- (10) Can be self-cleaned by flushout system.
- (11) Conserve the thermal energy by submerged installation.
- (12) Can be wet installation.

4. Product Photo



5. Award (Certification) Project

- (1) The product is ISO-9001: 2000 certified for design, manufacturing and installation.
- (2) Taiwan Environmental Manufacturers Association certified the product for environmental protection quality standard in 1999.

6. Specifications and Functions

Material : SUS304 stainless steel or FRP

Main Nozzle Spec

Model	HR1	HR2	HR4
Internal nozzle (inch)	> 1	> 1.5	> 2
Liquid flow rate ( GPM )	90 ~ 100	183	366
Air flow rate ( SCFM )	10 ~ 30	20 ~ 60	40 ~ 120

Remark : External nozzle diameter varies according to specific system.

健鑫環境工程股份有限公司

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# HOLLOW FIBER MEMBRANE FILTER

## 1. Structure and Principle

ZISECO PVDF Hollow fiber membrane is formation via NIPS method. The pores are present near the outer surface of the fibers, while sponge-like structures are possessed by the center of the fiber and the inner walls. ZISECO Hollow fiber membrane filter (CMF) can be substitute to the conventional sand filter and be the guard filter for RO system to extend the life time of RO modual. And, due to the chemical resistance of PVDF material, it can also be used for chemical purification or concentration process. The filtration principle of CMF is to remove or retain the insolubles from the liquid by the porous surface. And the filtration efficiency of SS, Coliform could be > 99%, so it can be used for waste water, drinking water, swimming pool water, reclaimed water treatment.

## 2. Purpose

Removal all insoluble, for example:  
Suspend Solid, Turbidity,  
Bacteria,...etc., in liquid

## 3. Features

Uniform Pore Size, High flux effluent,  
Low Trans-membrane pressure,  
Effectively remove bacteria, Turbidity

## 4. Specifications and Functions

- (1) Pore size: 0.05  $\mu\text{m}$ .
- (2) Membrane area : 2 / 10 / 41 / 51  $\text{m}^2$  (per customer requested)

## 5. Product Photo



集盛實業股份有限公司      ZIG SHENG INDUSTRIAL CO., LTD.

台北市大同區西寧北路 70 號 3 樓

3F, 70, Xi Ning N. Rd., Datong Dist., Taipei 103, Taiwan

TEL : 02-2555-7151 FAX : 02-2559-1357 E-mail : laker\_wu@zigsheng.com <http://www.zigsheng.com>

# ROUND DISK-PLATE UF-MBR MODULE

## 1. Structure and Principle

- (1) The format flat round disk of membrane, welded for each pair, mounted on a horizontal permeation shaft with patented mutual lock.
- (2) Permeate flow is from the outside of the double - sheet discs and into the central shaft , which is hollow to provide permeate off-take flow.
- (3) Low fouling hydrophilic PVDF membrane (  $0.03 \mu\text{m}$  ) provided good mechanical strength and high chemical tolerance results in long membrane life.

## 2. Purpose

Wide space ( 7.0 mm ) between membranes, typically operation MLSS are 8,000 ~ 15,000 mg/L. Biosolids up to 30,000 mg/L can be treated without fouling.

## 3. Features

- (1) High flux ( 30 ~ 35 LPM ) allows competitive design with smaller foot print, low aeration (SAD < 15:1) and low capital cost.
- (2) Flux rates at peak flow can increase to 50LMH.
- (3) Low chemical consumption, simple cleaning procedure. Low flow path reduces filtrate pressure drop and allows low vacuum operation.
- (4) Inside the UPVC vessel, a stream of water generated upward as scouring air is diffused below membrane disk. This mechanism provides extremely stable filtration as the membrane does not allow sludge to adhere to membrane surface.
- (5) Once or twice daily backwash with 50 ppm NaOCl prevent from biomass on to membrane surface.
- (6) Gravity system can be provided with tank depths > 3 m liquid depth

新世膜科技股份有限公司 NEW CENTURY MEMBRANE CO., LTD

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#### 4. Specifications and Functions

Module No	NHV1-185-MBR	NHV2-185-MBR	NHV3-185-MBR	NHV4-185-MBR
Peak, Flux(LPH) @minus 15cm-Hg,25°C	250	500	750	110
Element No.	M 125 × 1	M 125 × 2	M 125 × 3	M 58 × 1
Membrane Area, M2(ft2)	5.6 (60)	11.2 (120)	16.8 (180)	2.5 (27)
Membrane Material	PVDF(Polyvinylidene Fluoride)			
Membrane Nominal Pore Size	0.3 μm			
Vessel Material	UPVC			
Net Operation Flux, LPH(CMd)2	150~250(3.5~6)	300~500(7~12)	450~750(10~18)	65~110(1.6~2.8)
Scrubbing Air Flow (LPM)3	50 ~ 80	100 ~ 160	150 ~ 240	30 ~ 50
Per Backwash Volume(L)	15 ~ 18	30 ~ 35	45 ~ 50	7 ~ 8
Operation Mode	Suction 15`30 min, Backwash once			
Operation TMP cm/Hg(Bar)	- 10 ~ -25 (-0.15 ~ -0.3)			
Max, Backwash Pressure	0.5 Bar			
PH	2 ~ 11			
Daily Chemical Backwash	50~100ppm Naoci by Backwash 1~2time/day			
Cleaning	1.01 ~ 2 % citric acid (for inorganic fouling)			
Module Dimensions(mm)	Φ216×L950	Φ216×L1900	Φ216×L2850	Φ216×L508
Weight(kg)	8	16	24	6

#### 5. Product Photo



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# PTFE MEMBRANE BIOREACTOR

## 1. Structure and Principle

The hydrophilic Teflon (PTFE) film which is produced by EFM has the structure of nodes interconnected by fibrils which can effectively block the impurities and biological bacteria in the water. Therefore it can reach the emission standard of drainage water.

The MBR module is consisted of frame placing area (upper side) and air-liquid mixed area (lower side.) Air is spurted to the air-liquid mixed area after sent to the air diffuser by the blower. The bubble will accelerate after mixed uniformly and can clean up the sludge on the membrane surface in order to stabilize the volume of drainage water.

## 2. Purpose

MBR treating technology can simplify the procedure in the conventional treatment by taking place of the activated sludge tank, final sedimentation tank, sludge digestion and disinfection, hence increase the efficiency of land using..

## 3. Features

**Advantages of Hydrophilic PTFE for industrial wastewater:**

- (1) Resist all kinds of corrosive chemicals → pH range: 1 – 14.
- (2) Anti-biotic.
- (3) Higher Porosity → Higher Flux.

- (4) Low Surface Energy and Low Coefficient of Friction  
→ Non-adhesive, Easy to Clean
- (5) Good Mechanical Properties  
→ Long service life
- (6) Excellent Weather ability.

**The structure and characteristic of MBR**

- (1) The MBR system has the on-line automatic backwash function to keep it from scaling.
- (2) Comparing with the conventional method, the MLSS of MBR system is much higher.
- (3) It can speed up the decomposition of microorganism and can withstand different water pollutions.
- (4) The bio-bacteria phase is rich and the sludge retention time (SRT) is long due to the membrane's capability of keeping the microorganism in the sludge tank so that it is able to decompose pollutant and reduce the amount of waste sludge.
- (5) The module is easy to install. Each frame can be replaced individually. It is easy to maintain and operate.
- (6) Expansion of the system is flexible.

群揚材料工業股份有限公司 EF-MATERIALS INDUSTRIES INC.

桃園市中壢區長春六路 1 號 No.1, Changchun 6th Rd., Zhongli Dist., Taoyuan City, Taiwan  
TEL:+886-3-4513736 FAX:+886-3-4513353 Email: Sharon@efmi.com.tw [http:// www.efmi.com.tw](http://www.efmi.com.tw)

## 4. Specifications and Functions

Membrane frame specification table

Item	EFM-80	
Membrane Area (m <sup>2</sup> /Piece)	0.8	
Dimensions : W×H×T (mm)	490 × 1,000 × 6	
Weight (kg)	2.45	
Membrane Average Pore Size (μm)	0.1	1.0
Membrane Material	Hydrophilic ePTFE	
Scrubbing Air Flow (L/min.Piece)	≥ 10	≥ 10
pH	1 ~ 14	
Turbidity (NTU)	< 0.5	< 1.0
Suspension [SS] (mg/L)	ND	≤ 1

※ For different water quality, the volume of drainage water will be different. Complete test is needed. The data was collected initially from single membrane frame under 25°C, -30 kPa .

MBR System specification table

Item	EFM-80-150	
Membrane Average Pore Size (μm)	0.1	1.0
Quantity (Piece)	150	
Membrane Area(m <sup>2</sup> )	120	
Dimensions : W×H×D (mm)	2,650 × 620 × 2,200	
Weight (kg)	780	
Support Plate	ABS	
Frame Material	SUS 304	
Diffuser Pipe	PVC	
Collect Water Pipe	PVC & SUS 304	

## 5. Product Photo



群揚材料工業股份有限公司 EF-MATERIALS INDUSTRIES INC.

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TEL:+886-3-4513736 FAX:+886-3-4513353 Email: Sharon@efmi.com.tw http:// www.efmi.com.tw

# HIGH RATE ANAEROBIC BIOLOGICAL TREATMENT SYSTEM

## 1. Structure and Principle

The containing organic matter is bio-degraded anaerobically into the biogas which is containing methane and a renewable energy.

## 2. Purpose

Wastewater treatment.

## 3. Features

- (1) Compact design.
- (2) No odor emission.
- (3) Stable and reliable treatment performance.

## 4. Product Photo



環鼎國際股份有限公司

EIGENGREEN INTERNATIONAL INC.

台北市中山區松江路 237 號 9 樓 9F., No. 237, Songjiang Rd., Zhongshan Dist., Taipei 10483, Taiwan

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# AUTOMATIC SKIMMER

## 1. Structure and Principle

- (1) The skimmer is vertical on the surface of wastewater, and moves forth smoothly on the tracks by coil chain.
- (2) When the skimmer goes to the end of basin, it scrapes the scum into the drain pipe, then it turns 90° and makes it parallel to surface of wastewater and goes backwards.

## 2. Purpose

It is suitable to be equipped in sediment basin for scraping the grease and scum.

## 3. Features

- (1) Stainless steel structure is enough to resist corrosion.
- (2) Automatic operation by means of programmed logic control.
- (3) Driven by coil chain, easy to maintain.
- (4) No movable mechanism under wastewater that makes it safe while the machine is being fixed.

## 4. Product Photo



山亞環境科技股份有限公司

SHAN YA ENVIRONMENTAL TECHNOLOGY CO., LTD.

台中市北區忠明二街 39 號 No.39, Zhongming 2nd St., North Dist., Taichung City, Taiwan

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# SLUDGE COLLECTOR OF RECTANGULAR SEDIMENT BASIN

## 1. Structure and Principle

- (1) This machine consists of scraper suction modules with three tracks,driving unit and control panel.
- (2) The scraper –suction modules move stably on tracks. The module is equiped low and with inclined planes so that it doesn't disturb sludge when it moves.
- (3) V-shape scraper lead the sludge go to suction holes that drive the sludge out of basin effectively.
- (4) The driving unit is equiped coil chain that push the scraper-suction modules to move.
- (5) Each force of suction holes is the same so that scraper-suction modules can exclude the sludge smoothly.
- (6) The control panel with programmed logic controller ( PLC ) makes the machine go automatically. According to the concentracton or height of sludge blanket,it can be set the operation conditions in PLC.

## 2. Purpose

The machine is widely applied to rectangular sediment basin for driving the sludge out of the basin.

## 3. Features

- (1) Simple mechanical structure,easy operation and less maintaining cost over 50% than other kinds of sludge scrapers.
- (2) Save more than 80 % in electrical consumption.All PLC automatic control.
- (3) All made with stainless steel.It is throught designs of three-track,special wheels and coil chain that keep sludge collector move smoothly.

## 4. Representative Attainments

Style	Pool Width	Pool length	Reducer power	Suction pipe diameter	Suction sets
SY-400	4m 以下	below 4m	1/4 hp	65 mm	1 set
SY-400L	4m 以下	below 4m	1/2 hp	65 mm	2 set
SY-400XL	4m 以下	below 4m	1/2 hp	65 mm	Depend on the length of basin
SY-600	6m 以下	below 6m	1/2 hp	65 mm	1 set
SY-600L	6m 以下	below 6m	1/2 hp	65 mm	2 set
SY-600XL	6m 以下	below 6m	1/2 hp	93 mm	Depend on the length of basin
SY-800	8m 以下	below 8m	1/2 hp	65 mm	1 set
SY-800L	8m 以下	below 8m	1/2 hp	65 mm	2 set
SY-800XL	8m 以下	below 8m	1/2 hp	93 mm	Depend on the length of basin

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# HIGH EFFICIENCY PRESSURIZATION FLOATATION (AIR FLOATATION) EQUIPMENT (CIRCULAR BARREL/RECTANGULAR TANK/SHALLOW TYPE)

## 1. Structure and principle

Pressurized flotation equipment is a kind of air flotation separation equipment for dissolved air, combined with the functions of suspended solids condensation, gas flotation, and scum scraping. The pressurized flotation equipment injects high-pressure air into the gas tank, dissolves the air saturated in pressurized water, and releases the saturated liquid in the pressure tank into the inlet pipe. After decompression, the air-dissolved mixture will release fine bubbles, which adhere to the surface of the gel plume in the water, forming a scum with a specific gravity less than water, which drives the gel plume to float to the surface of the water, achieving the effect of solid-liquid separation.

## 2. Purpose

- (1) Solid/liquid separation for chemical coagulation treatment of various industrial wastewater.
- (2) Oil/water separation in the treatment of grease-containing wastewater.
- (3) The thickening treatment of sludge effectively increases the concentration and reduces the treatment cost.

- (4) The cleaning water is filtered and recycled for reuse.
- (5) Paper, leather, pharmaceutical, steel, oil refining, ship power, chemical industry, electroplating, food processing, beer, municipal sewage, textile, printing and dyeing, starch and other industries are recycled and reused.

## 3. Features

- (1) Continuous operation, large processing capacity, complete specifications, meeting the needs of all walks of life.
- (2) The residence time is short, so the equipment is small in size, the floor space is small, the installation land is extremely flexible, and the use space is saved.
- (3) The scum concentration is high, which is conducive to subsequent dehydration operations. The air flotation machine is collected into a combined structure design, which can effectively reduce the space requirement, the overall beauty is exquisite, and the energy consumption is low.

元錫工業股份有限公司

YUAN CHANG TSAY INDUSTRY CO., LTD.

台中市梧棲區向上路九段 382 巷 106 號

No. 106, Lane 382, Sec. 9, Xiangshang Rd., Wu-Chi District, Taichung City, TAIWAN

TEL : +886-4-2630-5899 FAX : +886-4-2630-8299 E-mail : [ycicl@ycicl.com](mailto:ycicl@ycicl.com) [http : // www.ycicl.com](http://www.ycicl.com)

Flotation and Sedimentation Equipment

- ( 4 ) High dissolved gas efficiency and stable treatment effect. The pressure of dissolved gas and the reflux ratio of dissolved gas to water can be adjusted as required.

#### 4. Specification and performance

- ( 1 ) The wetted part is made of SUS304 material, which is resistant to corrosion, acid and alkali, good chemical resistance, and durable.
- ( 2 ) Simple structure, easy maintenance, low operating cost, low maintenance cost and easy operation and maintenance.
- ( 3 ) The installation cost is low, and it is a whole set of package type, which is easy to install and saves time and wages.

#### 5. Representative Performance

- ( 1 ) Vedan Enterprise Corp.2019.
- ( 2 ) Ministry of National Defense-Joint Logistics Dazhi Park 2012.
- ( 3 ) Saudi Arabia-Maqna Ind. & Dev. Co. 2015.

#### 6. Product photo



#### 7. Award (Certification) Project

- ( 1 ) ISO 9001:2015 Quality System Certificate.
- ( 2 ) CE Safety Certification.

元鋈工業股份有限公司

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# LONG FIBER FILTRATION EQUIPMENT

## 1. Structure and principle

Dissolved Air Flotation (DAF) is an effective method to use for the separation of solid and liquid, it's removed the suspended solids、oils、greases, and other insoluble impurities from water. In the process, pressurized water is saturated with dissolved air and is discharged into a flotation vessel. The microscopic air bubbles is attach to solids and float them to the surface forming a sludge blanket. A scraping assembly skims the sludge off the surface of the water and into a sump. From the sump, sludge is pumped to dewatering equipment. The treated water flows from the DAF vessel for discharge or an to other treatment processes.

## 2. Purpose

- ( 1 ) Removal the suspended solid.
- ( 2 ) Separate oil and water (removal oil and grease).
- ( 3 ) Pre-treatment of Wastewater.

## 3. Features

- ( 1 ) Micro bubbles generating technology.
- ( 2 ) Subsurface capture technology.
- ( 3 ) Technology of automatic slag controlled by liquid level.
- ( 4 ) Non-clogging releasing technology with high efficiency.

## 4. Product photo



全澤股份有限公司      MOLYKEM CHEMICAL CORP.

高雄市大寮區和業六路 8 號      No. 8, Heye 6th Rd., Daliao Dist., Kaohsiung City, Taiwan

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E-mail : [molykem@yahoo.com.tw](mailto:molykem@yahoo.com.tw)      [http:// www.molykem.com.tw](http://www.molykem.com.tw)

# INCLINED TUBE SETTLER

## 1. Structure and Principle

This product consists of oblique plastic sheets tilted at a 60° angle, which are configured into a rectangular module. The diameter of each cellular pipe is approximately 50mm, which is placed inside the sediment tank for expansion of effective sedimentation surface.

## 2. Purpose

Expedient sedimentation equipment

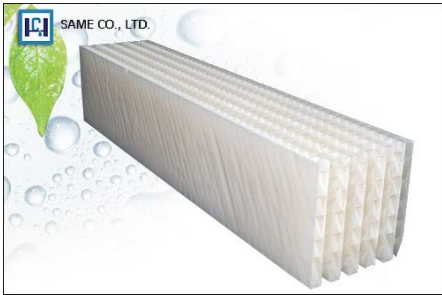
## 3. Features

- (1) High strength.
- (2) Easy installation.
- (3) Convenient maintenance.
- (4) Aesthetic appearance.
- (5) Adoptable to any sludge collection facilities.
- (6) Impervious to external factors.
- (7) The flow rectification and second condensation effect ensure capturing of floating gel flocs.

## 4. Specifications and Functions

Spec/Model	Pipe Diameter	A (mm)	B (mm)	I (mm)	W (mm)	H (mm)	L (mm)	Pipe Row	Sheet Gauge	Material
HCA-52	50	50	50	600	500	520	2,500	10	0.6/0.8/1.0	ABS
HCA-75	50	50	50	860	500	750	2,500	10	0.8/1.0	ABS

## 5. Product Photo



相同企業有限公司      SIMILAR ENTERPRISE CO.,LTD

台中市烏日區溪南路一段 506 巷 485 號  
No. 485, Lane. 506, Sec. 1, His Nan Rd., Tong Yang Village, Wu Jih District, Taichung City, Taiwan  
TEL : +886-4-2335-2827FAX : +886-4-2335-2659 E-mail : same66@ms16.hinet.net http :// www.similar.com.tw

# DISSOLVED AIR FLOTATION SYSTEM

## 1. Structure and Principle

Dissolved air flotation system is an advanced equipment combined flotation and settling functions. High surface loading, short retention time and shallow water depth were uniqueness of this system compared to the conventional designs.

The air is pressurized to be dissolved in the Air Dissolving Tube, and the fine bubbles will be released when it is discharged into the open basin.

The diameter of fine bubble is  $1\mu\text{m}$  approximately and the flotation velocity is about  $15\text{cm/min}$ . The flocs in the solution will be attached by fine bubbles and floated to the top of water.

The flotation process will be completed within 3 minutes and consistency of buoyant sludge is  $2 \sim 3\%$  solid content.

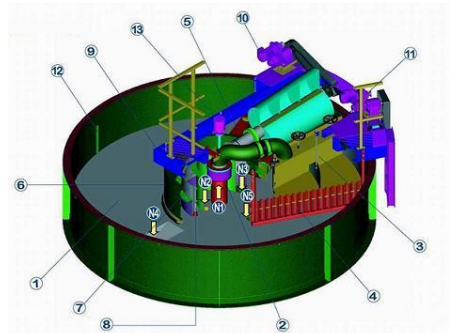
## 2. Purpose

- (1) Grease and suspension solids removal.
- (2) Sludge thickening.

## 3. Features

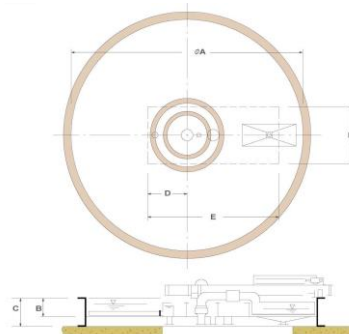
- (1) Short retention time.
- (2) Low purchase cost.
- (3) Low installation cost.
- (4) Minimum space requirement.
- (5) Thickened sludge consistency is  $2 \sim 3\%$ .

## 4. Specifications and Functions



10-Inlet 12-Scum outlet 13-Clear water outlet 11-Sludge outlet 13-Recirculation connection

1. Flotation cell	7. Discharge weir
2. Central rotation bearing	8. Leveling facility
3. Influent distributor	9. Operating platform
4. Distribution rack and driver	10 Surface scraper
5. Clear water discharge pipe	11. Rotation driver
6. Clear water outlet tank	12. Sight glass
	13. Slipring



健鑫環境工程股份有限公司

H PLUS R ENVIRONMENTAL ENGINEERING CO., LTD

桃園市楊梅區高青路 39 號 No.39, Gaocing Rd., Yangmei Dist., Taoyuan City, Taiwan

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E-mail : hplusr@ms15.hinet.net <http://www.hplusr.com.tw/first.htm>

( 6 ) Easy to clean and maintain.

Model	Outline Dimension ( mm )			Capacity ( m <sup>3</sup> /hr )	Civil block out ( mm )		
	A	B	C		D	E	F
HRAF-32	3,200	600	850	60	700	2,000	1,400
HRAF-39	3,900	650	950	90	800	2,350	1,600
HRAF-45	4,500	650	950	120	1,000	3,250	2,000
HRAF-55	5,500	650	950	180	1,300	3,500	2,600
HRAF-61	6,100	650	950	219	1,300	3,650	2,600
HRAF-67	6,700	650	950	264	1,400	4,000	2,800
HRAF-72	7,200	650	950	305	1,400	4,100	2,800
HRAF-81	8,100	650	950	386	1,500	4,700	3,000
HRAF-90	9,000	650	950	477	1,600	5,000	3,200
HRAF-100	10,000	650	950	588	1,600	5,200	3,200

5. Product Photo



6. Award (Certification) Project

- ( 1 ) The product is ISO-9001: 2000 certified for design, manufacturing and installation.
- ( 2 ) Taiwan Environmental Manufacturers Association certified the product for environmental protection quality standard in 1999.

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# THE SCRAPER DRIVER

## 1. Structure and Principle

The scraper driver is applicable to circular sedimentation / thickening tank; the bridge can be half-bridge or full-bridge types. The scraper system is consisted of a driver, center column (for half-bridged type only), platform, walkway, torque cage, scrapping arms, feed well, scum box, overflow weir, etc. Wastewater flows into the sedimentation tank through the feed well; the suspension solids coagulate and then settle to the bottom of tank. By scraper, the solids accumulated on the bottom of the tank shall be collected to the center sludge well for drawn out.

## 2. Purpose

Sedimentation tank or thickener sludge scrapping.

Sedimentation tank or sludge thickener.

## 3. Features

- (1) High Transmission Efficiency :  
The main reduction mechanism is composed-of planetary gear reducer, the transmission efficiency is high and space saving.
- (2) Manual Rotating System : Can be rotated manually for tank bottom finishing.

- (3) Overload Protection System : The operation torque is indicated on the indicator. Alarm and power shut-off system are equipped for overload protection.

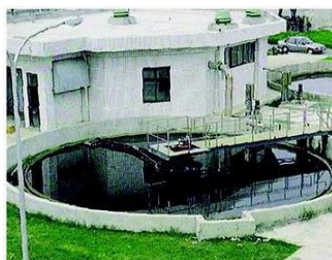
- (4) Easy Installation and Maintenance :

All installation and maintenance are completed on the operation floor easily and safely.

## 4. Specifications and Functions

Type						
Model	Type	Tank Diameter	Operation Torque	Acceptable	Remark	
CD	Half	8 m and	1,250 ~	Sedimen- tation	Central Bottom Influent	
CDF	Bridge	above	20,000 kg-m			
TD	Full Bridge	3 ~ 8 m	200 ~ 800 kg-m	Sedimen- tation Thickener	Central Top Influent	
TDH		8 m and above	1,200 ~ 6,000 kg-m			
TDR						

## 5. Product Photo



健鑫環境工程股份有限公司

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# INCLINED TUBE SETTLER

## 1. Structure and Principle

- (1) Space saving: The precipitation distance of particles in inclined tube settler is shortened to be h, compared to the precipitation distance in empty tank H, H/h times of sedimentation tank surface area was saved.
- (2) The inclined tube settler was made of PVC or ABS.
- (3) Simply installed the individual module in sedimentation tank and function well.
- (4) The tube is formed at 60 angles versus horizontal and in reverse direction to neighboring tubes in forming criss-cross configuration in module.
- (5) The assembled module is rectangular and opening is 50 mm.

## 2. Purpose

- (1) Optimize efficiency of new sedimentation tank : For constricted space this system offers excellent sedimentation efficiency at tremendous cost saving.

- (2) Improvement of existent sedimentation tank : Increasing the sedimentation efficiency of existent tank by installation of this system.

## 3. Features

- (1) Excellent water quality : By rectification of flow and secondary coagulation, all flocs were captured.
- (2) High strength : The assembled unit can withstand 2 kg/cm<sup>2</sup> jet pressure at 2m distance from top without damage.
- (3) Easy installation : Simply secure the modules on support frame.
- (4) Easy maintenance : No bend and surface smooth make cleaning and maintenance easy.
- (5) Aesthetic appearance : No hungers above tank. Easy monitoring from surface and neat looking.
- (6) Adaptable to any sludge collection facilities :As no barrier on tank bottom, there is no limitation in selection the sludge collection method.

## 4. Specifications and Functions

Model	Tube (mm)	Width (mm)	Height (mm)	Length (mm)	Tube Number	Thickness
HRST - 50	50×50	550	500	2,500	11×50	0.6/0.8/1.0

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## 5. Product Photo



# HEAT PUMP EVAPORATOR/CRYSTALLIZER

## 1. Structure and Principle

- (1) Any vessel containing the solution to be concentrated/crystallized can be connected to the inlet. The solution is then pumped into the evaporation tank.
- (2) The operating time can be set based on solution characteristics, desired concentration increase or volume reduction, etc.
- (3) It operates based on the energy amplification of a heat pump, consuming three to four times less energy than a traditional electric heater for the same amount of heat produced. Dry, low temperature air (40~60°C) is cycled through the solution, absorbing moisture. The moist air gets cooled in the condenser, releasing water as condensate, and is reheated for the next cycle. The water content and volume of the solution is consequently reduced, allowing the condensate or remaining solution to be disposed of or recycled.

## 2. Purpose

- (1) Refining of desired products: tea, milk, traditional medicine, biotechnology applications, etc.
- (2) Water removal for purification of solutions, chemicals, organic solvents, etc.
- (3) Volume reduction for waste liquids, to reduce pollution and disposal costs.
- (4) Recycling of etching solutions, plating solutions, etc. to extend useful life and cut down on purchase costs.

## 3. Features

- (1) Modular design: A variety of customizable models are available based on processing volume, factory layout, process flow, etc.
- (2) Low process temperature, to conserve power usage.
- (3) No combustion is required, eliminating the risk of flammable or explosive fumes.

二方企業股份有限公司 DILEMMA CO., LTD.

桃園市八德區廣福路 879 巷 192 弄 8 號

No. 8, Aly. 192, Ln. 879, Guangfu Rd., Bade Dist., Taoyuan City, Taiwan

TEL : +886-3-375-6081 FAX : +886-3-301-1763E-mail : w\_j\_95@hotmail.com <http://dilemma.com.tw>

## Water / Wastewater Treatment and Recycling Equipment

### Flotation and Sedimentation Equipment

- ( 1 ) Hermetic circulation system: no exhaust is released, curtailing the release of odors.
- ( 2 ) Intelligent control system: temperature control, timer settings, error logs, process monitoring, etc.
- ( 3 ) Anti-corrosion treatment: corrosion protection techniques inhibit tubing degradation and leakage.

#### 4. Specifications and Functions

- ( 1 ) Capacity: 800 kg/day.
- ( 2 ) Weight Reduction: 400 kg/day
- ( 3 ) Power Consumption: 15.0~18.3kw.
- ( 4 ) Material: SUS304.
- ( 5 ) Dimensions: 190x128x260 cm.
- ( 6 ) Compressor Unit: Scroll compressor, environmentally friendly refrigerant.
- ( 7 ) Auxiliary Radiator: High efficiency finned-tube heat exchanger (aluminum fins and copper tubes), anti-corrosion tubing, anti-corrosion resin coating, cooling fan.

- ( 8 ) Heat Exchangers: High efficiency finned-tube heat exchanger (aluminum fins and copper tubes), anti-corrosion tubing, anti-corrosion resin coating.

#### 5. Representative performance

MOUNTAIN RAINBOW TECH CO., LTD 2021.01.

#### 6. Product Photo



**二方企業股份有限公司     DILEMMA CO., LTD.**

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# NON-CLOG SEWAGE ( MUD ) PUMP

## 1. Structure and Principle

Different places require pumps with different impellers. The C-series products consists of different types of pumps such as vertical dry-pit, horizontal dry-pit, submersible or submersible dry-pit, and may also adopt impellers of different types such as non-clog, cutting knife or recess type according to the waste properties. Regarding cooling system of motors, there are options like water cooling, and oil cooling. Other functions are automatic control system, overload protection, leakage testing, temperature sensing, and anti-explosion motor and etc. The motor may be customized according to the customer requirements.

## 2. Purpose

- (1) Wastewater pump station
- (2) Domestic wastewater treatment plant
- (3) Agricultural and pasturage wastewater treatment system
- (4) Domestic wastewater process system for hospital, school, and residential community
- (5) Water treatment system for industries such as food, paper manufacturing, coalmining, textile, leather-making, and chemical factories.
- (6) Water purification system.

## 3. Features

- (1) Submersible Motor
  - A. Performance in compliance with the standard (CNS9813: Low Pressure Three-Phase Sensing Motor for Submersible Pump) and qualified for a certified mark.
  - B. Class-F insulation and the protection level is IP68
  - C. Heat Sink Options:
    - (a) Water Cooling: the advantages: may be operated even at a low water level or installed on the ground, low noise.
    - (b) Oil cooling system: adopts insulating oil with the heat exchange system: the advantage: may be operated even at a low water level or installed on the ground, low noise.
    - (c) General cooling method uses the surrounding fluid to cool naturally.
  - D. Other functions such as overload protection, temperature sensing and etc may be customized in accordance with the customer requirements.

川源股份有限公司 GSD INDUSTRIAL CO., LTD

新北市汐止區環河街 206 號 No. 206, Huanhe St., Sijhih District, NEW Taipei City, Taiwan

TEL : +886-2-2694-2732 FAX : +886-2-2694-2088 E- mail : gsd@gsd-pumps.com [http:// www.gsd-pumps.com](http://www.gsd-pumps.com)

(2) Motor

- A. In compliance with the Fully-Sealed Fan-Cooling Three-Phase Squirrel Cage Sensing Motor of the CNS14400 Standard
- B. The parameter is 1.15, and other characteristics such as the insulation level, anti-explosion, frequency inversion, and etc may be provided according to the customer requirements.

(3) Impellers

- A. Precision process and balanced calibrations to ensure stable operations.
- B. Types:
  - (a) Non-Clog Impellers: Special design to enlarge the water flow path; smooth water flow allows easy waste material passage thus consideration of clogging is not required.

- (b) Cutting Knife Impellers: The impellers are semi-open non-clog type. Tungsten knife blade is embedded into the impeller entrance and a long fiber object or soft object is designed based on the rubbing plate.

(Rubbing plate: The material is ball-shaped graphite cast iron, thus enhancing the resistance to friction and maintaining the performance )

- (c) Recess Impellers: Impellers are hidden outside of the flow way, and thus are capable of causing an eddy inside the pump, particularly useful for transmission of wastewater containing strands, pieces of debris and fibers.

#### 4. Product Photo



川源股份有限公司 GSD INDUSTRIAL CO., LTD

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# HORIZONTAL SINGLE STAGE SCROLL PUMP

## 1. Structure and Principle

This pump is a single stage centrifugal pump designed in accordance with ISO2858. The pump has a superior performance, and high efficiency. It is primarily used for pure water or liquids that are chemically and physically similar to water. The structure is reasonable and may be reliably used.

## 2. Purpose

Domestic water supply, industrial water supply, factor process, agricultural irrigation, construction water supply, boiler water supply, air conditioner, cooling water.

## 3. Features

- (1) Pump Exterior: Casted using cast iron with holes for air evacuation; tested to be able to withstand 1.5 times of the maximum water pressure; there is no sign of leakage after 5 minutes of continuous pressurization. The standard material is grey cast iron, complying with CNS2472 G3038.
- (2) Impellers: Fully sealed with a balanced hole design and tightly locked on the axle after dynamic and static balance calibrations. The standard material is either grey cast iron or optional bronze cast, complying with CNS2472, G3038 or CNS4125, H3057.
- (3) Wear Ring: The pump exterior is installed with bronze wear rings that comply with CNS4125 and H3057 and are fixed using screws.
- (4) Main Shaft: The standard is stainless steel, complying with CNS3270 G3067 and comes with steel-made nut that complies with CNS2473 G3039 so as to prevent loosening due to activation. The design of the strength of the shaft center is of a high standard, allowing the threshold rotational speed of the shaft to be higher than 1.3 times of the normal operation speed.

川源股份有限公司 GSD INDUSTRIAL CO., LTD

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- (5) Seal: Internationally well-known mechanical seal; operating pressure is 0 - 10 kg / cm<sup>2</sup> and the operating temperature range is between -20 ~ 100 °C; may use filling seal as designated by customers.
- (6) Bearing: Adopts sealed self-lubricating ball bearing free of adding grease, thus complying with AFBMA B-10; life of the bearing is stated on the manual.
- (7) Seal Base and Seal Chamber: The structure is designed in accordance with the standard small scroll pump of CNS2138 B4004. Bolts can be unscrewed to remove shaft seal and the bearing base without uninstalling the pump exterior, thus facilitating maintenance work.
- (8) Shaft Coupler: Pump exterior comes with a supporting frame that is fixed on the steel base with the motor. Both are connected using a shaft coupler to be driven on the same shaft center. The exposed operating components are covered by protection masks.

#### 4. Product Photo



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# AS TYPE APPARATUS USE SEWAGE SUBMERSIBLE PUMP

## 1. Structure and Principle

- (1) Equipped with weatherproof and waterproof cable. Wiring and core wire are impregnated with EPOXY. Not only avoid the moist going into the motor, but also leakage-proof and moisture-proof.
- (2) All series motors are equipped with dry motor of 3-phase and 2 poles or 4 poles, coil of class F isolation. It is the character of overheat-resistant and perfect isolation. Enclosure is IP68 grade of protection.
- (3) The material of silicon carbide has the character of mud-resistant and excellent lubrication system and is good for long-time running. The dual enclosed structure has a diaphragm; it is preventing strongly from leaking.
- (4) Pump is equipped with the motor overload protector and will shut itself off automatically to prevent from overheating whenever its voltage drop, impeller plugged, the draining line is below the pump's watermark and other unusual conditions.

- (5) Pump is coated with thick EPOXY. It is better corrosion-resisting and rust-resisting than common paint; prevent the surface of pump from rusting.
- (6) Fitted with vent valve at discharge side of pump casing to avoid air lock ensuring pumping system in steady operation.

## 2. Purpose

- (1) Building waste water treatment system, sewage treatment plant, community market, sanitary sewer.
- (2) Drainage waste water from paper industry, dyeing industry, foodstuff industry, leather industry and iron and steel industry.
- (3) Fishery, animal husbandry, dairy farm, piggery, fecal sewage tank and industry water supply.

亨龍電機有限公司 HENG LONG ELECTRIC CO.,LTD.

高雄市茄萣區莒光路三段 288-2 號 No.288-2, Sec. 3, Juguang Rd., Qiding Dist., Kaohsiung City, Taiwan

TEL : +886-7-690-4567 FAX : +886-7-690-7689

E-mail : sales@henglong.com.tw <http://www.henglong.com.tw>

3. Features

- (1) Pump is equipped with the motor overload protector and will shut itself off automatically to prevent from overheating whenever its voltage drop, impeller plugged, the draining line is below the pump's watermark and other unusual conditions.
- (2) There are 3 kinds of impellers as the pictures. You can close semi-open, closed and non-clogging. Suitable model will help you to do with properly all kind drainage of waste water or sewage.

- (3) Equipped with automatic lifting frame device. By simply installation to fix the water pipe in the saddle of frame body. It is easy to maintain or replace the pump by loading & unloading, separation and combin-ation. It is not necessary for the operator to go into the tank and incr-ease effectively the safety and convenience.

4. Product Photo



5. Specifications and Functions

Model Type	Picture	Type ψ	Power hp	Caliber inch	Pole P	Head M	Flow m³/min	Solid Passage mm
AS Type Apparatus Use Pump	Semi-open Channel Non-clog	3	2 ~ 20	3 ~ 8	2 或 4	5 ~ 23	0.5 ~ 4.5	32 ~ 80

亨龍電機有限公司      HENG LONG ELECTRIC CO.,LTD.

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# B TYPE NON-CLOG SEWAGE SUBMERSIBLE PUMP

## 1. Structure and Principle

- (1) For preventing moisture from gaps of cable or wire into motor, The cable base and wire are dealt with EPOXY.
- (2) Non-clog Impeller design allows to discharge 35mm solid passage and long fiber.
- (3) Vortex Impeller and taper flowing route improve the performance of pump and decrease the abrasion to extend the durability.
- (4) Fitted with vent valve at discharge side of pump casing to avoid air lock ensuring pumping system in steady operation.
- (5) Equipped with high quality dual mechanical seal or with SIC mechanical seal.
- (6) Motor is E ( 120 °C ) class insulation, enclosure IP 68. The thermal protector is optional to secure the protection of motor, which against overload & overheating.
- (7) Simplifying the structure (Bearing and Mechanical Seal) of the inside of Motor for improving the operation of Motor.

- (8) Pump is equipped with the motor overload protector and will shut itself off automatically to prevent from overheating whenever its voltage drop, impeller plugged, the draining line is below the pump's watermark and other unusual conditions.

## 2. Purpose

- (1) Wastewater lift station 、municipal wastewater treatment plant.
- (2) Building wastewater treatment system.
- (3) For using to drawing out piggery's excrement, animal & poultry farm.
- (4) School, hospital, community wastewater treatment system.
- (5) Food, Paper, mining, textile, leather industry wastewater treatment system.

亨龍電機有限公司 HENG LONG ELECTRIC CO.,LTD.

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3. Features

- (1) Pump is equipped with the motor overload protector (TEXAS Instrument) and will shut itself off automatically to prevent from overheating whenever its phase failure, voltage drop, impeller plugged, the draining line is below the pump's watermark and other unusual conditions.
- (2) The non-clog design is fitted to 35mm solid passages and the liquid with long Fiber; Impeller doesn't touch the liquid so reduce Impeller's abrasion.

- (3) Uipped with automatic lifting frame device. By simply installation to fix the water pipe in the saddle of frame body. It is easy to maintain or replace the pump by loading & unloading, separation and combin-ation. It is not necessary for the operator to go into the tank and incr-ease effectively the safety and convenience.

4. Product Photo



5. Specifications and Functions

Model Type	Picture	Type $\psi$	Power hp	Caliber inch	Pole P	Head M	Flow $m^3/min$	Solid Passage mm
B Type Non-clog Pump	Non-clog	1 & 3	1/2 ~ 10	2 ~ 4	2	5 ~ 20	0.17 ~ 0.78	35 ~ 50

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# P TYPE STAINLESS STEEL ENVIRONMENTAL PUMP

## 1. Structure and Principle

- (1) Pump cover made from SUS#316 resists wastewater with weak-acid and weak-alkalinity.
- (2) For preventing moisture from gaps of cable or wire into motor, The cable base And wire are dealt with EPOXY.
- (3) Non-clog Impeller design allows to discharge 35 mm solid passage and long fiber.
- (4) Vortex Impeller and taper flowing route improve the performance of pump and Decrease the abrasion to extend the durability.
- (5) Fitted with vent valve at discharge side of pump casing to avoid air lock ensuring pumping system in steady operation.
- (6) Equipped with high quality dual mechanical seal or with SIC mechanical seal.
- (7) Motor is E ( 120 °C ) class insulation, enclosure IP 68. The thermal protector is optional to secure the protection of motor, which against overload & overheating.
- (8) Simplifying the structure (Bearing and Mechanical Seal) of the inside of Motor for improving the operation of

- (9) Pump is equipped with the motor overload protector and will shut itself off automatically to prevent from overheating whenever its voltage drop, impeller plugged, the draining line is below the pump's watermark and other unusual conditions.

## 2. Purpose

- (1) Wastewater lift station 、municipal wastewater treatment plant.
- (2) Building wastewater treatment system.
- (3) For using to drawing out piggery's excrement, animal & poultry farm.
- (4) School, hospital, community wastewater treatment system.
- (5) Food, Paper, mining, textile, leather industry wastewater treatment system.

## 3. Features

- (1) Pump is equipped with the motor overload protector (TEXAS Instrument) and will shut itself off automatically to prevent from overheating whenever its phase failure, voltage drop, impeller plugged, the draining line is below the pump's watermark and other unusual conditions.

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Motor.

- (2) The non-clog design is fitted to 35mm solid passages and the liquid with long Fiber; Impeller doesn't touch the liquid so reduce Impeller's abrasion.
- (3) Uipped with automatic lifting frame device. By simply installation to fix the water pipe in the saddle of frame body. It is easy to maintain or replace the pump by loading & unloading, separation and combin-ation. It is not necessary for the operator to go into the tank and incr-ease effectively the safety and convenience.

4. Product Photo



5. Specifications and Functions

Model Type	Picture	Type ψ	Power hp	Caliber inch	Pole P	Head M	Flow M³/min	Solid Passage mm
P Type Stainless Steel Pump	Non-clog	1 & 3	1/2 ~ 10	2 ~ 4	2	5 ~ 20	0.17 ~ 0.78	35 ~ 50

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# AF SERIES - SUBMERSIBLE SEWAGE / WASTEWATER PUMPS

## 1. Structure and Principle

**Auto-cut Protector :** Automatic On/Off motor protector to prevent motor burn out due to high temperature and excess amperage draw. The Protector can revert when the motor temperature returns to normal. Auto-cut Protector is a standard component for pump 10HP or below.

**High Efficiency Dry Motor :** All stator coils are treated with insulating vanish procedures to achieve the best insulation, efficiency and durability.

**Double Mechanical Seals :** Superior abrasion resistant mechanical seal is manufactured with silicon carbide to ensure the best seal effect.

**Epoxy Cable Base :** An epoxy resin seal cable base prevents moisture from entering the motor through the core wires.

**High Solids Epoxy Coating :** High Solids Epoxy Coating greater than 100μm, provides resistance to salty sea water, industrial wastewater, and chemical fluids, creating an anti-corrosion layer on metal surface that prevents corrosion.

## 2. Purpose

- (1) Residential buildings, hospitals, commercial buildings and household uses.
- (2) Livestock farming, pig farming, dairy farming and sewage treatment.
- (3) Food industry, pulp and paper industry, mining, dyeing and finishing factory, leather factory, steel manufacturer, electronics industry and wastewater treatment.
- (4) Hydraulic engineering and flood control.
- (5) Sanitary sewer pumping..

## 3. Features

- (1) Pump body is made of cast iron and with high solids epoxy coating which offers the highest quality and performance.
- (2) Triangular handle is designed for easy handling on Guide Rail System (model above 5HP).
- (3) Oil Elevation Disk design in the oil chamber to ensure the mechanical seals lubrication and to extend the service life of pump.
- (4) Eco-friendly Food Grade Lubricant to keep wastewater applications a toxic free environment.

河見電機工業股份有限公司

HCP PUMP MANUFACTURER CO., LTD

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- (5) Non-clogging impeller designs:
- A. U Type Vortex Impeller – U type non-clogging impeller produces a vortex (whirlpool effect) which allows slurry, long fibrous materials and solid waste to pass through, without contact with the impeller.
  - B. P Type Vortex Impeller – P type impeller is open and comes with one or two vanes. The impeller is excellent to use for waste materials to prevent clogging.
  - C. E Type Vortex Impeller –Enclosed channel impeller features high efficiency, large capacity, large solid passage and non-clogging.

4. Representative Performance

The Emergency Project of Seawater Desalination Plant, Hsinchu, Taiwan

5. Product Photo



6. Award (Certification) Project



7. Specifications and Functions

Model	Output HP(kW)	Discharge Inch(mm)	Head m	Standard m <sup>3</sup> /min
AFx2.4x/4.4	0.5(0.4)	2"(50)	3.5~6.0	0.15~0.23
AFx2.8x/4.8	1(0.75)	2"(50)	5~8	0.2~0.3
AFx21.5x/41.5	2(1.5)	2"(50)~3"(80)	3.5~14	0.2~0.6
AFx22.2x/42.2	3(2.2)	2"(50)~3"(80)	5.5~17.5	0.2~0.6
AFx23.7x/43.7	5(3.7)	3"(80)~ 4"(100)	10~20.5	0.5~1.0
AFx25.5x/45.5	7.5(5.5)	3"(80)~ 6"(150)	11~26.5	0.6~1.5
AFx27.5x/47.5	10(7.5)	3"(80)~ 6"(150)	14.5~34.5	0.6~1.5
AFx211x/411 AF-815A	15(11)	3"(80)~ 8"(200)	8.5~46	0.6~4.5
AFx415 AF-820	20(15)	4"(100)~ 8"(200)	13~28	1.0~4.5
AFx422 AF-1030S/1430	30(22)	4"(100)~ 14"(350)	6.5~37	1.0~14.0
AFx430 AF-1040/1440	40(30)	4"(100)~ 14"(350)	8.5~44.5	1.0~14.0
AF-1050/1650	50(37)	10"(250)~ 16"(400)	7.5~22	7.0~18.0
AF-1060/1660	60(45)	10"(250)~ 16"(400)	10~24	7.0~18.0
AF-1075	75(55)	10"(250)	30	7.0

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# SF/SA SERIES - SUBMERSIBLE STAINLESS STEEL PUMPS

## 1. Structure and Principle

Auto-cut Protector : Automatic On/Off motor protector to prevent motor burn out due to high temperature and excess amperage draw. The Protector can revert when the motor temperature returns to normal. Auto-cut Protector is a standard component for pump 10HP or below.

High Efficiency Dry Motor : All stator coils are treated with insulating varnish procedures to achieve the best insulation, efficiency and durability.

Double Mechanical Seals : Superior abrasion resistant mechanical seal is manufactured with silicon carbide to ensure the best seal effect.

Epoxy Cable Base : An epoxy resin seal cable base prevents moisture from entering the motor through the core wires..

## 2. Purpose

- ( 1 ) Wastewater treatment in food and wine-making industry.
- ( 2 ) Wastewater treatment of acid fluid in gold mining, petroleum industry and dyeing industry.
- ( 3 ) Chemicals, low pH, corrosive and sea water applications.

## 3. Features

- ( 1 ) Precision casting with the use of an advanced stainless investment casting method, produces the highest quality with a smooth surface finish.
- ( 2 ) Standard accessories include : cable with an epoxy resin sealed water-resistant cable base, Auto-cut motor protector, dual mechanical seals and lip seal design.
- ( 3 ) Chemically protected Viton O-rings to handle acidic and corrosive fluids.
- ( 4 ) Pump hydraulic body made of corrosion resistant SUS316/SCS14 stainless steel material, to handle low pH value chemical media and/or seawater applications.

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- ( 5 ) Austenitic Stainless Steel (SUS300 series) is used in SF / SA series. SUS316 / SCS14 is better than SUS304 / SCS13 in water application of light acid-base.
- ( 6 ) pH4 ~ 10 (As reference at operating temperature range 0 - 40°C).

4. Representative Performance

KHH Terminal Wastewater Submersible Pump Replacement Project.

5. Product Photo



6. Award (Certification) Project



7. Specifications and Functions

Model	Output HP(kW)	Discharge Inch(mm)	Head m	Standard m3/min
SFx/SA2.4A	0.5(0.4)	2"(50)	5.5~6.5	0.15
SFx/SA2.8A	1(0.75)	2"(50)	8~10	0.17~0.2
SFx/SA21.5	2(1.5)	3"(80)	8	0.4~0.6
SFx/SA22.2	3(2.2)	3"(80)	12.5	0.4~0.6
SFx/SA23.7	5(3.7)	3"(80)	17.5~20.5	0.5~0.6
SFx/SA25.5	7.5(5.5)	3"(80)~4"(100)	20~26.5	0.6~1.0
SFx/SA27.5	10(7.5)	3"(80)~4"(100)	27~35	0.6~1.0
SFx/SA211	15(11)	3"(80)~4"(100)	36~47	0.6~10

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# AR SUBMERSIBLE AERATOR

## 1. Structure and Principle

The aerator makes use of the motor to directly drive the rotation of impellers, so as to induce a centrifugal force to suck in water at a low pressure. Vacuum is created at the impeller entrance to suck the air into the air-mixing chamber. After mixing water with the air, water is ejected at a fast speed due to the centrifugal force. In addition to causing effective convection loop, many fine air bubbles are also generated and the oxygen is dissolved into water while the air bubbles rise up slowly.

## 2. Purpose

Water purification, water and sewage treatment, public hazard handling, oxygen supply for agricultural cultivation, and other various aerations of industrial wastewater.

## 3. Feature

- (1) Directly driven by submersible motor, low noise and high efficiency.
- (2) Unique air-mixing chamber design, high air suction capacity, good mixing effect, aeration with the stirring function.

- (3) Adopts double layer mechanical seal, thus extending the motor life.
- (4) 12-way water radiator (14-way water radiator requires greater power) generates massive amount of air bubbles.
- (5) Meshed water entrance prevents the impellers from being jammed by foreign particles.
- (6) Guide rails may be installed for easier installation and maintenance.

## 4. Product photo



川源股份有限公司 GSD INDUSTRIAL CO., LTD

新北市汐止區環河街 206 號 No. 206, Huanhe St., Sijhih District, New Taipei City, Taiwan

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# JET AERATOR (JAX)

## 1. Structure and Principle

This jet aerator allows the water to flow through the nozzle base, which connect with the pump outlet, and be ejected into the air-mixing chamber at a high speed. As the water flows through the nozzle at a high speed, a negative pressure is generated to guide the air into the air-mixing chamber via the air guide tube to combine with the water flow. Subsequently, prior to ejecting as water, a patented static stirring device stirs and cuts the air bubbles into finer bubbles, which are emitted via an expansion tube, thus causing the stirring and aeration effects.

## 2. Purpose

Water purification, water and sewage treatment, public hazard handling, oxygen supply for agricultural cultivation, and other various aerations of industrial wastewater.

## 3. Feature

- (1) Highly efficient oxygen dissolving: unique air-mixing chamber and static stirring device design; high air suction capacity; well mixed with water; many fine air bubbles generated; high air dissolving rate.

- (2) Sufficient stirring: impellers generate pressures and eject strong water flow via the nozzle to cause air-mixing, thus allowing the oxygen to move in the water with high efficiency and achieving a good stirring effect at the same time; the required flow speed of the active mud flow may also be maintained.
- (3) Quiet and noiseless: this set of machine is designed to operate in water at a low rotational speed and with low noise; the air entrance guide tube above the ground may be equipped with a silencer, other than that, no other silencer is required to reduce the cost.
- (4) Easy installation and maintenance: auto setter can be requested is available; easy installation and maintenance thus saving the operation cost..

## 4. Product photo



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# SURFACE AERATOR

## 1. Structure and Principle

This aerator makes use of the motor to directly drive the rotation of axial impellers so as to eject wastewater using guide tubes via guiding boards such that a thin water curtain (or water droplets) is formed. In addition to being in contact with the air while floating, water flow and massive amount of air bubbles are also generated when the water curtain drops to hit the liquid surface so as to increase the oxygen concentration in the water. Also, the water at the bottom is sucked to form a water loop, which serves as a stirring purpose.

## 2. Purpose

Water purification, water and sewage treatment, public hazard handling, oxygen supply for agricultural cultivation, and other various aerations of industrial wastewater.

## 3. Feature

- (1) Motor: motor is installed above the water ejection region; sealed fan cooling and class-F insulation.
- (2) Shaft: stainless steel.
- (3) Impeller: made of stainless steel.
- (4) Floating units: The casing of floating unit is composed of strengthened glass fibers and the inside of the unit is filled with high density polyethylene foam.

## 4. Product photo



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# CAST MONO & MULTI-SECTION CENTRIFUGAL BLOWER

## 1. Structure and Principle

A type of air machinery that utilises centrifugal compression to compress air to the required pressure.

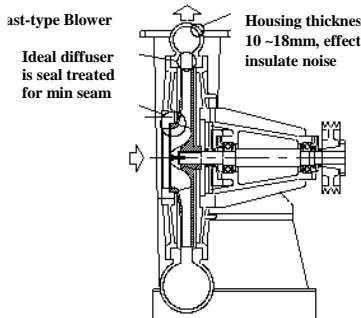
## 2. Purpose

High efficiency, low noise, no pulsation, air conveyed carrying no fuel, marginal vibration.

Applicable for incinerator air supply, flue-gas equipment air supply, mechanical processing, manufacturing, and various factory emissions.

## 3. Specifications and Functions

- (1) Air supply : over 1 ~ 300 m<sup>3</sup>/min.
- (2) Pressure : up to 500 ~ 9,000 mmAq.
- (3) Horsepower : 1 ~ 50 hp.



## 4. Product Photo



**達晟工業股份有限公司**      **DA SHENG INDUSTRIALS CO., LTD**

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# CAST RC, FRP SEWAGE TREATMENT FACILITY & SEWAGE, WASTEWATER EQUIPMENT

## 1. Structure and Principle

The product is a class 2 sewage treatment, employing aeration to purify water for building sewage to meet the legal release standards. The product is made of RC and FRP.

## 2. Purpose

Building sewage treatment facility.

## 3. Features

- (1) Easy installation, time and labor saving.
- (2) Low breakdown rate.
- (3) Easy to clean.

- (4) This product is designed with auto cleaning function that enables regular in-house cleaning without professional service.
- (5) The product is designed with a manhole for monitoring.
- (6) The facility requires only regular drain-off in every 6 ~ 12 months as required by law to restore the treatment efficiency to over 90 %.

## 4. Specifications and Functions

Material: The product is made of RC and FRP.

Structure	Spec Daily Capacity CMD (m <sup>3</sup> /day)	L (cm)	W (cm)	H (cm)
RC sewage/10-person load	2.5	299	120	150
RC sewage/20-person load	5.0	600	120	150
RC sewage/6-person load	1.5	162	120	150
RC sewage/10-person load	2.5	280	120	150
RC sewage/15-person load	3.75	445	150	200
RC sewage/20-person load	5	396	160	150
RC sewage/40-person load	10	840	150	150
RC sewage/60-person load	15	φ 250		
RC sewage/80-person load	20	φ 250		
RC sewage/120-person load	30	φ 250		
RC sewage/160-person load	40	φ 250		

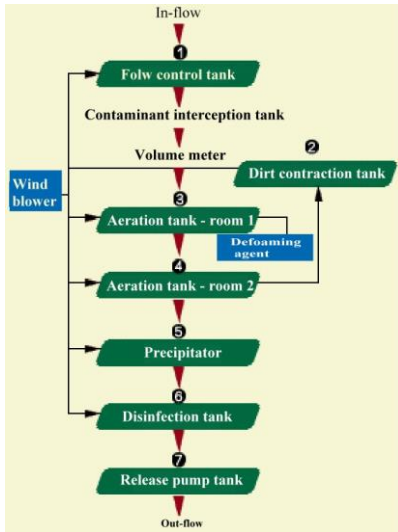
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# FRP PREFABRICATED WASTE-WATER TREATMENT EQUIPMENT

## 1. Structure and Principles



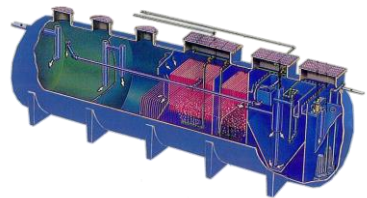
## 2. Features

- (1) It enables you to shorten construction time in large scale and save space. This product can be completely assembled in factory. Only simple assembly is needed after at the installation site. Compared to traditional RC tanks, it saves 1/3 to 1/4 construction time.

- (2) It is easy to assemble and operate. Machine equipments used in this unit are also automatic; no manual operation is needed. Only simple regular maintenance is needed to maintain the quality of water to the release standard.

- (3) The whole unit can be installed underground. The unit can be placed on a RC structure platform before piping and earth filling works are carried out. After installation is completed, only a man-hole needs to be left on the surface of the ground. Therefore, the land-surface above can be landscaped or used for other purposes like parking for maximum land utilization.

## 3. Product Photo



FRP Combo Settling Separation Type  
Waste-Water Treatment Tank

昇鴻國際開發有限公司

SUN HOME INTERNATIONAL DEVELOPMENT CO., LTD.

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# PRE-FABRICATED FRP SEWAGE TREATMENT PLANT

## 1. Structure and Principle

The vessels of FS serial products are made of Fiberglass-Reinforced Polyester (FRP), which include :

- (1) Primary Sedimentation Tank.
- (2) Contact Aeration Tank.
- (3) Settling Tank.
- (4) Disinfectant and Effluent Tank.

## 2. Purpose

Applied to all kinds of buildings for treatment of domestic water. Reducing pollutions of effluent water in compliance with the Water Pollution Control Act.

## 3. Features

- (1) Vessels, made of Fiberglass-Reinforced Polyester (FRP), this product is more stable, more convenient to use and safer compared to other wastewater treatment equipments.
- (2) Using the Contact Aeration Process to reduce water pollution speedily through the Bio-Film in the biofilter, which has higher specific surface area.

- (3) Reduce construction time and land area needed.
- (4) Corrosion-free - all component are prefabricated in the factory.
- (5) Reduce pollution to domestic water stably and efficiently.

## 4. Specifications and Functions

Certification	Model	User	Capacity
Yu-Chien No:0918	FS-AB10	10	2.5 CMD
Yu-Chien No:0919	FS-AB20	20	5 CMD
Yu-Chien No:0556	FS-AB30	30	7.5 CMD
Yu-Chien No:0200	FS-AB40	40	10 CMD
Yu-Chien No:0557	FS-AB50	50	12.5 CMD
Yu-Chien No:0201	FS-BB100	100	25 CMD
Yu-Chien No:0016	FS-B-B-30	120	30 CMD
Yu-Chien No:0202	FS-BB160	160	40 CMD
Yu-Chien No:0017	FS-B-B-50	200	50 CMD

福崧實業股份有限公司 FU SUNG ENTERPRISE CO., LTD

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## CTO FILTER

### 1. Structure and Principle

Natural coconut shell undergoes carbonization and high temperature activation treatment, so that the activated carbon is filled with pores, resulting in a lot of micropore volume and high surface area. Activated carbon particles with a large surface area have enough space for adsorbing pollutants. The size and distribution of the pores determine the activity. The strength of carbon's ability to remove pollutants.

### 2. Purpose

Remove peculiar smell in water, remove impurities, residual chlorine, trihalomethanes, pesticides and volatile organic compounds.

### 3. Features

Natural coconut shell is an excellent material for manufacturing high-quality activated carbon, and has been certified by NSF.

### 4. Specifications and Functions

10"/20" · Iodine value above 1,000.

### 5. Representative Performance

- (1) Spain HIDRO 2021.04.
- (2) U.S. ISPRING 2021.03.
- (3) Taiwan Tianhe Drinking Water 2021.04.

### 6. Product Photo



凡事康流體科技股份有限公司

FLUXTEK INTERNATIONAL CORP.

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TEL : +886-8-755-8557 FAX : +886-8-755-5055 E-mail : jacklan@fluxtek.com <https://www.fluxtek.com>

# 10"/20" BIG BLUE HOUSING

## 1. Structure and Principle

- (1) Cap: made of food grade material with selection of pressure release button and metal joint.
  - a. Pressure release button: help to release the water pressure and make it easier to separate the cap and cup.
  - b. Metal thread: Make the thread fitting tighter when assembly with metal connector.
- (2) Filter housing: Made of food grade material with reinforced design to provide higher strength.
  - a. Double seal (O-Ring): more efficiency in prevent leakage.

## 2. Purpose

Household filtration, water tower filtration, water filling station and other large water consumption filtration.

## 3. Features

Withstand pressure of 375PSI, suitable for large water consumption.

## 4. Specifications and Functions

10"/20"

Maximum flow 50G.P.M

Maximum temperature resistance: 50 °C

Import and export: 1 inch

Material: PP

Maximum withstand pressure: 375PSI.

## 5. Representative Performance

- ( 1 ) Spain HIDRO 2021.04.
- ( 2 ) United States ISPRING 2021.03.
- ( 3 ) Taiwan Ruitong Water Technology 2021.03.

## 6. Product Photo



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# FRP SCRUBBER/TANK

## 1. Structure and Principle

The method employs resin as the base material and glass as reinforcement in forming barrel tank via winding; resin is selected according to the intended liquid property. The barrel interior is built with anticorrosion coating and additional reinforcement; the former is capable of withstanding any chemical, whereas the latter is to bolster barrel strength.

## 2. Purpose

- (1) Tank.
- (2) Reactive tank.
- (3) Delivery tank.
- (4) Wastewater tank.
- (5) Suction tank.
- (6) Cleaning tank.
- (7) Electrolysis tank.
- (8) Neutralization tank.
- (9) Mixing tank.
- (10) Pure water tank.

## 3. Features

- (1) Capable of resisting strong acids and alkalis.
- (2) Super strength.
- (3) Light weight.
- (4) Can be customized to client's requirement.
- (5) Anti-corrosion, cold and hot temperature resistant.

## 4. Specifications and Functions

The product comes in vertical and horizontal varieties in the range of 500-4,000 $\phi$ diameter and 0.5-150 tons.

Function : Distinguished for storing water and chemicals.

## 5. Product Photo



良機實業股份有限公司      LIANG CHI INDUSTRY CO., LTD.

台北市南京東路三段 1 號 12 樓      12F, No. 1, Sec. 3, Nanjing E. Rd., Zhongshan District, Taipei City, Taiwan

TEL: +886-2-2506-3588 FAX: +886-2-2502-1872 E-mail: sales@liangchi.com.tw      <http://www.liangchi.com.tw>



# CHEMICALS TANK

## 1. Structure and Principles

- (1) Fabricated by machine winding  
The tank is light-weight with smooth internal surface. It has stable quality and high strength.
- (2) The strengthened layer is fabricated with the best resin construction. It is durable, heat-resistant, and coldness-resistant - no distortion under high temperature and no cracking in low temperature.

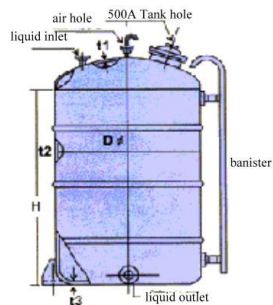
(a) Weight ratio	1.7~1.8
(b) Tensile strength	8.0~18kg/mm
(c) Tensile elasticity rate	750~1,500kg/mm
(d) Compression strength	12~22kg/mm
(e) Bend strength	20~30kg/mm
(f) Bend elasticity rate	650~1,500kg/mm

(a) Normal temperature range	-50~+120 °C
(b) Heat ratio	0.29~0.32kcal/kg °C
(c) Heat conductivity	0.2~0.3kcal/kg°C
(d) Linear expansion coefficient	(15~30)*10 /°C

## 2. Purpose

- (1) General chemical industry : storage tank, reaction tank, transfer tank, waste-water tank.
- (2) Steel industry : soaking tank, washing tank.
- (3) Non-metal industry : electrolytic cell, electrolyte adjustment tank, washing tank, waste-liquid tank, paper pulp.
- (4) Fiber industry : bleaching tank, washing-liquid tank, material tank, neutralization tank, washing tank, cleaning tank, soaking tank.
- (5) Food, medical material industry : material storage tank, transfer tank, material-mixing tank, pure-water tank.

## 3. Specifications and Functions



FRP Horizontal-type Anti-corrosion Tank

昇鴻國際開發有限公司

SUN HOME INTERNATIONAL DEVELOPMENT CO., LTD.

彰化縣溪湖鎮員鹿路 4 段 535 巷 29 號 No.29,Lane 535 Sec.4,Yuanlu Rd.,Shihu Jen,Changhua,Taiwan

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E-mail:sunhome.cl@msa.hinet.net <http://www.fargreen.com.tw>

# OCTAGONAL PLASTIC SEWAGE WELL

## 1. Structure and Principle

The well is made by special injection moulding. It is designed with multiple pipe connection for leakage prevention. It is light and easy to install.

## 2. Purpose

Sewer system, telecommunication and power manhole, community sewer pipe connection, roof corner catchments.

## 3. Features

- (1) One-piece compounded moulding of plastic.
- (2) The well is one-piece moulded with pipe apertures and shields, which may be knocked off for connection as required. Installation is done by layer and secured with stainless steel bolts. It is fitted with leak prevention rubber for flow adjustment that enables smooth flow. Therefore, it more convenient to install than RC.

- (3) Manually transportable.
- (4) The lightweight design enables easy manual transport and installation and is not constrained by narrow passages, hence cuts down labor and time costs. Moreover, rubbers are fitted between the well and the waste water pipes to prevent leakage.

## 4. Specifications and Functions

Inner diameter 600mm(height of assembly model may be adjusted).

Cover	Adjustable Layer	Adjustable Layer	4"	8"	Base	Adjustable Layer	Adjustable Layer
150	150	50	300	300	80	20	30

## 5. Product Photo



相同企業有限公司      SIMILAR ENTERPRISE CO.,LTD

台中市烏日區溪南路一段 506 巷 485 號  
No. 485, Lane. 506, Sec. 1, His Nan Rd., Tong Yang Village, Wu Jih District, Taichung City, Taiwan  
TEL : +886-4-2335-2827 FAX : +886-4-2335-2659 E-mail : same66@ms16.hinet.net http :// www.similar.com.tw

# KITCHEN SEWAGE PIPING BOX

## 1. Structure and Principle

Formed by plastics injection, able to connect to sewage pipeline in diverse direction; use leak-proof connector to keep from leakage; light in weight and easy in construction.

## 2. Purpose

Sewage system, telecommunication and power cable maintenance conduit, connection of community home sewage and rainwater ditch.

## 3. Features

Complex plastics are sued: great strength. Its resistance to pressure is tested up to reach 12 tons. The design has 4" and 8" bearings on all its sides So that the housing can vertically be connected to the water pipes on all of its sides and the connecting pipes do not need to bent or processed.

## 4. Specifications and Functions

Pavement layer	Pavement layer	Pavement layer	Ø 100mm 6 hole, mid layer	Ø 200mm 4 hole, mid layer
25	100	300	150	255

## 5. Product Photo



相同企業有限公司 SIMILAR ENTERPRISE CO.,LTD

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# OZONE GENERATOR & HIGH-PERFORMANCE MIXING FACILITIES

## 1. Structure and Principle

The primary function of ozone is for bacteria extermination, advanced oxidation, discoloration and preservation. The bacteria killing strength of ozone is 2000 times higher than that of chlorine. In general advanced oxidation, ozone is only second to F<sub>2</sub>, OH and O, ranking number four; the half-life cycle is approximately 22 minutes with benefits of no residue, no accumulation and can be produced at any given time. It is extensively applied in water treatment such as cooling tower, swimming pool, drinking water, industrial wastewater, domestic wastewater, semiconductor wafer washing and air cleaning.

## 2. Features

Applied in various types of water and air treatment.

## 3. Purpose

(1) Ozone generator

A. Unique double quartz tube design

a. High-voltage discharge. Ozone produced not only has high purity and stability, it does not yield any impurities and can be continuously used for long duration without having to clean the tubes.

b. Module design. Modular numbers can be adjusted to needs for power saving, and require no operation halting for repair. It saves a lot of costs to buy another machine for standby.

c. Self-owned patent right

B. Complete ozone generator models

a. Ozone production range from 2g/hr to over kilograms.

b. The gas-fed can be from air or oxygen. Under the same gas flow rate; AirTree can produce more ozone than the other makers.

愛樹科技股份有限公司

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- c. Provide the most complete system design and install the related accessories. To achieve the stable output and safe operation.
  - d. Acquire the international certificate CE and SEMI. The best quality is no doubt.
- C. Simple operation design
- a. Built-in communication interface : 4-20mA signal output can be connected to central control for remote controlling.
  - b. Touch-screen man/machine interface : easy to operate and configure; bilingual panel displays in Chinese and English.
- (2) High-performance mixer
- A. Negative pressure sucks in ozone, dissolving evenly in water to form 0.2mm micro bubbles that float in water to attain 90% dissolution rate.
  - B. Gas-liquid separator : Separate the undissolved ozone and water, and then recycle ozone for remixing to bolster efficiency; prevent end gas dispersion to save the costs for additional devices of ozone destructor.

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# Overview of Sludge Treatment and Recycling Equipment

New types of sludge and environmental requirements are resulted from the operational changes from different fields. In particular, the differential gap between the formation of industrial sludge and the chemical properties is enormous. Thus, dewatering equipment, being the end of the industrial chain, shall continuously have further innovations and creations as to be able to provide the corresponding technological services and productions at the right time.

## I. Sludge Dewatering

Dried bed from thirty years ago became obsolete due to its labor costs and climatic factors. They were later replaced by belt pressed and decanter centrifugal dewatering machines, and currently plate filter press (pressurization and dehydration) as well as screw press are popular models. In a near future, membrane filter press which emphasizes on high-pressure and multi-functions will become the mainstream model. The reason for this trend is owing to the fact of the increasing demand of lower moisture content in sludge cakes. In regard to the analysis of the physical mechanism of sludge dewatering filtering, filtration pressure is the basic principle for the dehydration process in every kind of machinery; the higher the pressure, the higher the degree of dryness of the sludge cakes. Although the operations of the various types of the dewatering machines differ, yet the newly designed model adopts a higher filtration pressure for lower moisture content in the filtration cake.

**Table 1. Overview Table of the Properties of the Common Dewatering Equipments**

Dewatering Machine Model	Belt Press Filter	Decanter Centrifugal Filter	Plate Filter Press	Screw Press	Automatic Membrane Filter Press
Construction Principles	By squeezing and driving the pressure rollers, the sludge dewatering process is operated in a single or double filter cloth.	The sludge would withstand the centrifugal forces within the machine. The particles would drop in the circumferential wall of the cone carcass as to achieve solid-liquid separation.	Multiple plates and filter frames or concave plates would be covered with filter cloth. The sludge would be pumped into the filter chamber to be filtered and dewatered through filter cake and filter cloth.	The transportation and squeezing are done with different propel shafts between the gaps, so that the filtrate and filter cake are separated through the peripheral sieves.	A concave filter is covered with filter cloth and equipped with multiple-membranes. The sludge is pumped into the filter chamber with high pressure, filtered by the filter cake and filter membranes for two squeezing effects and dewatering.
Filtration Rate	100-200 kgDS/m-h	15 m <sup>3</sup> /h-m (Bowl)	2-6 kgDS/m <sup>2</sup> -h	< 1.5 rpm	3-12 kg/m <sup>2</sup> -h
Filtration Pressure	1-5 kg/cm <sup>2</sup>	1000-3000G	Filtration : 1-7 kg/cm <sup>2</sup>	--	Filtration: 1-15 kg/cm <sup>2</sup> Squeezing: 5-15 kg/cm <sup>2</sup>
Moisture Content in the Filter Cake (%)	80-85	70-85	50-75	60-85	35-70

## II. Sludge Conditioning

Most of the properties of the sludge can be divided into organic sludge and inorganic sludge. For the past few years, the cost of sludge disposal has been augmenting. Sludge dewatering is just the first step, while a proper sludge conditioning is fundamental as to make it easier to remove the moisture. The main purpose of sludge conditioning is to increase reduce the resistivity factor; the lower the number, the easier to dewater. The following is the type of sludge in numerical order (from larger to smaller): activated sludge > sewage sludge > conditioned activated sludge > conditioned sewage sludge > gelatinous  $\text{Al}(\text{OH})_3$  > gelatinous  $\text{Fe}(\text{OH})_3$  >  $\text{CaCO}_3$ .

Different model of dewatering machines need different type of chemical conditioner. Belt press filter, decanter centrifugal filter and screw press filter require polyacrylamide flocculants, whereas filter press requires ferrous chloride or slacked lime if necessary. Yet the evaluation of the incremental proportion of the amount of dry sludge; if polyacrylamide flocculants is used, then the problem of “appropriate amount” shall be noticed as the excessive or insufficiency would reduce sludge dewatering. As for organic sludge of higher resistivity factor, cell wall breaking technique would be adopted for a deep conditioning with high-pressure dewatering, so that sludge cake can effectively reduce the moisture content and can be used in green building materials or alternative fuels, which would be a meaningful practice for energy-saving and carbon-reduction.



### III. Sludge Drying

Apart from conditioning and dewatering, industrial sludge can apply drying method to reduce weight, or to assess in accordance with different conditions of the cases for its demand. If the equipment life is between 7 to 10 years, the energy efficiency could be the key parameter of selection. Not only the initial set-up cost shall be considered, the price variation of the energy shall also be taken into the consideration.

**Table 2. Reference table of energy-consumption for moisture content removal of the common dewatering Equipments**

Drying Equipment Model	Medium	Energy	Commercial Moisture Content	Energy Consumption / kg Dewatering amount
Hot air drum dryer	Hot air	Waste gas	15-25%	-----
	Hot air	Boiler oil	15-25%	0.1-0.13L
	Hot air	Electricity	20-30%	1.0-1.1kw-hr
Dehumidifier drum dryer	Refrigerant	Electricity	25-40%	0.45-0.65kw-hr
Dehumidifier drying fixed box	Refrigerant	Electricity	30-45%	0.5-0.7kw-hr
Dehumidifier Dryer	Refrigerant	Electricity	30-40%	0.55-0.7kw-hr
Spiral blade dryer	Steam or hot kerosene	Boiler oil	15-30%	0.1-0.14L
Electric oven	Hot air	Electricity	15-30%	1.1-1.5kw-hr
Vacuum drying filter press	Steam	Boiler oil	25-40%	0.1-0.14L
	Steam	Natural gas	25-40%	0.07-0.08m <sup>3</sup>
	Hot air	Waste hot water	25-40%	30-35kg×95℃

## IV. Differences between Domestic and International Products

Sludge dewatering and drying equipment belongs to standard mechanical manufacturing. International renowned manufacturers which have developed several distinctive machine models cannot provide simple, clear and complete specification lists, and thus only professionals of the manufacturers are capable to select the adequate model. For a further understanding, most people have to solicit an agent to offer the adequate machinery according to their conditions. There are some common problems of the imported products: 1. Some type of industrial sludge is not common in the dewatering machine's country of origin (such as sludge from dyeing, leather processing, optoelectronics and other technology electronics industries). 2. The coagulants included in the process of wastewater treatment in Taiwan are generally PAC, ferrous chloride, calcium chloride, etc. In some other countries, as of the manufacturers' countries of origin are still using lime series. Different components and formation conditions might have a wide variation in their processing features. Without a proper data or sufficient capability, probability of further problem might greatly increase.

On the contrary, lands in Taiwan are expensive and the regulations are strict. Within a limited market size and client-factory space, dewatering machine and dryer manufacturers are constantly making progress. Adopting top-quality electromechanical components made in Taiwan can provide the clients with excellent and customized solutions for every industry. Most of the manufacturers in Taiwan are capable of making oversea exportations as their overall technology and quality are not inferior to those of the international brands.

# ULTRA-SAVING WATER FILTER BELT CONTINUOUS SLUDGE DEWATERING MACHINE

## 1. Structure and principle

The high molecular polymer and sludge are injected into the sludge coagulation mixer through the high molecular dosing machine and sludge feed pump, and after overflowing into the drum thickener, they are evenly distributed on the full width of the filter belt, and after passing through the sludge-water separation zone, Entering the wedge-shaped and roller pressurization zone, through a series of rollers and filter belt tensioning device, the sludge is continuously pressurized along the direction of travel of the filter belt until the sludge cake of the dewatering machine falls from the discharge port.

## 2. Purpose

Sludge dewatering treatment of various industrial wastewater, slaughter, animal husbandry, urban sewer, water fertilizer, water purification plant.  
Waste sewage treatment plant, sludge dewatering treatment, saving the cost of cleaning and transportation.

Solid/liquid separation and dehydration treatment in food, chemical, mining, and various industrial processes.

## 3. Features

- ( 1 ) Treat all kinds of sludge, with the dual function of gravity concentration and dewatering.
- ( 2 ) It can automatically control operation and continuous production, which is suitable for sludge in all walks of life.
- ( 3 ) Continuous processing, the most manpower saving, and high work efficiency.
- ( 4 ) Cylinder correction positioning system, control the filter belt to run within the scope of the specification without deviation, prevent the filter cloth from snakes and keep the filter cloth flat and not discounted.
- ( 5 ) Pneumatic cylinder automatic tensioning device, the bilateral tension of the filter cloth is not biased evenly, which can keep the filter cloth set to a certain pressure.
- ( 6 ) The air pressure tension can be adjusted according to the demand, so that the moisture content of the filter cake is low.

元錫工業股份有限公司

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- ( 7 ) Low energy consumption, low noise, simple structure, semi-closed structure and convenient maintenance.
- ( 8 ) Dual filter cloth operation: The filter cloth adopts one upper filter cloth and one lower filter cloth to operate, so the dehydration rate is fast.
- ( 9 ) The running speed of the filter cloth can be adjusted.

#### 4. Specification and Functions

- ( 1 ) The main body of the equipment is composed of a drum thickener and a belt filter press. The feeding sludge, dosing, mixing, and reaction are sequentially carried out in the entire concentration and dehydration system. The concentration and dehydration are carried out under steady flow conditions of pipeline operations such as the output of the sludge cake.

- ( 2 ) Equally divided sludge mass falls to the gravity dehydration zone of the lower filter belt for the third stage of gravity dehydration. At this time, the sludge solids concentration can reach more than 8-10%. The sludge mass begins to enter the initial pressure wedge-shaped throat, sequentially from initial pressure → low pressure → medium pressure → high pressure, and squeezes and dewaterers in a horizontal wave-shaped motion track. The solid content of the sludge cake can reach over 15.5 to 37%.

#### 5. Representative Performance

- ( 1 ) Taiwan major industrial parks WWTP 1997-2021.
- ( 2 ) China Petrochemical Development Corporation 2005-2021.
- ( 3 ) Systems of Formosa Plastics Group 1997-2021.

#### 6. Award (Certification) project

- ( 1 ) ISO 9001:2015 Quality System Certificate.
- ( 2 ) Patent certificate No. Taiwan M276045 、 M348113 、 119141 、 110817 、 126352.

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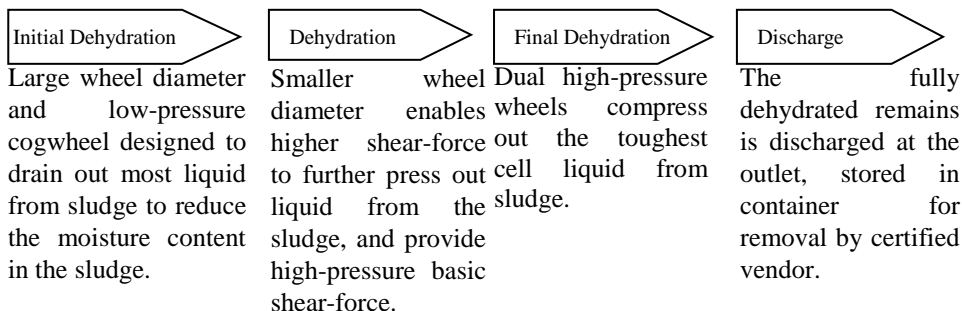
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# FILTER-ROLLER SLUDGE DEHYDRATOR

## 1. Purpose

Applicable for wastewater sludge dehydration and manufacturing process.



## 2. Features

- (1) Fully automated operating functions.
- (2) Fully zinc-plated to prevent rusting with a rigid base.
- (3) Extended gravity dehydration design.
- (4) Pneumatic filter tension auto control system.
- (5) Pneumatic dynamic snaking calibration system.
- (6) Direct-driven filter mechanism.
- (7) Liquid crystal electronic constant-speed operating functions.
- (8) Complete irregularity alarm and auto stop function.
- (9) High-efficiency low-pressure cogwheel design.
- (10) Made with plated stainless steel and bolts.
- (11) Solid wheel axles.
- (12) All wheel axles are chrome-hardened and center calibrated.
- (13) Swiss Pretext filter set.
- (14) Plat-filter tension mechanism.
- (15) Auto filter washer.
- (16) Vacuum suction accelerator can be installed.
- (17) Pressured cleaner may be installed for water saving.

## 3. Product Photo



銓風機械股份有限公司

CHUAN FENG MACHINERY CO., LTD

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# AUTOMATIC MEMBRANE FILTER CLOTH WALKING TYPE FILTER PRESS

## 1. Structure and principle

The sludge is pumped into the filter chamber composed of filter plate and filter cloth, and the closed positive pressure is used to force the filtrate to be discharged through the filter cloth and the orifices of the filter plate, so that the moisture content of the sludge slurry is reduced and the sludge cake is formed and then falls. Send out. Feeding on the top of the filter press compartment plate, after pressing, re-pressing, filter core blowing back (optional), unloading, and filter cloth cleaning are automatically completed. Filter cloth walking automatic blanking system: The mud cakes are completely discharged and do not stick to the filter cloth. Due to the filter cloth walking design, even the mud cakes that are not easy to fall off automatically will automatically peel off when the filter cloth is walking and turning.

## 2. Purpose

Various industrial wastewater inorganic coagulation sedimentation sludge dehydration treatment; stone/construction mud, river/reservoir sludge dehydration treatment; food, pharmaceutical, chemical, dye (color) materials,

ceramics, mining and other various industrial processes in solid/liquid Separate dehydration treatment. Used in the dehydration equipment of industrial sludge, sewage plant sludge, water sludge, and incinerator fly ash.

## 3. Features

- ( 1 ) Automatic high-pressure frontal cleaning system: The two sides of the single filter plate are positioned in the center and thoroughly cleaned with a water source nozzle above 20Bar at the same time. The cleaning water will not splash. The electrical and water pipelines use the swimming protection pipe configuration, which is beautiful and easy to maintain. It adopts PLC + man-machine interface to fully automate, the operation is the simplest.
- ( 2 ) Filter element blow-back function: Before returning the plate, the sludge in the feed pipe is blown back by the air source to ensure that the re-feeding will not cause the filter plate to be biased, and to prevent the slurry from dripping to the mud cake when the material is discharged.

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## Sludge Treatment and Recycling Equipment Filter Press Dewatering Machine

- ( 3 ) Fully automated, starting, dewatering, unloading, cleaning, free of manual operation.
- ( 4 ) The filter cloth walk-in design, the filter cake can be completely unloaded and can be finished, free of manual operation, revolutionary new initiative.
- ( 5 ) Industry 4.0 smart factory is the best tool to realize full automation.

### 4. Specification and Functionse

- ( 1 ) Good dehydration reduction effect (65%~75%), low power consumption, no need to add chemicals, reducing subsequent processing costs.
- ( 2 ) Wide application range, the feed concentration can reach more than 5%.
- ( 3 ) The filter cloth is heat-set, calendared, and leak-proof. The filter cloth is not easy to block, easy to clean and less water.

### 5. Representative Performance

- ( 1 ) Tripod Technology Corporation 2006-2012.
- ( 2 ) China Steel Corporation 2020.
- ( 3 ) Systems of Catcher China Group 2007-2021.

### 6. Product Photo



### 7. Award (Certification) project

- ( 1 ) ISO 9001:2015 Quality System Certificate
- ( 2 ) CE Safety Certification
- ( 3 ) Patent Certificate No. : Taiwan M584218 、 135682 、 135785 、 139267

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# AUTO-CLEANING MEMBRANE FILTER PRESS

## 1. Structure and Principle

Using chamber filter plate with a membrane adhering to the recess, a filter cloth is draped over each filter plate. All filter plates line up orderly with regular intervals. Between two filter plates, a hollow chamber is formed with feed tunnels channeling through the filter plates and chambers. Once the hydraulic cylinder is triggered to close the filter plates, the concentrated sludge is fed into the chambers via the diaphragm pump; the filtrate is then drained to accumulate sludge solids in the chambers. Hence, the more sludge is fed, the lower the water content of the sludge cake is. When the chambers are filled where sludge can no longer enter, stop the pump and close the feed valve and then execute the membrane second squeezing procedure. The expandable membrane uses its reverse force to further reduce the moisture content of the dewatered sludge cake until the set time lapses. The hydraulic device restarts and opens filter plates one by one or all at once via the high-stability hydraulic driving shifter to allow sludge cakes fall automatically into the running conveyor and transports the cakes to the storage silo or catcher bags for storage.

## 2. Purpose

- (1) Wastewater sludge dehydration for various industries.
- (2) Chemical manufacturing process's solid and liquid separation.
- (3) Water purification plant's sludge dehydration.
- (4) Construction industry's waste sludge dehydration.

## 3. Features

- (1) The fabrications are frame structure consisted of a head end, fixed end, traveling end, and sidebars. They are designed as rigid steel with rib reinforced construction. The sidebars are wedged into pockets in the ends of the press frame and fastened by high-tension bolts. The stress loads are calculated to ensure maximum absorption of all mechanical forces. It is adequate for high-pressure operation and sludge pulsation feeding.
- (2) Rubber plates : 10 ~ 12mm steel sheets are used for interior reinforcement, which are molded with rubber throughout. The reinforced multi-support design assures optimal strength and durability.

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- (3) Hydraulic shifter : The pressure is empowered to drive tilted plates straight before shifting, superior to electrical or pneumatic models for free of error current detection and lack of drive that may lead the plates to fall-off.
- (4) Auto cloths cleaner booth-type unit, dual transmission support plus cogwheel configuration for better stability; individual plate is aligned centrally to both sides for thorough cleaning by 20Bar jet to deter splashing; electric cables and water pipe come with mobile trays for aesthetic and easy maintenance.
- (5) Sludge cake water content : generally reduce 20 ~ 70 % of water content; film model is equipped with second film compressing system that further reduces 5 ~ 10 % water content.

## **6. Award (Certification) Project**

Taiwan Environmental Manufacturers Association certified the product for environmental protection quality standard in 1999

- (6) Core-blow design : before the plate shifts back, the sludge inside the feed tunnel is blown back for clearance with water or high pressure air to prevent subsequent feed from crushing the plate and slurry from dripping onto the cakes when cakes are being discharging.

## **4. Specifications and Functions**

- (1) Number of plates : 30~110pcs.
- (2) Plates materials : Rubber or Polypropylene
- (3) Plates sizes : 1,000 、 1,250 、 1,300 、 1,500 、 2,000mm.
- (4) Filtration area : 42 ~ 700 m<sup>2</sup>.
- (5) Chamber volume : 640 ~ 10,500 L/cycle.

## **5. Product Photo**



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# MEMBRANE FILTER PRESS

## 1. Structure and Principle

Theory: Filter presses are manufactured to separate solids from slurries. This machine comprises of several main components including the structured frame, plate pack, filter cloths and various modular components designing for the purpose of automation. During the process of filtration, the filter cloth plus the increasing accumulated thickness of the filter cakes will generate resistance against the flow. More and more hydraulic forces required to overcome this resistance. Once a compact filter cake be formed inside the filter press, it will be discharged out of the machine.

Slurry flow will encounter and suffering following three types of resistances , and the total pressure drops(  $-\Delta P$  ) equals to the sum of them.

- (1) Tubing friction resistance--- It is minor and irrelative small and it can be ignored compared to the other two types of resistance. ,
- (2) Filter cloth resistance----- The initial value of resistance of the brand new cloth was totally different from the used filter cloth! , the filter cloth resistance will be gradually increasing and this resistance will be reached a steady value after certain period of operational times. But, still, this resistance forces was much more less than the filter cakes'

- (3) Filter cakes' resistance---- This is the major forces which no one can ignore it! The resistance caused by filter cakes will be subjected to change caused by machine's filter run! Resistance is starting from zero ,then, it will be graduated increasing to(by) a steady value after certain times of filter run.

## 2. Purpose

- (3) Wastewater sludge dehydration for various industries.
- (4) Chemical manufacturing process's solid and liquid separation.
- (5) Water purification plants' sludge dehydration.
- (6) Construction industry's waste sludge dehydration.

## 3. Features

- (3) Body structure: Head end, fixed end, traveling end and side bar are made by solid steel plate and jointed by high-strength bolts under precise safe strength calculation, able to withstand high pressure operation and suitable to the pulsed input loading.
- (4) Hydraulic driving mechanism: Double acting electricity-driven hydraulic cylinder; move forward/backward and supplement pressure automatically.

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- resistance .
- (3) Rubber filter plate: apply 10 or 12mm steel plate to build the reinforced core plate and totaled enclosed by rubber; the reinforced “Stay bosses” design can ensure longest operation lifetime; high sealing capability that won’t leak; anti-chemicals, elevated temperature and acid/caustic; no cracking or deformed.
  - (4) Polypropylene filter plate: integrated into one piece by high tempura & pressure + milling machining; able to create visible and invisible streams; the reinforced “Stay bosses” design can prevent from bad sealing or deformation from insufficient mechanical strength.
  - (5) Membrane protection: automatically detect the residual air pressure in membrane, avoiding instant explosion or trip made while rejecting plate and thus would hurt operator.
  - (6) Filter cloth: double-side, made by PP or PA (nylon); easy to separate cake rather than sticking on the cloth.
  - (7) Control system: feed in from inner/outer door (incl. glass door) + dustproof & waterproof electrical control cabinet; allowing to set auto (constant cycle)/manual operation mode; prints + hot coats, bright, good looking and dirt endured.
  - (8) Hydraulic plate-picking machine: pressure is sufficient to push skewed plate back to order and pick it up substantially; the process is better than motor-driven or pneumatic one that would drop down filter plate from error current induction or insufficient thrust force.

#### 4. Specifications and Functions

- (1) Number of plates : 21 ~ 111 pcs.
- (2) Plates materials : Rubber or Polypropylene.
- (3) Plates sizes : 800、930、1,000、1,250、1,300、1,500mm.
- (4) Filtration area : 19 ~ 435 m<sup>2</sup>.
- (5) Chamber volume : 285 ~ 6,460 L/cycle.

#### 5. Product Photo



#### 6. Award (Certification) Project

- (1) Industrial Development Bureau of MOEA certified the product for environmental protection quality standard in 2003.
- (2) The product was certified the award from IDB for environmental protection equipment application benchmark in 2020.

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# FILTER PRESS

## 1. Structure and Principle

Equipment for removing soolids from liquids separation.

The opening methods of filter plates, collection of filtered liquid, sludge cake packing

## 2. Purpose

Removing soolids from liquids separation.

## 3. Features

- ( 1 ) More Product YIELD per batch.
- ( 2 ) Less Handing Loss
- ( 3 ) Increased product quality
- ( 4 ) Ease of handing and substantial Savings on drying costs.

## 4. Specification and Functions

Moving Clothes Type Filter Press  
model: FA1000

## 5. Product Photo



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# FILTER PRESS

## 1. Structure and Principle

Sludge is pushed into filter centre via a high-pressure pump to filter and compress. The pump then pumps into high-pressure air to bulge the rubber film for further compressing, squeezing out about 50-70% water content at this stage (pending upon sludge property). Before sludge cakes are discharged, high-pressure air is pumped into the feed opening to blow residues through the filter to achieve dehydration. The system is capable of 24-hour automatic operation..

## 2. Purpose

Sludge drying for semiconductor, electroplating, dye manufacturing or other chemical sludge drying; sludge treatment for water purification plant, reservoir silt treatment, building sludge, tunnel engineering debris, manufacturing raw material hydrating and drying, food industry and steel mills, metal surface treatment industry, electronics, PCB, active sludge and bio-sludge, etc.

## 3. Features

- (1) Fully Automatic : PLC + Touch Screen Interface.
- (2) Dewatering effect : Water Content : 30% ~60%.
- (3) Easy to operate : Auto Back washing system + Auto Cake dropping system.
- (4) R & D + Manufacturing 100% in Taiwan.
- (5) High Efficiency : slurry feeding 10 bar , membrane squeezing 15 bar.

## 4. Product Photo



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# MOVING CLOTHES TYPE FILTER PRESS

## 1. Structure and Principle

A Moving clothes type filter press is a breakthrough of general filter press. It is a highly efficient, compact, dewatering device for separating solids from liquid slurries in the form of compressed cake. Its major components are a structured framework, filter chambers (formed by recess portion of Recessed plate system, or frames in plate and frame system), and filter clothes.

- (1) Complete automatic operation
- (2) Efficient dewatering to high dryness
- (3) Complete release of mud disks, no contaminations on filter clothes
- (4) Fast cleansing of filter clothes
- (5) Extreme heavy duty cleaning for mud treatment

## 2. Purpose

- (1) Chemical industry: Medicine, Fertilizer, Dye, Graphite.
- (2) Mining industry: Sand and stone pit, Marbles, Mount Morillonite, Bentonite, Calcium Carbonate, Amino Acid, White Smoke etc.
- (3) Others: Dyes, Resin, Metallurgic Industries, Non-iron Metallic Industries etc. Polluted sludge in the sewer, industrial polluted sludge, and polluted sludge in the tap water etc.

## 3. Features

Each cycle time only need 40mins included-feeding – decharged -washing clothes total 40mins

## 4. Specifications and Functions

- (1) Number of plates : 30 ~ 110 pcs.
- (2) Plates materials : Rubber or Polypropylene
- (3) Plates sizes: 1,000、1,250、1,300、1,500、2,000 mm.
- (4) Filtration area : 42 ~ 700 m<sup>2</sup>.
- (5) Chamber volume : 640 ~ 10,500 L/cycle.

## 5. Product Photo



## 6. Award (Certification) Project

ISO9001 : 2015 Quality System Certificate.

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# ULTRA-HIGH PRESSURE SCREW TYPE EXTRUSION DEWATERING MACHINE

## 1. Structure and principle

Utilizing the screw conveying and squeezing principle of the screw, under the condition of gradual pressure, the moisture in the material flows out through the metal screen to achieve the purpose of dehydration.

Low-pressure section: The first section is a low-pressure section, this section mainly discharges excess free water in the treated material.

Medium-pressure section: The second section is a medium-pressure section. This section mainly pre-compresses the processed material into a cake.

High-pressure section: The third section is a high-pressure section. This section mainly squeezes and compresses the processed material to reduce the water content.

## 2. Purpose

- (1) In the food industry, wine residues, coffee residues, vegetable residues, raw/cooked kitchen waste, vegetable and fruit, aquatic product processing...etc. are squeezed and dehydrated.

- (2) Dehydration of scum / fibrous / particulate related substances in food processing, agricultural product processing, aquatic product processing, chemical industry, pulping and papermaking, textile fiber, slaughter industry...etc.
- (3) The raw and cooked materials are separated and dewatered by solid-liquid separation after crushing or crushing.
- (4) Palm oil and coconut oil extrusion manufacturing.
- (5) Vegetable oil and various types of edible oil extrusion manufacturing.

## 3. Features

- (1) Design cleaning function, filter screen intermittent cleaning and cleaning system before shutdown, reduce filter screen clogging, cleaning water consumption is very small.
- (2) Sturdy and simple structure design, low speed, low consumption parts, can be operated at different speeds according to the frequency conversion of physical properties, and low maintenance costs.

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- (3) It can be operated intermittently or continuously, with stable production capacity and high efficiency.
- (4) Coaxial deceleration, direct drive design, high torque, low noise, low vibration, low wear and low operating cost.
- (5) Closed structure design, no pollution to the environment, can also be used with a gas collecting hood, easy to operate.

#### 4. Specification and Functions

- (1) Using the Archimedes screw principle, a special combination screw with large processing capacity, stable effect and low slag moisture content is designed for various sludge and processed materials.
- (2) Stainless steel triangular wedge-shaped filter screen or drilling screen, with high structural strength, wear resistance, durability, corrosion resistance, long service life, high open rate, the filter surface is not easy to block, and has good filterability to maximize performance.

- (3) Patented outlet design, the internal pressure is fixed and there is no problem of synchronous rotation.

#### 5. Representative Performance

- (1) Taiwan Scott Paper Corporation 2014-2019.
- (2) Taita Chemical Co., Ltd. 2018.
- (3) Tai Roun Products Co., Ltd. 2015.

#### 6. Product Photo



#### 7. Award (Certification) project

- (1) ISO 9001:2015 Quality System Certificate.
- (2) Patent Certificate No. : Taiwan M394332 、M524217 ; China ZL201020581618.9.

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## VOLUTE SLUDGE DEWATERING EQUIPMENT

### 1. Structure and principle

When the equipment is running, the sludge enters the filter cartridge from the feed port and is pushed by the spiral blades to move to the discharge port. As the pitch of the screw shaft blades is gradually reduced along the mud cake outlet direction, the pressure on the sludge also increases continuously, and the dehydration starts under the action of the pressure, and the water flows out from the gap between the fixed ring and the moving ring. At the same time, the equipment relies on the self-cleaning function between the fixed ring and the moving ring to clean the filter gap to prevent clogging. The mud cake is discharged from the discharge port under the push of the screw shaft after dehydration.

- ( 1 ) The same direction of force and water: make the free water separate at the fastest speed.
- ( 2 ) Appropriate pressure: While ensuring the effect of sludge dewatering, it keeps the lowest energy consumption and mechanical wear.

- ( 3 ) Thin-layer dewatering: make free water in the sludge go the shortest distance to separate from the muddy water.
- ( 4 ) Extend the path: Extend the dewatering path, which not only gives the sludge a little more time in the dewatering process, but also ensures the continuous operation of dewatering production.

### 2. Purpose

- ( 1 ) Dewatering of industrial wastewater and municipal sewage sludge.
- ( 2 ) Sludge dehydration in food, beverage and brewing industries.
- ( 3 ) Dewatering of sludge from medical and health institutions.
- ( 4 ) Sludge dewatering in petroleum and chemical industries.
- ( 5 ) Sludge dewatering in animal husbandry and breeding industries.
- ( 6 ) Machine manufacturing, metal processing sludge dewatering.
- ( 7 ) Dyeing, washing, papermaking sludge dewatering.

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### **3. Features**

- ( 1 ) Strong resistance to oily sludge, the best oily sludge dewatering machine.
- ( 2 ) Using low-speed screw extrusion, stable performance, low power consumption, no clogging, high efficiency, self-cleaning function, and greatly reduced flushing water.
- ( 3 ) Automatic operation, simple operation, short daily maintenance time and simple maintenance operations. Clean and environmentally friendly, no pollution, easy daily maintenance.
- ( 4 ) Small footprint, easy maintenance and replacement; small weight, easy to carry.
- ( 5 ) Using 304 stainless steel material, corrosion resistance, acid and alkali resistance, good chemical resistance, sturdiness and durability, and long service life.

### **4. Specification and Functions**

- ( 1 ) Strong resistance to oily sludge, the best oily sludge dewatering machine.

- ( 2 ) Using low-speed screw extrusion, stable performance, low power consumption, no clogging, high efficiency, self-cleaning function, and greatly reduced flushing water.
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- ( 5 ) Using 304 stainless steel material, corrosion resistance, acid and alkali resistance, good chemical resistance, sturdiness and durability, and long service life.

### **5. Representative Performance**

- ( 1 ) Charoen Pokphand Enterprise (Taiwan) Co., Ltd. 2019.
- ( 2 ) Kuang Chuan Dairy Co., Ltd. 2020.
- ( 3 ) Central Union Oil Corp. 2020.

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# SLURRY DEWATERING MACHINE

## 1. Structure and Principle

It is a centrifugal sedimentation machine. When the mud treatment enters the mechanism, it is separated by high-speed rotary sedimentation, and the solid and water are separately discharged to achieve dehydration or separation of solid and liquid.

## 2. Purpose

- (1) Sludge dewatering function in sewage treatment process
- (2) Separation of solids from liquids in suspensions, emulsions, and mud-water mixtures
- (3) separation of solids and liquids from crystals and precipitates
- (4) Separation of solid slag from animal and vegetable oils
- (5) Dehydration of raw materials or distiller's grains
- (6) Solid-liquid separation of various other substances

## 3. Features

- (1) It can operate continuously.
- (2) The particle size in the mud can be continuously and smoothly operated
- (3) The solid concentration and particle size during operation will not affect the operation if there is any change.
- (4) The mechanism is strong and the machine is small.
- (5) If the machine is overloaded during operation, there is an automatic stop device.
- (6) solid-liquid separation of oil sludge.
- (7) The squeezing machine is used for squeezing moisture out of fibers, films, waste vegetables and fruits, etc.

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## 5. Specification and Functions

model	Internal size	capacity	power	length	width	high
	mm	m <sup>3</sup> / hr	kw	mm	mm	mm
SD-210	φ 210	1 ~ 2	2.2 ~ 3.7	1,500	1,000	750
SD-300	φ 300	3 ~ 5	7.5 ~ 11	1,950	1,150	800
SD-400	φ 400	7 ~ 10	18.5 ~ 22	2,260	1,401	1,018
SD-600	φ 600	15 ~ 20	22 ~ 30	3,200	1,770	1,150
Remarks: The dehydrator body can be sold separately						

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# DEOILER

## 1. Structure and Principle

The metal is cooled and lubricated during the CNC machining process. Special cutting oil or cutting fluid is usually added to the cutting contact surface. Because of its adhesiveness, it will adhere to the surface of the metal slag and the surface of the product.

The main structure is a U-shaped continuous centrifugal design with a vertical rotation. The oil-containing metal particle solids are collected and transported by the conveyor, fed from the upper center, and dropped into the U-shaped high-speed rotating body. The particles are forced to be detached by the centrifugal force through the filter screen, and flow out from the side filter of the rotating body, and the deoiled metal solid particles are removed. It is discharged from the bottom of the centrifuge, so it can be continuously fed and discharged..

## 2. Purpose

Iron slag deoiling, copper slag deoiling, aluminum slag deoiling, plastic pellet dehydration, etc.

## 3. Features

- (1) Continuous operation.
  - A. Continuous feeding, automatic oil discharge, automatic chipping.
  - B. Save manpower
  - C. A deoiler can process multiple processing machinery to discharge metal scrap at the same time.
- (2) Special drive structure  
Adopting the direct connection motor drive mode, the transmission mechanism is solid and small, saving space.
- (3) Cutting oil can be recycled and reused.  
The oil removal rate is over 95%, reducing the cost.
- (4) Smooth operation, sturdy and durable.  
Continuous feeding and discharging are different from batch feeding, so the rotating body does not have a small load.
- (5) Easy maintenance, easy to clean and wash.

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## 4. Specification and Functions

capacity Model	Steel	Copper	Aluminum	Power	Revolu- tion	A	B	C	D
	ton / hr	ton / hr	ton / hr	hp	RPM	mm	mm	mm	mm
FMU-600	0.9~1.6	1.2~2.0	0.6~1.2	10	1,100	1,15	1,530	1,530	1,623
FMU-500	0.4~0.8	0.7~1.3	0.3~0.6	7.5	1,500	980	1,300	1,235	1,460
FMU-400	0.3~0.5	0.5~0.9	0.1~0.4	5	1,750	880	1,032	1,150	1,328
FMU-300	0.2~0.4	0.3~0.6	0.08~0.3	3	2,000	750	960	1,000	1,328

## 5. Product Photo



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# HEAT PUMP SLUDGE DRYER (INTEGRATED MODEL)

## 1. Structure and Principle

- ( 1 ) The integrated model sludge dryer is a batch dryer for small to medium sludge volumes.
- ( 2 ) The dryer consists of an upper drying unit and a lower drying cart/container. Its small footprint allows it to fit in a variety of factory layouts.
- ( 3 ) It operates based on the energy amplification of a heat pump, consuming three to four times less energy than a traditional electric heater for the same amount of heat produced. Dry, low temperature air (40~60℃) is cycled through the sludge, absorbing its moisture. The moist air gets cooled in the condenser, releasing water as condensate, and is reheated for the next cycle, with no exhaust air released into the environment. The moisture content and weight of the sludge is consequently reduced.

## 2. Purpose

Dewatered sludge at the end of the wastewater treatment process can be sent into the dryer for an additional reduction in weight of 40% or more. This not only decreases waste disposal fees by 40% or more, but also eases the increasing load on waste disposal facilities and reduces carbon emissions from the transport of waste.

## 3. Features

- ( 1 ) Modular design: A variety of customizable models are available based on sludge volume, factory layout, process flow, etc.
- ( 2 ) Heat pump drying system: energy-saving, efficient, and environmentally friendly.
- ( 3 ) Hermetic circulation system: no combustion or exhaust is required, eliminating the risk of flammable or explosive fumes and curtailing the release of odors.

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TEL : +886-3-375-6081    FAX : +886-3-301-1763E-mail : w\_j\_95@hotmail.com    <http://dilemma.com.tw>

- ( 4 ) Intelligent control system:  
temperature control, timer  
settings, error logs, process  
monitoring, etc.
- ( 5 ) Anti-corrosion treatment:  
corrosion protection techniques  
allow our systems to handle a  
variety of sludges.

#### 4. Specifications and Functions

Capacity: 2,250 kg/day.  
Weight Reduction: 1,125 kg/day.  
Power Consumption: 22.3~27.2kw.  
Energy Consumption per kg of  
Water Evaporated: 0.45 kWh/kg.  
Material: SUS304.  
Dimensions: 300x212x270 cm.  
Compressor Unit: Scrol.l  
compressor, environmentally  
friendly refrigerant.  
Auxiliary Radiator: High efficiency  
finned-tube heat exchanger.  
(aluminum fins and copper tubes),  
anti-corrosion tubing, anti-corrosion  
resin coating, cooling fan.

Heat Exchangers: High efficiency  
finned-tube heat exchanger  
(aluminum fins and copper tubes),  
anti-corrosion tubing, anti-corrosion  
resin coating.

#### 5. Representative performance

Nan Ya Plastics Corporation 2018.05.

#### 6. Product Photo



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# HEAT PUMP SLUDGE DRYER ( SPLIT MODEL )

## 1. Structure and Principle

- ( 1 ) 1.The split model sludge dryer consists of a drying unit and an independent drying chamber to accommodate sludge volumes from small to large. Its small footprint allows it to fit in a variety of factory layouts.
- ( 2 ) 2.It operates based on the energy amplification of a heat pump, consuming three to four times less energy than a traditional electric heater for the same amount of heat produced. Dry, low temperature air (40~60 C) is cycled through the sludge, absorbing its moisture. The moist air gets cooled in the condenser, releasing water as condensate, and is reheated for the next cycle, with no exhaust air released into the environment. The moisture content and weight of the sludge is consequently reduced.

## 2. Purpose

Dewatered sludge at the end of the wastewater treatment process can be sent into the dryer for an additional reduction in weight of 40% or more. This not only decreases waste disposal fees by 40% or more, but also eases the increasing load on waste disposal facilities and reduces carbon emissions from the transport of waste.

## 3. Features

- ( 1 ) Modular design: A variety of customizable models are available based on sludge volume, factory layout, process flow, etc.
- ( 2 ) Heat pump drying system: energy-saving, efficient, and environmentally friendly.
- ( 3 ) Hermetic circulation system: no combustion or exhaust is required, eliminating the risk of flammable or explosive fumes and curtailing the release of odors.

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- ( 4 ) Intelligent control system:  
temperature control, timer  
settings, error logs, process  
monitoring, etc.
- ( 5 ) Anti-corrosion treatment:  
corrosion protection techniques  
allow our systems to handle a  
variety of sludges.

#### 4. Specifications and Functions

- ( 1 ) Capacity: 4,500 kg/day
- ( 2 ) Weight Reduction: 2,160  
kg/day
- ( 3 ) Power Consumption: 45 kw
- ( 4 ) Energy Consumption per kg of  
Water Evaporated: 0.45 kWh/kg
- ( 5 ) Material: SUS304.
- ( 6 ) Compressor Unit: Scroll  
compressor, environmentally  
friendly refrigerant.
- ( 7 ) Auxiliary Radiator: High  
efficiency finned-tube heat  
exchanger (aluminum fins and  
copper tubes), anti-corrosion  
tubing, anti-corrosion resin  
coating, cooling fan.
- ( 8 ) Heat Exchangers: High  
efficiency finned-tube heat  
exchanger (aluminum fins and  
copper tubes), anti-corrosion  
tubing, anti-corrosion resin  
coating..

#### 5. Representative Performance

Eclat Textile Co., Ltd. 2016.03.

#### 6. Product Photo



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# HEAT PUMP SLUDGE DRYER (CONTINUOUS MODEL)

## 1. Structure and Principle

- (1) The continuous model sludge dryer continuously takes in wet sludge and produces dry sludge using internal and external bulk conveyors. The automated design saves manpower and can manage large-scale sludge volumes.
- (2) It operates based on the energy amplification of a heat pump, consuming three to four times less energy than a traditional electric heater for the same amount of heat produced. Dry, low temperature air (40~60℃) is cycled through the sludge, absorbing its moisture. The moist air gets cooled in the condenser, releasing water as condensate, and is reheated for the next cycle, with no exhaust air released into the environment. The moisture content and weight of the sludge is consequently reduced.

## 2. Purpose

Dewatered sludge at the end of the wastewater treatment process can be sent into the dryer for an additional reduction in weight of 40% or more. This not only decreases waste disposal fees by 40% or more, but also eases the increasing load on waste disposal facilities and reduces carbon emissions from the transport of waste.

## 3. Features

- (1) Modular design: A variety of customizable models are available based on sludge volume, factory layout, process flow, etc.
- (2) Heat pump drying system: energy-saving, efficient, and environmentally friendly.
- (3) Hermetic circulation system: no combustion or exhaust is required, eliminating the risk of flammable or explosive fumes and curtailing the release of odors.

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- ( 4 ) Automated drying process:  
sludge can be dried 24 hours a day with automated feed-in and discharge, saving manpower and time.
- ( 5 ) Intelligent control system:  
temperature control, timer settings, error logs, process monitoring, etc.
- ( 6 ) Anti-corrosion treatment:  
corrosion protection techniques allow our systems to handle a variety of sludges.

#### 4. Specifications and Functions

- ( 1 ) Capacity: 7,000 kg/day.
- ( 2 ) Weight                      Reduction:  
3,600kg/day.
- ( 3 ) Power Consumption: 225 kw.
- ( 4 ) Heating Capacity: 366 kw.
- ( 5 ) Energy Consumption per kg of Water Evaporated: 0.5 kWh/kg.
- ( 6 ) Material: SUS304.
- ( 7 ) Dimensions: 1,280x230x245 cm.
- ( 8 ) Compressor      Unit:      Scroll  
compressor,      environmentally  
friendly refrigerant.

- (1) Auxiliary Radiator: High efficiency finned-tube heat exchanger (aluminum fins and copper tubes), anti-corrosion tubing, anti-corrosion resin coating, cooling fan.
- (2) Heat Exchangers: High efficiency finned-tube heat exchanger (aluminum fins and copper tubes), anti-corrosion tubing, anti-corrosion resin coating.

#### 5. Representative Performance

Sewage treatment plant of Tucheng industrial area 2020.01.

#### 6. Product Photo



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# SLUDGE PLASTIC DRYING BED

## 1. Structure and Principle

- (1) The facility includes
  - (2) Drying bed are assembled with Filters,
  - (3) RC base with drainage,
  - (4) sludge conditioning equipment and pipings.
  - (5) Design and construction depend on the volume of sludge and space of field. A special design for equipment of pour and transport cake if necessary.
  - (6) Sludge→Conditioning→Dumping into the drying bed→Naturally drying 7 – 30 days (depend on water content of cake we need)→ Cake disposal. °
- (4) High solid content of cake that might save cost of waste disposal.
  - (5) Totally avoid of defects which sand drying bed would form obstruction and sandy-cake.

## 4. Specifications and Functions

- (1) The dimension of a filter unit is 304.8 mm × 304.8 mm × 50.8 mm.
- (2) Each filter has several tenons that make it easy to assemble. HDPE reinforced material with treating by UV on surface for anti-aging.
- (3) Hardness is above 63 ( D Scale , Shore Durometer) and its compressive strength is over 4,500 kgf.

## 5. Product Photo



## 2. Purpose

Sludge drying for water and wastewater treatment plants , especially suitable for small and medium volume of sludge.

## 3. Features

- (1) Simple structure, invincible material, easy to construct, operate and maintain.
- (2) It might use no land by constructing the drying bed above the basin with RC.
- (3) Low investment cost , less 20 – 50 % than mechanical drying machines.

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# HIGH-EFFICIENCY AND ENERGY-SAVING SLUDGE DRYING REDUCTION EQUIPMENT

## 1. Structure and principle

The main components of the dryer are compressor, condenser, expansion valve, evaporator, auxiliary condenser and drying box. The expansion valve sends the refrigerant to the evaporator. The refrigerant absorbs heat and vaporizes. The gaseous refrigerant is compressed into a high-pressure liquid by the compressor and enters the condensation. The refrigerant returns to the accumulator and evaporates through the expansion valve to complete the refrigeration cycle. The high-humidity gas extracted from the drying chamber is condensed and dehumidified by the evaporator to become dry and cold air. The dry and cold air is heated by the condenser into high-temperature and low-humidity air. The high-temperature and low-humidity air enters the drying chamber to bring out the moisture of the material to complete the drying cycle.

## 2. Purpose

- ( 1 ) Factory wastewater treatment inorganic sludge and biological sludge drying.
- ( 2 ) Drying reduction of industrial organic and inorganic waste.
- ( 3 ) Biological sludge drying in the primary sedimentation tank and secondary sedimentation tank of municipal sewage treatment plants.
- ( 4 ) The sand-containing sludge is dried in the primary sedimentation tank of urban domestic sewage.
- ( 5 ) The solidification of food and drug products is convenient for packaging and transportation.
- ( 6 ) Dry powder processing of agricultural products and medicinal materials improves product quality.

## 3. Features

- ( 1 ) Low temperature dehumidification and drying, low energy consumption, no change in physical properties, stable quality, high drying

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## Sludge Treatment and Recycling Equipment Sludge drying Equipment

reduction and volume reduction, odorless waste gas and dust generation, and pollution-free wastewater generation.

- ( 2 ) The best drying reduction system for organic sludge and inorganic sludge.
- ( 3 ) The equipment has compact structure, small floor space, simple operation, convenient maintenance and stable operation.
- ( 4 ) Have the ability to meet large-scale production, high efficiency, energy saving, and continuous production.

### 4. Specification and Functions

High-efficiency and energy-saving device, energy consumption per kilogram of weight removal is only 0.4kwh, low temperature drying under normal pressure (45°~70°C), the weight of dried sludge is reduced by 75%, the volume is reduced by 60%, the drying medium is closed and circulating, and there is no waste gas. And waste heat pollution.

### 5. Representative Performance

- ( 1 ) Murata Group-Taiwan/China Systems
- ( 2 ) Dajia Youth Industrial Park WWTP 2019.
- ( 3 ) Epistar Corporation 2020.

### 6. Product photo



### 7. Award (Certification) Project

- ( 1 ) ISO 9001:2015 Quality System Certificate.
- ( 2 ) Patent Certificate No. : Taiwan M585786.

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# PLATE TYPE CONTINUOUS DRYER

## 1. Structure and Principle

Plate-type continuous dryer is to continuously send sludge cakes into feeding opening under constant feeding rate; cake is cutted to tiny grains and dropped to porous plate surface under continuous operation; machine will use auto poker to uniformly distribute the sludge grains; each plate is closely connecting to other plates to form conveyor shapeto run, normally designed to 4~8 loops lining up by different layers. Then, hot airflow (or dry airflow at normal temperature) generated by varied energy source is introduced into the dryer; sludge grains will be directly blowed by hot airflow (or dry airflow at normal temperature) in the forward and backward stroke steadily to dry out moisture inside them. Vapor product is circulately introduced to regrigating compressor to dehydrate, or to stake by inducing fan. Under the slight negative pressure operation, odor won't dissipate out; normally the exhaust can meet emission standard. Or we can follow the physical property of drying treatment process to equip simple air polution protection facility, such as bag precipitator or waterwash scrubber, and able to meet environmental code.

The dried sludge normally is in the shape of dried grains or powder, being sent to collection bag or hopper to make temporary storage by screw conveyor. To prevent powder dissipation, it should seal the bag opening onto screw conveyor outlet. If designed to store dried sludge grains or powders by temporary storage hopper, it should apply small dust collector or precipitator instead.

## 2. Purpose

- (1) Dry wastewater sludge.
- (2) Dry farming products.
- (3) Dry chemical process.
- (4) Maintain.

## 3. Feature

- (1) Consecutively send in/out sludge; can automatically operate, easy to manage and
- (2) Sludge conveying plate is by single-ring, two-layer drying design; both upper/lower layer of conveying plate can load sludge and receive hot airflow ( or dry airflow at normal temperature ), better drying efficiency can derive rather than the ordinary conveying belt type dryer using single drying layer.

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- (3) Hot airflow (or dry airflow at normal temperature) directly blows to sludge cake, the heat transfer efficiency is higher than indirect dry, energy effectiveness is better.
- (4) Module hot wind generator can operate by coordinating to various energy form including steam, electric heat or boiler oil, etc.
- (5) Slight negative pressure operation; no odor dissipation; only require wet-type scrubbing tower or bag precipitator to treat exhaust in order to meet pollution protection code standard.
- (6) Follow requirement to meet various dehydrating rate; the low limit is 20 %.
- (7) Available treating capacity: 6 ~ 25 tons / day °

#### 4. Product Photo



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# VACUUM DRYING FILTER PRESS

## 1. Structure and Principle

- (1) The vacuum drying filter press operates as a standard press , compressing The cake material with the feed pump , There will always be moisture remaining in the small void spaces between the solid cake particles .
- (2) Membrane plate squeeze: compressed air or steam cause expansion of the membrane plates , further reducing cake volume and moisture content, Free water Is removed through this standard membrane filter operation.
- (3) The drying process begins after the membrane squeeze and slurry inlet closed. While the filter cakes are still close in the press , a vacuum is pulled on the liquid drain lines.
- (4) Heat is transferred to the cake from steam or hot water circulating through the core of membrane plate. The vacuum allows the moisture in the cake to vaporize at a reduced

- (5) As the cake dries and loses volume , the membrane plate construction allows the diaphragm to expand and maintain heat transfer throughout the drying cycle.

## 2. Purpose

Dehydrate and direct dry up the organic/inorganic sludge.

## 3. Features

- (1) Solidified ratio of filtered sludge can reach 99%; moisture content is lower than 1%.
- (2) Associate the press, filtering and dehydrating process together in one shift rather than separated into several sections that would waste space and transporting manpower.
- (3) No the odor or secondary air pollution made in ordinary dryer's operating process; no need to apply for emission permit.
- (4) Extremely low moisture content makes cake easy to apart; filter cloth cleaning or maintaining cost is reduced.

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temperature.

- (5) Low power consumption; able to apply the low-pressure steam exhaust from factory in the process and largely save energy cost.
- (6) No need to clean filter cloth: after dry, cake's moisture content is largely reduced, the viscosity coefficient is low and cake separates from filter cloth neatly.
- (7) Leading technology and mature experience can delicately combine the heat transfer and vacuum skills to rapidly evaporate and remove moisture.

#### 4. Product Photo



#### 5. Award (Certification) Project

- (1) Taiwan Environmental Manufacturers Association certified the product for environmental protection quality standard in 1999.
- (2) Industrial Development Bureau of MOEA certified the product for environmental protection quality standard in 2003.

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# SLUDGE ADVANCED CONDITIONING AND HIGH PRESSURE DEWATERING SYSTEM

## 1. Structure and Principle

A cost-effective dewatering system for sludge is developed with a packaged in-depth dosing reactor and a high pressure membrane type filter press, which comprise (1) a smart diagnosis module, including sludge parameter sensing/controlling units, which detect several key parameters of sludge and control dosing of reagent; (2) a microcontroller-PLC unit, processing above-mentioned detected parameter signals collected through sensors, then sending out instructions after analyzing those signals upon proprietary algorithm to control dosing of reagents; (3) a reagent addition unit, receiving the above-mentioned dosing control signals to add in reagents accordingly. (4) a high pressure membrane type filter press, maintaining feed pressure as high as  $15\text{kg/cm}^2$  and durable membrane for pressure filtration that results in reduced water content of sludge from 80~98% down to 40 ~ 60%.

**Principle:** This chemical conditioning method is to mix reagents and sludge through sol-gel synthesis, in which organic complexes are added to form metallic organic complex, then cell walls are preliminarily broken by controlling pH and reaction temperature, etc. Organics thus released are hydrated and oligomerized with those metallic-organic complexes through sol-gel process to form a more densified but better oxidizable

conditioning, loosely flocs suspension within sludge can be broken and riddled, as adjustment of static potential and pH reconstruct granules via precipitation and complexing to form self-assembled microstructures. Upon adding cell lysing reagent and further sol-gel processing to excrete water out of cells, more densely spatial microstructures are thus formed. Those excreted and interstitial water are discharged through homogeneously constructed microchannels upon consequential press filtration.

Fed into the high pressure membrane type filter press, microstructures and slurry phase of sludge is well reduced thus improving dewatering performance of the consequential press filtration to reduce water content of sludge from 80~98% down to 40 ~ 60%. The output volume or mass of final sludge cake can be therefore reduce no less than 50% as the filtered sludge cake still contains dry-base heat value of 2000~3500 kCal/kg, of which can be further utilized as resource regeneration such as environmental construction materials or substitute fuels.

## 2. Purpose

(1) Especially useful for conditioning and dewatering of sludge containing massive organics and micro-biologics

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## Sludge Treatment and Recycling Equipment

### Sludge Drying Equipment

nano-ceramic like microstructure.  
Upon high-performance mixing and

- (3) Dewatering and conditioning of residual biologic sludge out of variety of industrial sewage
- (4) Further reduction of sludge volume prior to disposal, reclamation or landfills.

### 3. Features

- (1) Enhancement of cell-wall breaking treatment.
- (2) Continuous sludge treatment in automation with ease to manage and maintain.
- (3) Automated operation to pre-diagnose variety of sludge and accordingly deploy different reagent addition sequences, timing and dosages via built-in microcontroller algorithm.
- (4) Massively reducing usages of expensive flocculent yet to obtain better flocculation outcome of conditioned sludge.
- (5) No significant increase on absolute dry sludge in tot.

### 4. Specifications and Functions

- (2) Dewatering and conditioning of municipal sewage sludge.
- (6) Automated high pressure membrane-type filter press resulting to increased sludge cake production at lower water content, as well as reducing batch operating times of filtration and pressing.
- (7) Sludge cake upon in-depth dosing and high pressure filter pressing subjective to drying by natural ventilation or variety of dryers due to better volatility
- (8) In-depth dosing module of this system is authorized by Greenway Environment Technology Corp. to assemble and distribute in Taiwan, of which the proprietary technology has been successfully demonstrated and commercialized in Asia.

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## Sludge Treatment and Recycling Equipment Sludge Drying Equipment

Sludge on dry basis ( kg / d-24h )		2000	4000	6000	9000	15000
In-depth dosing mixer	type	CMDS-A-05	CMDS-A-10	CMDS-A-15	CMDS-A-25	CMDS-A-40
	dimension, mm,L*W*H	1,600 × 2,250 × 2,300	2,000 × 2,250 × 2,300	2,200 × 2,250 × 2,300	3,000 × 2,250 × 2,300	4,600 × 2,250 × 2,300
	power rating, kw	9	11	19	26.4	36
High pressure membrane type filter press	type	CK - FP100 – 35 APP	CK – FP 100 – 71 APP	CK – FP 125 – 65 APP	CK – FP 125 – 91 APP	CK – FP 125 – 81 APP*2 台
	filtration area, m <sup>2</sup>	53	109	153.6	216	384
	chamber volume, L	750	1,545	2,624	3,690	6, 560
	dimension, mm,L*W*H	5,720 × 1,500 × 2,280	8,220 × 1,500 × 2,280	8,620 × 1,790 × 2,780	10,630 × 1,790 × 2,780	9,860 × 1,790 × 2,780 × 2 台
	power rating,kw	8.6	9.3	11.2	12.7	22.5

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# DEHUMIDIFICATION SLUDGE DRYER

## 1. Structure and Principle

(1) There are batch type and continuous type. Batch type is suitable below 1.5 ton/batch, operating time is 10~11 hours /batch. The operation is automatic for wet sludge inputting and dry cake discharging. Continuous types are 6-10 layers of perforated plates operating continuously in the drying oven. The plates carry sludge of the same thickness, over which dry, hot air is circulated. Circulating this air causes the water content of the sludge to evaporate. The resultant high-humidity air is then cooled with the refrigerant, allowing its water content to be removed. This achieves the goal of drying sludge at lower temperatures than conventional dryers.

## (2) Principle

- A. The DHD Dryer operates by forcing phase changes of water. First, the liquid water in the sludge comes in contact with dry air. The difference in water concentration causes water to transfer from the sludge to the dry air, which then becomes wet air. Cooling down the wet air causes the water molecules to condense into liquid water which is then separated from the air. The wet air is thus dry again and is recirculated to further dry the sludge.
- B. The refrigerant is easily compressed or vaporized, and has a high latent heat. Thus, the DHD Dryer uses vapor-compression refrigeration to remove water from this wet air, as illustrated in the diagram at right. Once the air has been dried, it is then reused to continue the sludge DHD process. Excess heat from the refrigerant is also recycled in the system to heat the dry air.

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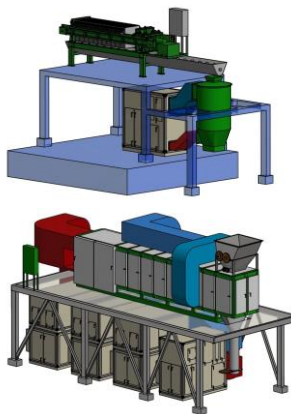
### 3. Purpose

- (1) Drying for organic sludge.
- (2) Drying for inorganic sludge.

### 4. Features

- (1) Lower temperature operation: There is no risk of starting a fire. Noxious odors are also minimized because the metabolic activity of microorganisms in the sludge is inhibited at this temperature.
- (2) Closed-loop system: There is no need for exhaust ventilation, which limits volatile organic compounds (VOC) and noxious odors.
- (3) Fully automatic continuous operation: Reduces labor costs.
- (4) Patented high efficiency plate conveyor: This conveyor design is able to carry sludge on both the outgoing and return directions each loop, which reduces the filling height of sludge and allows it to dry evenly. This also increases the drying rate of the sludge by increasing available surface area for evaporation.
- (5) Easily scalable: The number of dehumidifiers can be easily changed, allowing fine control of the sludge's water content as desired.
- (6) Energy efficient: The DHD Dryer uses a high efficiency heat pump, so average power consumption for drying is only 0.4-0.7 kwh per kg of H<sub>2</sub>O removed
- (7) High-quality industrial design: Anti-corrosion components provide a long lifetime for internal mechanisms and are also easy to maintain. The DHD Dryer is also very clean and will not dirty its surroundings.

### 4. Product Photo



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# AVACUUM DRYER FILTER PRESS

## 1. Structure and Principle

Sludge Dryer :

Sludge is pushed into filter centre via the high-pressure pump to filter and compress, squeezing out about 60~70% water content at this stage. Then, the pump compresses again through the air film (this process is same as conventional filter); heat is introduced for indirect heating to the sludge in the vacuum state until dry (water content under 35%); after the treatment, sludge cake can be removed from the filter neatly without sticking. The course of process for each batch takes 6~8 hours.

## 2. Purpose

Sludge drying for semiconductor, electroplating, dye manufacturing or other chemical sludge drying; sludge treatment for water purification plant, reservoir silt treatment, building sludge, tunnel engineering debris, manufacturing raw material hydrating and drying, food industry and steel mills, metal surface treatment industry, electronics, PCB, active sludge and bio-sludge, etc.

## 3. Features

- (1) Dehydrating + Vacuum + Drying Three – in – One.
- (2) Water Content from 99% to 30% below with one machine.
- (3) Recycled steam with 2 ~ 3 kg / cm<sup>2</sup> is available.
- (4) Efficiently saving running cost.
- (5) No Air pollution.
- (6) Patent Certificated in China & Taiwan.

## 4. Product Photo



## 5. Specifications and Functions

Model	Unit	PAH-15	PAH-20	PAH-30	PAH-40	PAH-50	PAH-60	PAH-70	PAH-80
Plate No. of filter	Plate	15	20	30	40	50	60	70	80
Area of filter	(m <sup>2</sup> )	36.3	48.4	72.6	96.8	121	145.2	169.4	217.8
Capacity	(L/cycle)	450	600	900	1,200	1,500	1,800	2,100	2,400

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# V-SHAPED DRYER

## 1. Structure and Principle

- (1) After the object is placed in the drying chamber, it is completely sealed. The vacuum pump is strongly attracted to the rear of the process. After the volatile gas passes through the filter, it is cooled by the heat exchanger and discharged into condensed water. The remaining small amount of gas can be directly discharged or reprocessed.
- (2) It is a vacuum dryer that reduces the evaporation temperature of water and improves drying efficiency.
- (3) It is a V-shaped agitating dryer. The main body is provided with a jacket, which can inject auxiliary heat source such as hot water or steam or low-temperature cooling water.
- (4) It is a conical spiral dryer. It has a rotating spiral and a revolving arm inside to drive and close to the inner surface for continuous rotary motion. The screw machine makes the objects from bottom to top and stirs each other to produce a uniform mixing effect, and the water is easy to evaporate.

## 2. Purpose

- (1) It is a sludge dryer and can process water up to 10% or less.
- (2) It is a homogeneous mixer of raw materials, with the functions of drying, dehumidification and cooling.
- (3) The sludge, bean dregs, tea residues, peeling residues, and Chinese medicine residues from food factories are dried and reused.

## 3. Features

- (1) It is treated by a vacuum sealed dryer, and the outside air cannot enter, so the exhaust gas is discharged less.
- (2) Treated by vacuum sealing, taste and dust will not leak.
- (3) Batch operation mode, saving manpower.
- (4) Discharge once after drying.
- (5) Dry matter has high moisture content and can be operated
- (6) Special transmission structure, so it is durable.
- (7) Maintenance and cleaning is easy.
- (8) Dryness can be adjusted.

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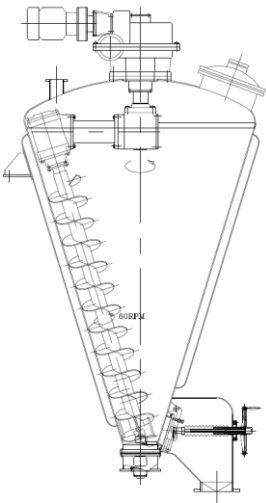
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4. Specifications and Functions

Model	Capacity	Power	Body Size (mm)	
	Lit/Batch	HP	Diameter	Height
NVD-07	700	2+ 5.0	1,362	3,583
NVD-10	1,000	2+ 5.0	1,650	4,485
NVD-15	1,500	2+ 7.5	1,800	4,970
NVD-20	2,000	3+ 7.5	1,930	5,735
NVD-40	4,000	3+ 7.5	2,255	6,200
NVD-50	5,000	5+ 10.0	2,369	6,363
NVD-60	6,000	5+ 10.0	2,416	7,048
NVD-70	7,000	5+ 15.0	2,889	7,740
Remarks: dryer body can be sold separately				

5. Product Photo



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# ROLLING DRYER

## 1. Structure and Principle

- (1) It is a steam-heated dryer that uses steam as a heat source to inject into the metal roller of the dryer and conducts heat quickly to the surface of the roller
- (2) It is a roller dryer(or drum dryer) that feeds the object continuously into the upper part of the roller for preheating, and after being rolled by two rollers, the attached surface is heated and dried.
- (3) After a few seconds, it is dried and turned into a powder or flake shape. The scraper on both sides of the roller will scrape it off and continue to be discharged by the conveyor. '
- (4) Evaporate the water and then enter the scrubber for treatment before discharging

## 2. Purpose

The use of various substances to reduce moisture, reduce weight, reduce capacity, recycle, and process.

- (1) Drying and reduction of various types of wastewater sludge.
- (2) Concentration treatment of sodium salt solution.
- (3) Drying and solidification of sodium salt solution.
- (4) Distillation of waste solvent..
- (5) Solidification of waste solvent

## 3. Features

- (6) Drying of feed and distiller's grains.
  - (7) Drying of viscous liquids, high-concentration wastewater, mud and suspension.
  - (8) The drying of other substances has a wide range of uses
- (1) Treated by low temperature physical method, stable quality.
  - (2) Drying can be completed in a short time, the moisture content can be as low as 5%.
  - (3) Continuous operation.
  - (4) It can be used for objects with high water content and high viscosity.
  - (5) The heat exchange efficiency is very high, about 70 ~ 90%, which can save operating cost.
  - (6) The roller mash embodiment, the machine durable.
  - (7) The object is pressed into a thin sheet by means of a roller, and the machine is durable.
  - (8) Dryness can be adjusted.
  - (9) Large processing capacity,

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4. Specifications and Functions

model	Capacity (kg/hr)	Body size (mm)		
		L	W	H
RD-400	400	4,700	3,600	2,800
RD-600	600	5,500	4,300	3,200
RD-800	800	6,500	4,700	3,700
RD-1000	1,000	7,000	5,000	4,500
Remarks: The dryer body can be sold separately.				

5. Product Photo



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# Overview of Air Pollution Control Equipment

Air pollution presents as the pollutants of dust, fume, particle, gas, mist, odor, smoke, vapor, etc., affects the human, animal and plant, damages our living environment.

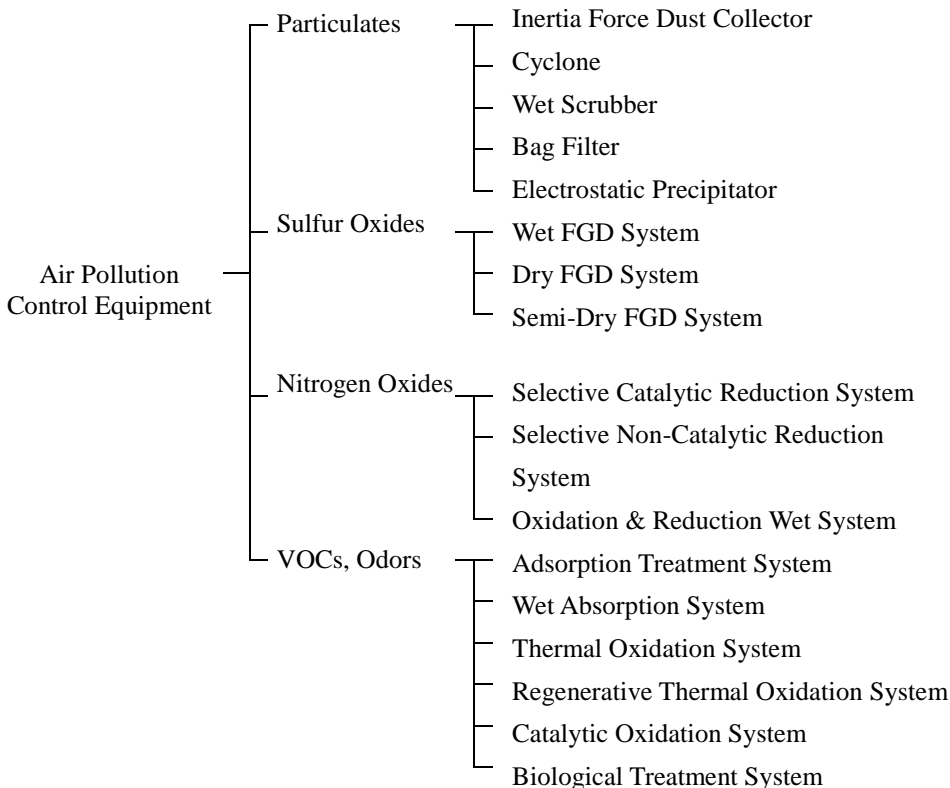
Air pollutants consist of particulate and gas phases. The latter includes VOCs,  $\text{SO}_2$ ,  $\text{SO}_3$ ,  $\text{H}_2\text{S}$ ,  $\text{CS}_2$ ,  $\text{NO}$ ,  $\text{NO}_2$ ,  $\text{CO}$ ,  $\text{Cl}_2$ ,  $\text{HCl}$ ,  $\text{HF}$ , etc. The five primary pollutants are carbon monoxide ( $\text{CO}$ ), nitrogen oxide ( $\text{NO}_x$ ), hydrocarbon ( $\text{HC}$ ), sulfur oxide ( $\text{SO}_x$ ) and particulate.

## I、Air Pollution Control Technology

Improper use of fuel, material, and process will result in air pollution. Thus, correcting the improper at the source is the simplest and best way to solve air pollution problem. If the cause of air pollution cannot be avoided, then the control equipment must be used to purify the polluted air. Figure 1 shows the normal practice of air pollution control technology and equipment.

The treatment methods of particulate, sulfur oxide, nitrogen oxide and volatile organic compounds are described as following:

1. Particulates : Pollutants can be removed by physical functions such as inertia force, filtration, washing and electrostatic dust collecting equipment.
2. Sulfur Oxides : They can be treated and recovered by chemical processes such as neutralization and oxidation. The feasible processes include wet, dry and semi-dry methods.
3. Nitrogen oxides : They can be removed by reduction or oxidation reactions to form non-toxic nitrogen or nitrates.
4. VOCs & Odors : They can be removed by absorption, adsorption and thermal oxidation.



**Fig. 1 : Air Pollution Control Technology and Equipment**

## **II 、Description of Air Pollution Control Equipment**

### **1. Dust Collecting Equipment**

Dust collecting equipment is well-developed in Taiwan, has been widely applied to all industries. The products include bag house, cartridge filter, wet scrubber, electrostatic precipitator, cyclone, etc.

### **2. De-SO<sub>x</sub> System**

The flue gas desulfurization system (FGD) can be classified as wet, dry and semi-dry methods.

The wet FGD method is widely applied. Sodium hydroxide is

used to react with  $\text{SO}_x$  to form by-products such as sodium sulfate.

The dry FGD system is to inject dry powder to react with  $\text{SO}_x$ . The reacted product can be collected by a bag house or ESP.

The semi-dry FGD system uses calcium or sodium hydroxide to remove  $\text{SO}_x$ . The agent solution mist is injected into the flue to react with  $\text{SO}_x$ . The flue heat will evaporates all the water, dry sodium or calcium salts are collected by a bag house or ESP.

### **3. De- $\text{NO}_x$ System**

Except oxidation/reduction wet method, mainly are Selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR) methods. SNCR method injects  $\text{NH}_3$  to convert  $\text{NO}_x$  into  $\text{N}_2$  and  $\text{H}_2\text{O}$  at high temperature. The SCR method has an additional catalytic so that the reaction can proceed under a lower temperature of  $250\sim 400^\circ\text{C}$ . Materials such as Pt, V and Ti in the form of pellet, cylinder, sphere, ring, plate and honeycombs are used as the catalyst. Normally the catalyst should be replaced every 2 to 4 years.

### **4. Volatile Organic Compounds Treatment and Recovery System**

The “Adsorption” is an operation to use the surface reactive capability of materials, such as activated carbon & zeolite, to capture certain substances from a gas stream. It is cost-effective to remove selected pollutants from waste gas until the absorbent is saturated. Adsorption is advantageous for treating low concentration gaseous pollution such as VOCs and odors.

The adsorption equipment can be designed as a rotary concentrator. It adsorbs pollutants and recovers high concentration stream by a hot air, then send to thermal oxidizer to destroy the VOCs completely.

The VOCs can be destroyed to  $\text{CO}_2$  and  $\text{H}_2\text{O}$  completely at certain high temperature. The direct thermal oxidizer (TO) is an



effective way, but consumes large amount of fuel. So it is available for high concentration VOCs.

A regenerative thermal oxidizer (RTO) utilize ceramic materials to recover the heat of oxidized hot air, is an advantage of energy saving.

A catalytic oxidizer (CO) can low down the oxidation temperature, is the most effective for energy saving. But the catalyst needs to renew periodically.

The exhaust of VOCs is an important factor of air pollution and global warming. As a fact VOCs is also a heat resource itself, how to solve the VOCs pollution problem and recycle its heat energy are very important to our industry.

## **5. Fan & Blower**

Fan and blower are classified depending on their pressure ability, mainly used on industrial ventilation, waste air exhaust and material conveying. They are necessary and important equipment for air pollution control process. The manufacturers have sufficient technic for low/medium/high pressure and even vacuum products. The structure materials include carbon steel, stainless steel, cast iron, anti-abrasion steel, PP, FRP, etc.

# Overview of Noise Prevention and Control Equipment

Noise is a sound wave of irregular frequency and incompatible pitch that irritates those who can hear it. Manufacturing plants can easily produce so much noise to lower the environmental quality of the surrounding areas. Further, in addition to adversely impacting the efficiency of those working in the plant, the noise will also damage the workers’ hearing. Thus, noise prevention and control is a serious concern. Sources of industrial noise are shown in Table 1.

Table 1: Typical Sources of Industrial Noise

Category of Noise	Typical Examples
Incineration process	Furnaces
Impact process	Hammer
Electrical equipment	Motor, generator
Gas flow	Intake, jet, emission
Contact between metals	Gear set
Fluid flowing in confined spaces	Wind pipe, water pipe, valve
Contact between flowing fluid and metal surface	compressor, fan, pump

## I 、Strategies for Preventing and Controlling of Noise:

There are three strategies for preventing and controlling of industrial noise.

1. Improvement and control of noise sources.
2. Alteration of the noise paths.
3. Modification of the noise receiver’s behavior.

## **II 、 Domestic Equipment Frequently Used for Noise Prevention and Control**

Methods commonly used for preventing and controlling noises include: mufflers, muffling boxes (ditches), noise control panels and installing noise control wall (screening or curtain) as explained in the follows:

### **1. Installing Mufflers:**

Based on adsorption, reflection and interference of sound waves, the muffler is used to reduce noise. It is mostly installed in emission pipes, exhausting pipes and pressure relief pipes to reduce the noise caused by high-speed gas exhausted from compressors, generators and pressurized tanks. The muffler is made of steel plate as a diffuser to disperse the kinetic energy of a gas stream emitted from a chamber, hole or intake. It consists of parallel plates, center column or holes to absorb the high-pitch frequency waves of the noise for achieving noise reduction.

### **2. Installing Muffling Box (Ditch) or Panels**

Muffling boxes (ditches or panels) apply the same principle as mufflers to reduce noise but they are used in large emission pipes or where it is inconvenient to stall mufflers. Using this method, the gas velocity in either internal pipes or near the exhaust exit must not exceed 15 cm/sec to avoid the secondary noise problems caused by high gas flow velocity. Generally, this type of equipment will reduce noise of more than 10 dB depending the material and area of internal noise absorbent.

### 3. Installing Noise Reduction Wall (Panel or Screen)

This method depends on installing an obstacle between the noise source and the receiver to increase the noise transmission path and energy consumption for achieving noise reduction. Generally, the noise reduction wall will reduce 5 – 15 dB noise with a maximum of 25 dB. The noise reduction efficiency depends on the height and the material as well as method of installation of the wall installed.

There are a few domestic companies specialized in manufacturing noise prevention and control equipment such as noise reduction plate glass, noise reduction boxes, noise reduction doors and mufflers being the major products.

# CONDUCTION WET SCRUBBER

## 1. Structure and Principle

This system uses the original power from various air exhaust systems to treat waste gas and dust in pollutants. It has the function of sedimentation, collection, filtering, and dust removing.

## 2. Features

- (1) The rear part of the exhaust does not need additional power supply.
- (2) Independent gas outlet for individual pollution source; no back-flow or cross Contamination.
- (3) Pressure loss is under 15mmAg.
- (4) The air outlet of multi-set pollution source is available to build only one set of exhaust chimney.
- (5) Suitable for use with an exhaust system pollution control for various circles.
- (6) Easy to inspect; low cost.
- (7) Saving energy cost.

## 3. Specifications and Functions

Material quality : PP, PVC, SUS304, galvanize, SS400 depends on the waste spirit established rule.

## 4. Product Photo



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# ELECTROSTATIC TYPE OIL MIST ELIMINATOR

## 1. Structure and Principle

By making use of the principle of attraction between positive and negative electrodes, this system creates a electromagnetic field to collect oil mist or ionized granules. This system can be used to remedy problems caused by pollution and achieve the purpose of air purification. Oil mist eliminating rate can reach up to 95~99%.

## 2. Purpose

Palm oil refining industry, dyeing industry, oil production, glass industry, paper pulp, incinerator, food, paper-making, chemical industry, heat treatment processing industry.

## 3. Specifications and Functions

Material quality : SUS304, SUS304L,  
SUS316, SUS316L  
galvanize the  
material quality.

Processes waste spirit : 10 ~ 2,000  
cmm.

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# OIL MIST ELIMINATOR

## 1. Structure and Principle

After oil mist enters into the filtering equipment, it then goes through the primary, intermediate, and high performance filtering layers for filtering for separation of different substance. As soon as the warning indicator is activated by the pressure gage at the filtering net, the filtering element is required for replacement.

## 2. Purpose

Screw, Steel rolling, metallic surface processing, chemical industry, and electronic industry.

## 3. Features

Varied Processing for constant temperature oil mist.

## 4. Specifications and Functions

10 ~ 2,000 cmm.

## 5. Product Photo



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# PULSE JET BAG FILTER

## 1. Structure and Principle

After dusty air gets through the sedimentation chamber for even distribution of the airflow and after pre-filtering, the filter bag enabling dusts to adhere to the dust tube and create dust cakes filters the dust. Then, by compressing against high-pressure air, dust is vibrated to fall behind the dust hopper through air spray reversed scrubbing; dusts then pass through the screw conveyor and rotary valve and are discharged and collected.

## 2. Purpose

Asphalt mixing, burning, incinerating, lumber industry, chemical engineering, pharmacy, and electronic industry, etc. processing to collect dust for recovery and delivery treatment.

## 3. Specifications and Functions

- (1) Outer covering material quality : SUS304, SUS316, galvanized sheet, SS400.
- (2) Filter material : Varies according to the types of pollutant. Choices can be made to suit the needs.
- (3) Process load : designed for varied demands
- (4) Processing efficiency : May reach above 99.8%.

## 4. Product Photo



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# NON-PUMP WET EXHAUST TREATMENT EQUIPMENT

## 1. Structure and Principle

Non-Pump Wet Exhaust Treatment Equipment consists of a tank, gas induction stopper, spray neck, flow stirrer, dewater stopper, liquid surface adjuster, overflow surface adjuster, and discharge valve (electric, pneumatic or manual). This system can be further fitted with essential auxiliary equipment for pollutants with various physical properties.

Gases containing dust are inducted into the system. As the induction stopper keeps a small channel from the liquid surface, the exhaust passes through the neck at high speed; the centrifugal force then causes considerable splashes, forming swirls, and the impact of massive moisture on the stopper produces collision to drive dust-carrying air to rise rapidly from the bottom to mix with liquid and flush up and down to derive extremely high filtering efficiency. After which, the purified air sputters with water droplets and, upon colliding on the dewater stopper, separates into air and water. The water is then completely captured and only the air is released. In the case of drastic gas flow fluctuation, the overflow adjuster of the water-level adjuster may be used to maintain the

## 2. Purpose

This equipment processes water soluble (hydrophilic) gases, Liquid format micro-particles, Solid particles, and odors.

## 3. Features

- (1) The equipment is capable of processing high temperature and moisture containing gases.
- (2) Reasonably priced, this ideal gas and liquid mixture washing device offers excellent exhaust capturing, yielding over 95 % capture rate for 3 – 5  $\mu$  micro-particles.
- (3) The device requires no pump and relies on fan to drive gases through the passage and centrifugal force for designation of moisture; the spacious interior enables easy maintenance and inspection.
- (4) Small pressure loss ( 150 mmAq ), nearly no wear parts to save operating cost.

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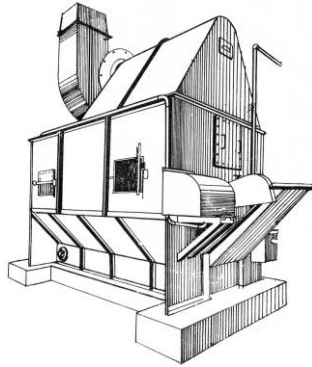
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dust-gathering function.

#### 4. Specifications and Functions

- (1) The body of the equipment is made to accommodate high-temperature gases, which is made of SUS 304, 316, 316L grade stainless steel, SS400 rustproof treaed and spray painted; Applicable for acidic, alkaline chemical exhausts, PP, PVE, PE.
- (2) The filler material may be SUS304, PP, or PVC according to the exhaust's physical properties.

#### 5. Product Photo



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## PULSE SPRAY-TYPE FABRIC FILTER

### 1. Structure and Principle

This equipment consists of a filter unit, collection funnel, ash discharge system, filter system, and dust spray-off system.

- (1) The filter unit must have sufficient pressure resistance capacity and weight-bearing capacity to keep the fabric filter and Venturi pipe frame from deforming.
- (2) The collection funnel is designed according to particular dust properties; the rest of the corners may not be lower than the angle of the lowest flow, and the unit is fitted with a maintenance hole.
- (3) Ash discharge system consists of a rotating release valve or spiral conveyor and can be used independently or combined according to particular dust properties. Discharge is continuous to deter deposit accumulation.

The filter system is fitted with choice of fabrics according to exhaust properties; when particles of certain diameter pass through the filter, larger particles will move along inertia conflict and smaller particles will disperse and attach to the fabric

(4) While forming particle bridges between threads, an attachment layer with numerous tortuous micro-pores is also formed. Generally the empty-space rate is around 80-85%, and these micro-pores serve to capture micro-particles.

(5) Dust spray-off system : As the name informs it relies on the instant spray force of high-pressure air to bring large air volume into the fabric filter via the Venturi principle for the filter surface to vibrate and consequently shake off the dust caked on the filter surface.

When passing through the filter, the air carrying the dust leaves dust on the exterior of the fabric filter. For constant filtering wind volume and pressure difference, every filter must be continuously washed. This system is equipped with compressed air reverse wash. The fitted magnetic valve is controlled via an electronic sequencing circuit, which is triggered at preset intervals and operates the film. Once the film is opened, the compressed air jettisons in the pipeline fitted at the top of the fabric filter loosens the dust or dust bits attached to the outside of the filter

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threads.

## 2. Purpose

Recycling processing containing dust waste gas.

## 3. Features

- (1) Maximum dust removal efficiency.
- (2) Minimize requirement of power equipment to cut operating and maintenance costs.
- (3) Reduce filter size.
- (4) Elevate filtering speed.
- (5) Greater processing capacity, maintaining nearly consistent processing capacity.
- (6) Reduce filter wear and tear to enhance effective filter lifespan.
- (7) Widely applicable in dust producing operations.

into the catcher.

## 4. Specifications and Functions

The unit and support materials are SUS304, 316, 316L grade stainless steel, or SS400 rustproof treated then stray painted. The filter frame is made of SUS304 or 316 grade stainless steel.

The filter fabric is selected according to particular dust's physical properties and exhaust temperature.

## 5. Product Photo



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# STATIC FILTER

## 1. Structure and Principle

This static filter employs the polarity theory of attraction between opposite electrodes and electromagnetic fields of two opposites electrodes created by imposed high pressure. Columbic force charges dust particles, which are sucked by wind to attach to the collection sheet and achieve the purpose of air purification.

The static filter can be low pressure or high pressure. In the design, the properties of dust and smoke must be taken into account, and, where necessary, a preliminary filter may be fitted at the inlet and a high-performance filter or deodorizer may be fitted at the outlet.

- (1) Filter may be manually removed for cleaning.
- (2) This equipment is fitted with an auto-cleanser.
- (3) This equipment is fitted with a timed pounding system for pounding.

## 2. Purpose

The equipment may be used for treating powder dust, ashes, smoke ashes and smolder produced in the process of manufacturing.

## 3. Specifications and Functions

The equipment is made of SUS304 or SS400 grade materials.

Standard Equipment :

- (1) Static filter housing.
- (2) Support frame.
- (3) Suspension system.
- (4) High-polarization structure.
- (5) Ash silo.
- (6) Ash discharge system.
- (7) DC HV power supply device (HV producer).
- (8) HV switchgear.
- (9) HV insulation.
- (10) Spray wash system (or dust pound-off system).

## 4. Features

- (1) Power supply for this equipment is in SCR format. It is equipped with voltage, current and frequency adjustment controls for easy operation.
- (2) The control console employs a separation transformer to prevent stray signal from interfering with the electronic circuit.

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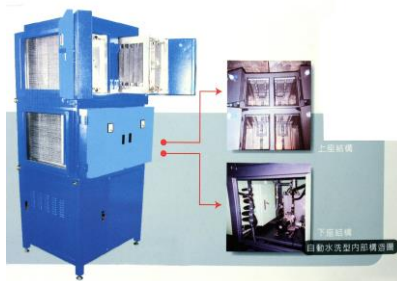
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- (3) It is designed with an output detection circuit , which automatically cuts off power if no output voltage is detected after 10 seconds from startup.
- (4) The auto voltage adjusting circuit is capable of detecting sparks. when sparks are detected, the voltage is reduced.
- (5) The design of the multiple section sheet and pipe-type long-distance dust and smoke collection enables over 98% of efficiency.
- (6) The equipment requires minimum power to operate and minimizes wind resistance.
- (7) The distance between the collecting electrode and the discharge electrode is designed according to the physical properties of target dust particles to increase the efficiency of dust capture while reducing powder attachment to the discharge electrode.

- (8) The airflow at the inlet is evenly distributed to reduce dust dispersion caused by uneven load.

## 5. Product Photo



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# CARTRIDGE DUST COLLECTOR, BAG HOUSE

## 1. Structure and Principle

Utilize a specially designed “Jet-Deflector” cartridge filter to enhance dust release and reduce housing size. The fine dust will be fully collected when dust-laden air enters through the cartridge filter. There is a sedimentation chamber and flow distributor at the air inlet to separate large and heavy particles, ensuring a longer bag life.

## 2. Purpose

For all kinds of dust need to be collected..

## 3. Features

- ( 1 ) Cartridge Filter Enlarges Filter Area by 7 Times.
- ( 2 ) Inside Jet Deflector Enhances Dust Release, No Dust Clogging.
- ( 3 ) Fine Separated Cartridge Pleats, No Dust held up.
- ( 4 ) Unity of Filter with Jet Deflector and Venturi Tube, Easy for Installation and Maintenance.
- ( 5 ) Equipped with Sedimentation Chamber and Flow Distributor, Can Handle High Dust Laden Air and Large Particles.

## 4. Product Photo



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# CENTRAL VACUUM CLEANING SYSTEM

## 1. Structure and Principle

Utilize small-size pipe work, can easily clean up the factory area, work shop, clean room, machine room, even office.

Simply insert the vacuum pipe nozzle into the wall-mount or floor-mount socket, then cleaning job can be operated.

The pressure resist dust collector and vacuum blower can be located outside the area for easy maintenance.

## 2. Purpose

For cleaning of floor, table, machine, clean room, and others. Also available for powder pneumatic conveying.

## 3. Features

- ( 1 ) Small size piping, easy installation for all kinds of working place.
- ( 2 ) Standard pipe nozzle attachments for easy cleaning job.
- ( 3 ) Powerful vacuum for exact cleaning.
- ( 4 ) Offer low noise design for special location.

## 4. Product Photo



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# VACUUM DUST COLLECTOR SYSTEM

## 1. Structure and Principle

Specially designed for PC Board Drill and Router machine. This central vacuum dust collector is equipped with:

- (1) Vacuum piping with static pressure control.
- (2) Pressure-resist cartridge dust collector.
- (3) Double flap dumping valves.
- (4) Low noise vacuum blower.

Auto control, anti-static, continuous dust discharge for 24 hrs/day operation.

## 2. Purpose

- (1) Vacuum dust collector for PCB' drill, router, and cutting process.
- (2) Central vacuum dust collector for other processes.

## 3. Features

- (1) Well piping designed, good flow distribution, no clogging.
- (2) Accurate static pressure control extends equipment' life.
- (3) Available for central control of multi-exhaust.

(4) High efficiency “Jet Amp Cartridge Filter” enlarges filtering area and enhances dust release.

(5) Compact design, save space.

(6) Easy installation and maintenance.

## 4. Product Photo



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## AIR-SPRAY FABRIC FILTER

### 1. Structure and Principle

Particle-carrying air is channeled via the upper part of the machine to meet with the baffle plate; the high velocity of which causes the flow to change direction. This process separates particles into various grades: coarser particles fall directly into the silo whereas the finer ones adhere to the fabric filter to achieve particle screening. Particles adhering to the fabric filter are shaken off via a high-pressure air jet, and air passed through the filter is channeled through the filter's ultra Venturi to the upper part of the machine for release by the fan.

### 2. Purpose

Gathering dusts from general powder dusts, and dust filtering for conveyors, casting operations, cement plants, steel plants, ceramic and chemical engineering materials, food industry.

### 3. Features

- (1) Ultra Jet Venturi is adopted for high-pressure air jetting to shake off dusts at an instant and deter dust from depositing to ensure optimum filtering efficiency.
- (2) Instant spray-off method translates to fixed pressure loss and less wind fluctuation for high efficiency.
- (3) Filter replacement is done from the top access, which enables easy, convenient inspection and replacement.
- (4) Filter replacement by a snap ring enables easy replacement and excellent sealing during operation.
- (5) The cycle time required is 1/10 of regular dust filter system.
- (6) High-performance solid-state tube ensures stable control for optimal performance.
- (7) Especially suitable for cleaning air of high particle concentration.

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#### 4. Specifications and Functions

Housing material : carbon steel      Fabric filter : polyester, etc.

Model		UDC-86PR	UDC-8PR	UAC-812PR
Screen Space ( m <sup>2</sup> )		86	130	173
Filter Pipe ( pcs )		48	72	96
Air Valve		6	9	12
Discharge Motor		0.4kw×4p×1set		
Machine Dimensions ( mm )	A	1,330	2,042	2,654
	B	2,113	2,113	2,113
	C	8,220	8,370	8,720
	D	4,100	4,100	4,100
	E	3,120	3,270	3,620
	F	1,000	1,000	1,000
Air Consumption		120 L/min	180 L/min	240 L/min

#### 5. Award (Certified) Items

- ( 1 )    The product meets with Japan Environmental Protection Association's  
          "Certification" 0064 and 0065 standards.
- ( 2 )    The product is TUV certified under No. 41008253 (ISO900 : 2000).

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# ANTI-EXPLOSION BUBBLE FILTER

## 1. Structure and Principle

- (1) This equipment utilizes washing and centrifugal force to capture particles in the dust-carrying air. When air passes through the S tank and mixed with water, the mixture is then sucked out by the exhaust fan.
- (2) The equipment is designed with a safety device and engineered against explosion.

## 2. Purpose

- (1) Foundries : particle filtering for aluminum alloy and magnesium alloy casting.
- (2) Petrochemical plants : pharmaceutical manufacturing.

## 3. Features

- (1) Low operating cost.
- (2) Minimum pressure loss brought by air flow fluctuation.
- (3) Simple structure makes it easy for inspection and maintenance.

## 4. Specifications and Functions

Model		BDC-3N	BDC-5N	BDC-7N	BDC-50N
Power Supply		220V 50/60Hz	220V 50/60Hz	220V 50/60Hz	220V 50/60Hz
Fan Motor		2.2kw×2P	3.7kw×2P	5.5kw×2P	37kw×2P
Wind Volume ( m <sup>3</sup> / min )		30	50	75	500
Static Pressure ( pa )		2,450	2,450	2,450	2,450
Tank Capacity ( L )		900	1,000	1,400	5,500
Outlet No		1 outlet	1 outlet	2 outlets	11 outlets
Pressure Release Outlet No.		3 outlets	3 outlets	3 outlets	11 outlets
Equipment Dimension	A ( mm )	800	1,000	1,400	4,420
	B ( mm )	613	689	789	2,200
	C ( mm )	Ø 195	Ø 250	Ø 292	Ø 775

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# SMALL PULSE-SPRAY FABRIC FILTER

## 1. Structure and Principle

Upon exhaust input, the inner stopper will catch larger particles and deposit it into the the collector, meanwhile exhaust flow is rectified by the stopper to distribute waste-gas evenly outside of the filter, thus smaller particles in exhaust will be captured by the filter, screened, and air released and channeled to the upper gearbox and then released via the fan. The particles collected by the filter gradually accumulate to form cakes; the timer can be programmed to automatically open-air valve and introduce high-pressure air to instantly shatter the particle deposits into the bin below for dust removal.

## 2. Purpose

For particle filtering at foundries, mechanical shops, electronic factories, ceramic industry and petrochemical factories

## 3. Features

- (1) Equipped with a digital monitor for recording air volume and velocity data.
- (2) Minimum equipment space requirement for maximum filter space.

## 4. Award(Certified) Items

- (1) The equipment complies with Japan Environmental Association “Certification” registration No. 0064, 0065.
- (2) The equipment is TUV certified per No. 41008253 (ISO 9001 : 2000)

## 5. Specification and Functions

Houseing Material: carbon steel sheet. Filter Material : polyester, etc.

Model		FXII- 7PB	FXII- 15PB	FXII- 22 PB	FXII- 37 PB	FXII- 55PB	FXII- 75 PB	FXII- 110 PB
Power		3-phase exchange 220V/50Hz or 60Hz						
Output (kw)		0.75	1.5	2.2	3.7	5.5	7.5	5.5×2
Wind volume (m³/min)		10 12	10 20 25	15 30 40	20 40 55	30 60 80	40 80 100	80 120 140
Static Pressure (mmAq)	60Hz	252 242	274 265 240	280 260 230	275 265 250	300 280 250	320 280 250	285 270 240
	50Hz	246 230	265 260 240	280 260 220	290 280 250	280 260 240	295 280 263	272 260 228
Material		Polyester						
Space (m²)		9	13	20	26	40	52	74
Electrode Count		4	6	9	12	18	24	24
W (A) ×D (B) (mm)		550×550	650×650	770×770	900×900	1,300×900	1,700×900	1,700×900
H (H) (mm)		1,593	1,765	1,785	1,850	1,916	1,971	1,971
Collector Capacity (L)		20	25	25	45	40×2	35×3	35×3
Suction Aperture (D) (mm)		ψ125	ψ150	ψ200	ψ250	ψ300	ψ300	ψ400
Suction Position (c/m) (mm)		483/190	645/225	605/255	550/300	490/270	490/270	490/200
Compressed Air – Standard Consumption (NL/min)		15	20	20	35	40	70	80
Total Weight (kg)		170	240	320	400	500	600	750

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# SMALL OSCILLATING FABRIC FILTER

## 1. Structure and Principle

Upon exhaust input, the inner stopper will catch the larger particles and deposit it into the collector, meanwhile exhaust flow is rectified by the stopper to distribute waste-gas evenly outside of the filter, thus smaller particles in exhaust will be captured by the filter and screened, and air released and channeled to the upper gearbox before released via the fan. The fitted oscillator then shakes off the particle deposits into the bin below for manual removal.

## 2. Purpose

For particle filtering at foundries, mechanical shops, electronic factories, ceramic industry and petrochemical factories.

## 3. Features

- ( 1 ) High filter rate.
- ( 2 ) Require small space.
- ( 3 ) Easy operation.
- ( 4 ) Easy maintenance.
- ( 5 ) Low noise.

## 4. Specifications and Functions

Material: Housing made of carbon steel sheet.  
Filter made of silk cotton.

Model		EX II -400H	EX II - 750H/M	EX II - 1500H/M	EX II - 2200H/M	EX II - 3700H/M
Power		3-phase exchange 220V/50Hz or 60Hz				
Motor （kw）		0.4	0.75	1.5	2.2	3.7
Wind volume（m³/min）		5	10 22	20 25 30	30 40 45	40 50 60
Static Pressure mmAq	60Hz	280	258 245	280 270 250	265 250 238	270 260 250
	50Hz	195	250 235	265 260 250	280 260 245	290 275 245
Filter		Silk cotton				
W（A）×D（B）（mm）		450×531	524×524	624×624	775×775	775×775
H（mm）		740	1,280	1,380	1,740	1,740
Bin Capacity（L）		10	20	30	20×2	20×2
Suction Aperture（D）（mm）		φ 100	φ 125	φ 200	φ 250	φ 250
Suction Position（c/m）（mm）		273/185	630/160	630/164	348/224	348/224
Oscillation Motor		Manual	Manual 0.2kw	Manual 0.2kw	Manual 0.2kw	Manual 0.2kw
Colour		Paint 534				
Total Weight（kg）		48	110 125	155 165	225 235	235 245

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# PIPE FILTER SYSTEM

## 1. Structure and Principle

Upon receiving the exhaust, the interior stopper will capture and deposit coarser powders in the funnel. The passed-through gas is evenly distributed into various pipes before passing the fabric filter for capture of finer powders; clean air is then suctioned out via the fan to the stack for release. The collected powders gradually form into cakes. By using a timer, the valves are opened/closed as timed. When the valves are closed and the interior air is still, the fitted vibrator shakes the powders into the collection funnel.

Through this process, dusts in the chambers vibrate to shake off dusts along the automatic cycle. This process enables treatment of even the tiniest smoke haze. Finally, dusts are then released via the spiral conveyor and rotating valves.

## 2. Purpose

Recycle and collection of general powder dusts, foundries, cement plants, ceramic operations, petrochemical and food industries.

## 3. Features

Efficient shake-off for corpuscles.

## 4. Specifications and Functions

Model		TDC-10CR	TDC-15CS	TDC-20CS	TDC-25CS	TDC-33CS	TDC-44CS
Screen Space (m <sup>2</sup> )		102	150	200	249	332	440
Pipe No		144	216	288	216	288	384
Oscillation Motor		0.4kw × 3set	0.4kw × 3set	0.4kw × 4set	0.4kw × 3set	0.4kw × 4set	0.4kw × 4set
Pipe Chamber No		3	3	4	3	4	4
Dust Release Format	Valve only	1	-	-	-	-	-
	Conveyor + Valve	1	1	1	1	1	1
	Motor	0.4kw × 1set	0.75kw × 1set	0.75kw × 1set	0.7kw × 1set	1.5kw × 1set	1.5kw × 1set
Gate, Cylinder, Electromagnetic Valve		3set	3set	4set	3set	4set	4set
Machine Dimensions (mm)	A	2,143	3,157	4,225	3,927	5,235	6,678
	B	2,100	2,100	2,100	3,170	3,170	3,170
	C	3,520	3,590	3,590	3,590	3,590	3,590
	D	6,380	6,600	6,600	7,520	7,520	7,820

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Model		TDC-55CS	TDC-66CS	TDC-83CS	TDC-99CS	TDC-120CS	TDC-130CS
Screen Space (m <sup>2</sup> )		550	660	825	990	1,155	1320
Pipe No		480	576	720	864	1008	1152
Oscillation Motor		0.4kw×5set	0.4kw× 4set	0.4kw× 5set	0.4kw×6set	0.4kw×7set	0.4kw× 8set
Pipe Chamber No		5	4	5	6	7	8
Dust Release Format	Conveyor + Valve	1	2	2	2	2	3
	Motor	2.2kw×1set	1.5kw×1set	1.5kw×1set	2.2kw×1set	2.2kw×1set	1.5kw×1set
Gate, Cylinder, Electromagnetic Valve		5set	4set	5set	6set	7set	8set
Machine Dimensions	A	8,371	9,382	11,751	14,120	16,489	18,858
	B	3,170	3,170	3,170	3,170	3,170	3,170
	C	3,590	3,590	3,590	3,590	3,590	3,590
	D	7,820	7,820	7,820	7,820	7,820	7,820

## 5. Award (Certification) Project

- (1) The product meets with Japan Environmental Protection Association's "Certification" 0064 and 0065 standards.
- (2) The product is TUV certified under No. 41008253 (ISO9001: 2000).

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# ELECTROSTATIC PRECIPITATOR

## 1. Structure and Principle

Electrostatic precipitator applies the two opposite electric fields generated from high voltage to charge dust particles passing through it under the action of Column force, the charged particles then will move the electrode with opposite polarity and attach to the electrode plate and removed out from the airflow.

## 2. Purpose

When volatile or cracked oil forms oil fume, smoke or dust pollutant in industrial or cooking process and they pass through the electrostatic type smoke handling equipment (precipitator), over 90% or the pollutants can be captured effectively.

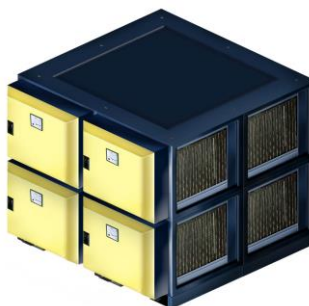
## 3. Features

Normal oil fog, smoke or dust particle dimensions are distributed within the range of  $0.01 \sim 10\mu\text{m}$ ; the electrostatic type smoke handling equipment (precipitator) can perform over 90% efficiency in pollutant particles capture. Since this equipment applies module design, able to be assembled by cascade or parallel combination, it thus can be applied to clean up flue gas under various airflows and concentrations.

## 4. Specifications and Functions

- (1) Particulates removing rate is above 95 % (electrostatic precipitator).
- (2) Scent filtering (scent-removing stone and active carbon).
- (3) Low noise generated (noise protection facility).

## 5. Product Photo



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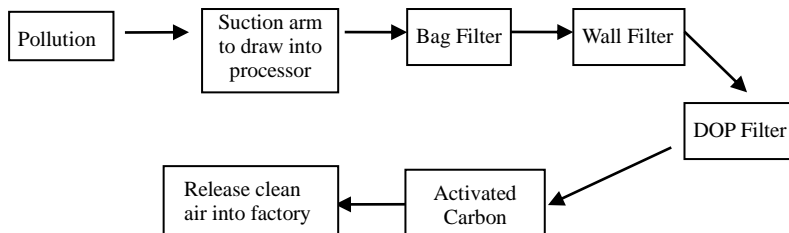
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# MOBIL AIR PURIFIER

## 1. Structure and Principle

The following chart illustrates the processing sequence for AW/AB lines.



## 2. Purpose

AW line is for processing general welding smoke.

AB line is for processing organic solvent odor, toxic gas, odor, smoke and particulates.

## 3. Features

- (1) Semi-auto reserve washing device offers simple operation.
- (2) Excellent purifying effecicacy capable of filtering 99.7 % strong of over  $0.2 \mu\text{m}$ .
- (3) Polluted air is sucked into the equipment via a high-speed suction arm to deter operator from inhaling bad air.
- (4) Specially designed filters are capable of screening off 99 % to  $0.3 \mu\text{m}$ , and also able to purify toxic gases and odors.

## 4. Specification and Application

- (1) Standard models.  
AW - 900. AB - 2,000 / 3,000.
- (2) Customised according to environment requires approximately one month for delivery.

## 5. Product Photo



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# OIL MIST CLEANING SYSTEM

## 1. Structure and Principle

- (1) Compact structure offers small but effective processing.
- (2) Removable housing for easy maintenance.
- (3) Gap between the cylinder and hub is precision calculated for optimal filtering efficiency via centrifugal function.
- (4) Curve-blade design improves wind volume.
- (5) Cone inlet design elevates collection efficacy.

## 2. Purpose

- (1) For maintain the clean environment.
- (2) Suitable for all types of machine tools.
- (3) Recycled fuel for reuse.

## 5. Specifications and Functions

Model	Wind volume (m³/hr)	Voltage	Weight (kg)
FX2000	425@50Hz / 500@60Hz	0.55kw, 220/380V, 50/60Hz	16
FX3000	850@50Hz / 950@60Hz	1.5kw, 220/380V, 50/60Hz	17
FX4000	1250@50Hz / 1500@60Hz	1.5kw, 220/380V, 50/60Hz	23
FX5000	1675@50Hz / 2000@60Hz	2.2kw, 220/380V, 50/60Hz	29
FX6000	2000@50Hz / 2400@60Hz	2.2kw, 220/380V, 50/60Hz	34
FX7000	2700@50Hz	2.2kw, 220/380V, 60Hz	34

All models may be installed on machinery either horizontally or vertically, or on the floor with support.

- (4) The centrifugal filter design makes it the most effective means for collecting vaporized oil or water mist.
- (5) Capture mist at the source.

## 3. Features

The small, compact, effective construction. The equipment operates quietly, and is equipped with advanced filter function and effective motor that reduces operating cost and creates preferred working environment.

## 4. Product Photo



光騰工業科技股份有限公司

EASTON ENGINEERING INTERNATONAL CORP.

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# SPRAY-PAINT TREATMENT FACILITY

## 1. Structure and Principle

Arch water-curtain is designed to bolster induction and filter efficiency. It draws floating particles produced in paint-spraying into a filter chamber through suction to separate the particles from air and achieve the desired standard of air purification.

## 2. Purpose

Eliminate powder pollution produced in the process of paint-spraying to deter pollutants from attaching to objects of work

## 3. Features

- (1) Manpower saving; productivity enhancing; increase production capacity.
- (2) Enhance product aesthetic value.
- (3) Special water induction design and swirl filter chamber.
- (4) Keep factory neat and pleasant, create comfortable work environment.
- (5) Maintain constant humidity, prevent accidents caused by volatile materials.
- (6) Designed for capturing powder dust and organic solvent produced in spray-painting; expand water-curtain and reinforce air supply device to deter loose powder from adhering on work objects for higher product quality.

兩昌股份有限公司      LIANG CHANG CO., LTD.

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# BAG TYPE DUST COLLECTOR

## 1. Structure and Principle

Dust trough filter bag by blower. For keep filter bag normal working and efficiency of front part by high pressure de-dusting.

## 2. Purpose

This equipment is suitable for all mills dust pollution.

## 3. Features

This equipment is automatic de-dusting, working time depends on your necessary.

## 4. Specifications and Functions

Q : 8,000 m<sup>3</sup> / min 、 SP : 400 mmAQ 、  
M : 30 hp ~ 1,250 hp 、 N : 890

金風機械股份有限公司      KING FOON MACHINERY CO., LTD

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# STEELWORKS ARC FURNACE DUST-COLLECTING EQUIPMENT

## 1. Structure and Principle

### Structure:

- (1) Work of Main frame:
  - A. It's available for 8 sets ~ 10 sets or 16 sets to assemble an entire frame in the dust-collecting room.
  - B. It's able to control the dust-collecting and the dust-removing in each dust-collecting room.
  - C. There is an H-shaped steel with the structure of 200 × 200 being assembled by L3" and reinforced materials.
  - D. The surface is placed by a powder coating plate with soundproof and heatproof effects.
- (2) Dust Vacuuming Windpipe: SS41 6t, D= Φ 3,000, Φ 2,400, Φ 2,000.
- (3) Dust Vacuuming Windpipe: SS41 3~4t, It's set up according to the work site.
- (4) Burning Tower: SS41 9t, 12t, 15t.

### Principles:

- (1) During the process in smelting the steel, there will be able to produce a great deal of powder to go to the surroundings of the factory, and the temperature also reaches more than 1,500 °C.  
Therefore, it will suck and conduct into the burning tower at the furnace inlet from the dust vacuuming location to burn the carbon monoxide again and lower its temperature, and then, getting rid of bigger granules to conduct into the cooling tower for lowering the temperature at the second time. After removing the granules to conduct into the second windpipe to be cooled until the temperature is getting down and entered inside the dust collecting room.  
As a result, it can keep the safety and the life of clothing pipe and reach the effect of collecting dust by such a

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- (5) Cooling Tower:SS41 9t, 12t.
- (2) The dust that bursts from the cover of the furnace is able to be sucked into the windpipe by means of the air cover on the top. Both the ambient temperature and the temperature on the top will lower the temperature for each other without double-layer pipes, which only conducts into the dust-collecting room to remove the dust by means of a single-layer pipe.
- (3) Various systems in the dust-collecting room is available for setting the frequency and the speed according to the time, and the temperature in the dust-collecting room can be adjusted properly in accordance with the practical requirements.

## **2. Purpose**

- (1) Arc furnace dust-collecting in the steelworks.
- (2) Collect and remove the mine dust pollution at each plant.

process.

## **3. Features**

Oversized dust-collecting equipment. A model of fan performance pipeline layout air cover. Back washing operation to the flow speed. The repair system of silo separation is flexible either big or small. And it depends on the demand to select the filter materials and set to keep the energy and the frequency for the bag, as well as stabilizing the pressure of the system in order not to result in the improper dust cleaning. We have a complete planning system for the above features.

## **4. Specification and Functions**

- (1) Type : back washing, vibration and pulse.
- (2) Dust Vacuuming Fan Horse Power : 5 hp ~ 1,750 hp.

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# MOBILE DUST COLLECTOR

## 1. Structure and Principle

The model easy and convenient beauty can move to the position that need to be collected pollution source at any time. And can fit extra inlet for more machines.

## 2. Purpose

- (1) Mobile design to collect dust at different pollution points.
- (2) Designed for all types of dry wood dust from all popular woodworking machines.

## 3. Features

- (1) Reduce toxic hazardous dust in the air at workplace.
- (2) Powerful motor with efficient fan.
- (3) Pleated filter with large filter area.

- (1) Vacuum gauge shows the air flow status.
- (2) Pleated filter and plastic dust bag protected by metal tank from damage. Prompt assembly and easy maintenance.
- (3) See through glass for checking the dust level in the dust bag.
- (4) Cleaning filter by turning the brush inside the filter housing.

## 4. Product Photo



## 5. Specification and Functions

Model No.	DC-102	DC-103	DC-105
Motor	2 hp	3 hp	5 hp
Air volume (CFM)	26 m <sup>3</sup> /hr (916 CFM)	32.2 m <sup>3</sup> /hr (1136 CFM)	47.7 m <sup>3</sup> /hr (1683 CFM)
Filter Area	4,348 cm <sup>2</sup> (674 in <sup>2</sup> )	5,809 cm <sup>2</sup> (900 in <sup>2</sup> )	8,177 cm <sup>2</sup> (1,267 in <sup>2</sup> )
Bag volume	0.09 m <sup>3</sup> (3.2 ft <sup>3</sup> )	0.12 m <sup>3</sup> (4.3 ft <sup>3</sup> )	0.16 m <sup>3</sup> (5.76 ft <sup>3</sup> )
Sound Rate	53 dB(A)	67 dB(A)	82 dB(A)
Inlet Diameter	100 mm (4") x 1	125 mm (6") x 1 Or with extra inlet 100 mm (4") x 2	125 mm (6") x 1 Or with extra inlet 100 mm (4") x 2
Overall Dimension	1,220 mm x 506 mm x 1,440 mm	1,232 mm x 540 mm x 1,604 mm	1,400 mm x 621 mm x 1,750 mm
Net weight	95 kg (209 lbs)	116 kg (255 lbs)	136 kg (300 lbs)

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# PULSE – HIGH TEMPERATURE BAG FILTER HOUSE

## 1. Structure and Principles

The principle used for this filter is similar to that of a cartridge type dust gatherer. When waste-gas containing dust enters into the dust gatherer and flows through the stopper board and deflector, the gas will be evenly distributed on the outside of each filter bag and turn the dust into cake form. The machine then activates the solenoid valve (its reverse-washing time is configured by the procedure controller) to push the compressed air ( $5\text{kg/m}^2$ ) through the venture tube and generate pulsation waves. The pulsation waves then shake the dust to the bottom of the dust gatherer and extract the dust out through the releasing valve. Due to the fact that high-temperature waste gas is sometimes sticky, a pre-powdered system must be in place to protect the filter bags.

## 2. Purpose

Chemical-petroleum plants, bituminous mixing plants, ceramic plants, recycling plants, and waste incinerators.

## 3. Features

- (1) Filtered gas meets the environmental protection standards.
- (2) The powder is recyclable to prevent wastage.
- (3) The filter bags are designed to be pulled out upward for replacement, so workers will not be contaminated.

## 4. Product photo



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# PULSE-CARTRIDGE FILTER HOUSE

## 1. Structure and Principle

Through pressure or suction, particle-carrying gas is sent from the pollution source to the system, and filtered clean air is then released into the atmosphere via suction equipment. Powders or ashes attached to the exterior of the filter tubes are shaken off by using the procedure controller; for which, the wash time is set to trigger the electromagnetic valve, which sends 5kg/cm<sup>2</sup> of compressed air instantly through the Venturi pipe and spray into the filter tube to cause shockwaves. The auto trigger-on interval of each electromagnetic valve can be set according to particle concentration and variety to achieve continuous operation.

## 2. Purpose

Asbestos, fertilizer, feed industry, PVC, rubber grinding, powder conveyance, powder grinding, mixing, sandblasting, ceramics, tiles, powder coating, leather, pigments, paper industry, cement, coal, plywood, wooden products, petrochemical raw materials.

## 3. Features

- (1) Prefabricated design, simple structure.
- (2) High screening efficiency, low pressure loss.
- (3) Replacement of filter tubes can be carried out externally without requiring personnel entry into the system, offering simple and easy maintenance.
- (4) Small equipment size, large treatment capacity, requiring large installation space.

## 4. Specifications and Functions

Material : the body is made of stainless steel or carbon steel.

Filter material: PE, Teflon, PP, Aramid, Polyamide, polyester.

- (1) Wind volume : 5 ~ 1,000 m<sup>3</sup>/min/unit.
- (2) Treatment temperature : max 100 °C.
- (3) Choices of body material and filter material to suit various needs

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Specification:

Model	Screen Surface ( m <sup>2</sup> )	Tube Count	EM Valve Count	Horsepower ( hp )
T-1	5	1	1	0.5
T-4	20	4	2	2
T-9	45	9	3	5
T-12	60	12	4	5.5
T-16	80	16	4	7.5
T-20	100	20	5	10
T-25	125	25	5	15
T-30	150	30	6	15
T-35	175	35	7	15
T-40	200	40	8	20
T-50	325	50	10	30
T-60	300	60	12	30
T-75	375	75	15	40
T-100	500	100	20	50
T-125	625	125	25	60
T-150	750	150	30	75

5. Product photo



# PULSE JET FILTER

## 1. Structure and Principle

The dirt is getting into from dust collection machine. A fender can apply an airflow distributing whole place and using a deep bed filter to collect. Fresh air exhaust up outside, every deep bed filter is use program control utensils to exhaust outside.

## 2. Purpose

Dry powders produced in all kinds of manufacture procedure can be collected.

## 3. Features

- (1) At least ninety-nine percent of dust collection efficiency is. Achieved.
- (2) The filter bags are highly breathable and capable of treating massive amount of wind volumn.
- (3) Easy to maintain and disassemble; Long usage life.

## 4. Specifications and Functions

Filter area : 10 ~ 600 m<sup>2</sup>.

## 5. Product Photo



高幟通風工程股份有限公司

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# WET SCRUBBER

## 1. Structure and Principle

Waste gas goes through the closed liquid layer, enabling thorough gas/liquid contact.

Liquid affinity is then used to absorb and collect waste gas to achieve cleansing. This system also use irregular substance to increase time and area of gas/liquid contact for maximum effect.

## 2. Purpose

Gas absorb, neutralize, rid of dirt and odor, and clarify.

## 3. Features

- (1) Use P.P., PVC to manufacture, the age is longer.
- (2) A consumption of liquid is less.
- (3) Collected effect is better.
- (4) Consumption is not obstructing.

## 4. Specifications and Functions

- (1) Capacity : 20 ~ ~ 1,000 m<sup>3</sup>/min.
- (2) Dimension:  $\varnothing$  0.6 ~ ~  $\varnothing$  4 m.

## 5. Product Photo



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# AIR PURIFICATION SYSTEMS

## 1. Structure and Principle

By combining wet scrubbing and AOP technologies, ecAir is able to remove particulate matter, gaseous pollution, such as SO<sub>x</sub> and NO<sub>x</sub>, and volatile organic compounds (VOCs) with very high efficiency.

Wet scrubber first diffuse pollutants into liquid phase, AOP then decompose pollutants into CO<sub>2</sub> & H<sub>2</sub>O in the liquid.

## 2. Purpose

Degradation of volatile organic compounds (VOC<sub>x</sub>) and PM<sub>2.5</sub> in the air on-site, so that the treated air reaches the air pollution prevention standard.

## 3. Features

- (1) No chemicals added.
- (2) No wastewater produced.
- (3) No consumable parts.
- (4) Oxygen-enriched clean air.

## 4. Product Photo



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# ELECTROSTATIC PRECIPITATOR

## 1. Structure and Principle

ESP is the use of charge principle that opposites attract, and the applied pressure and the formation of two polar opposite of the electric field, under the action of the Coulomb force, so that soot particles after the charge sheet to the movement of dust attached to the dust, and thus to achieve clean the purpose of the air.

## 2. Purpose

Effective treatment of industrial, catering and domestic kitchen smoke pollution generated through efficient processing purified before discharge. Business owners to solve problems.

## 3. Features

- (1) High efficiency air pollution control.
- (2) Design and installation of flexible.
- (3) Treatment to follow-site design.
- (4) Meet the highest standards of environmental protection.
- (5) No secondary pollution.
- (6) Using less supplies and reduce energy consumption.

## 4. Specifications and Functions

Disposal sites according to the amount of wind may be, to do a combination of fixed models (unlimited portfolio required)

## 5. Product Photo



清三環境科技股份有限公司

CHING SAN ENVIRONMENT TECHNOLOGY CO., LTD.

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# AUTOMATIC PULSE JET BAG FILTER

## 1. Structure and Principle

### Cleaning of Bag Filter

The dust-laden air is drawn on to the filter bags, where the dust is retained on the outer surface of the bag. To maintain continuous operation each row of bags must be regularly cleaned. In this system cleaning operation is achieved by reverse jet of compressed air. The electronic time sequential controller activates each pilot valve in sequence at predetermined intervals on a continuous cycle. The pilot valve in turn opens the diaphragm valve. The multi-nozzle jet tube through the insert header into the filter bag releases a short burst of compressed air. The accumulated dust or dust cake is dislodged from the bag surface and falls into a collection hopper beneath. Following figures show the cleaning cycle of filter bag and operation of solenoid valve and diaphragm valve.

## 2. Purpose

- (1) Chemical & Food Industries : Grinder, Mixer, Conveyor, Silo inlet, Bag

- (2) Ceramic industries : Crusher, Mixer, Press, Conveyor.
- (3) Machinery industries : Grinder, Lathe, Polishing, Welding.
- (4) Wood & Furniture industries : Sawing, Wood planning, Sanding.
- (5) Fertilizer industries : Silo inlet, Conveyor, Mixer, Bag filling.

## 3. Features

- (1) Highest filtration efficiency.
- (2) No moving parts in mechanism makes it the least maintenance.
- (3) Reduce volume of collector unit.
- (4) High air to cloth ratio.
- (5) Constant and small pressure drop across filter achieves constant and large air volume.
- (6) Total pressure across collecting unit is low Reduce bag wear.
- (7) Widely applicable for the recovery equipment of various industries.

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filling.

4. Specifications and Functions

Specification Model No.	Filter area ( m <sup>2</sup> )	No. of filter dag	No. of solenoid valves	Approx wt. ( kg )	Dimension	Comp Air	
						Max	Min
JBF-50	54	48	6	2,600	1,500	0.44	0.24
JBF-80	81	72	9	3,200	2,100	0.63	0.37
JBF-100	108	96	12	4,000	3,000	0.80	0.46
JBF-130	135	120	15	5,000	3,900	1.02	0.58
JBF-160	162	144	18	5,600	4,500	1.19	0.68
JBF-190	190	168	21	6,000	5,400	1.41	0.80
JBF-220	217	192	24	6,650	6,000	1.62	0.92
JBF-240	244	216	27	4,700	6,900	1.82	1.03
JBF-270	271	240	30	8,000	7,500	1.99	1.14
JBF-300	299	264	33	8,600	8,400	2.20	1.26
JBF-320	326	288	36	9,200	9,000	2.42	1.38
JBF-350	353	312	39	10,000	9,900	2.63	1.50
JBF-380	380	336	42	11,000	10,500	2.80	1.60
JBF-400	407	360	45	11,800	11,200	3.00	1.72
JBF-430	434	384	48	12,200	12,000	3.17	1.82
JBF-460	461	408	51	13,000	12,900	3.38	1.93

5. Product Photo



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# CENTRIFUGAL VENTURI SCRUBBER

## 1. Structure and Principle

The special mist area in the interior provides a large contact surface and longer contact time. The gas absorption rate is greater than a venturi scrubber. Its efficiency is closer to regular filler reactors. For treatment of indissoluble powders in flue gas or where emulsion or crystallization may occur, centrifuge is the best solution, as the interior has no parts to block air flow, nor clogging/filling in the nozzles. At the same time, the swirl keep the tank interior clean through continuous washing. When flue gas carries dust powders or crystals that standard filler scrubber cannot be employed, centrifugal venture washing tower is an effective solution.

Using the centrifugal venture washing tower to treat flue gas produced from boilers or incinerators is an exemplary illustration, as the flue gas simultaneously carries smoke and chemical gases.

## 2. Purpose

Fine mist is produced by centrifugal contact and reacts with flue gas in opposite direction, which enables more effective dust collection than other types of wet scrubber.

## 3. Features

- (1) Lower pressure loss.
- (2) Less water consumption.
- (3) Less space requirement.
- (4) Lower installation cost.
- (5) Lower maintenance.

## 4. Specifications and Functions

MODEL NO.	H (mm)	D (mm)	Weight (kg)
0111	1,800	580	380
0206	2,000	760	500
0302	2,400	965	620
0310	2,650	1,170	850
0405	2,850	1,350	1,210
0501	3,300	1,550	1,650
0509	3,700	1,750	1,800
0604	4,050	1,930	2,050
0700	4,500	2,140	2,500
0707	4,800	2,310	2,850
0803	5,040	2,520	3,410
08 1	5,400	2,720	3,800
0906	5,800	2,900	4,200
1002	6,250	3,100	4,780
1010	6,400	3,300	5,320
1105	6,600	3,480	6,200

## 5. Product Photo



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# HIGH AREA PULSE JET BAG FILTER

## 1. Structure and principle

Cleaning of Bag Filter The dust-laden air is drawn on to the filter bags, where the dust is retained on the outer surface of the bag. To maintain continuous operation each row of bags must be regularly cleaned. In this system cleaning operation is achieved by reverse jet of compressed air. The electronic time sequential controller activates each pilot valve in sequence at predetermined intervals on a continuous cycle. The pilot valve in turn opens the diaphragm valve. The multi-nozzle jet tube through the insert header into the filter bag releases a short burst of compressed air. The accumulated dust or dust cake is dislodged from the bag surface and falls into a collection hopper beneath. Following figures show the cleaning cycle of filter bag and operation of solenoid valve and diaphragm valve.

## 2. Purpose

- (1) Electronics : CNC drilling, Routing, Cutting, Laminating, V-cut.
- (2) Chemical & Food Industries : Grinder, Mixer, Conveyor, Silo inlet, Bag filling.
- (3) Ceramic industries : Crusher, Mixer, Press, Conveyor.
- (4) Machinery industries : Grinder, Lathe, Polishing, Welding.
- (5) Wood & Furniture industries : Sawing, Wood planning, Sanding.
- (6) Fertilizer industries : Silo inlet, Conveyor, Mixer, Bag filling.

## 3. Features

- (1) Highest filtration efficiency.
- (2) Small Volume and small footprint.
- (3) Constant exhaust air volume.
- (4) High filter area, Low press drop.
- (5) Widely applicable for dust collecting of various industries.

貫能技術工程有限公司

**FAIR TECHNICAL ENGINEERING CO., LTD**

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E-mail : fair.tech@msa.hinet.net <http://www.fairtech.url.tw>

#### 4. Specifications and Functions

	Filter area (m <sup>2</sup> )	No. of filter element	No. of solenoid valves	Dimension A (mm)	Dimension B (mm)	Approx. wt (kg)
CEF-24	24	6	3	1,000	850	500
CEF-36	36	9	3	1,000	1,850	800
CEF-48	48	12	4	1,150	1,850	850
CEF-60	60	15	5	1,250	1,850	900
CEF-72	72	18	6	1,350	1,850	950
CEF-100	96	24	8	1,550	1,850	1,020
CEF-120	120	30	10	1,750	1,850	1,100
CEF-140	144	36	12	2,000	1,850	1,200
CEF-160	156	39	13	2,100	1,850	1,250
CEF-180	180	45	15	2,350	1,850	1,350
CEF-200	192	48	16	2,450	1,850	1,400
CEF-300	300	75	25	3,450	1,850	1,750
CEF-400	396	99	33	4,300	1,850	2,100
CEF-500	504	126	42	5,300	1,850	2,500
CEF-600	600	155	50	6,200	1,850	2,850
CEF-700	708	177	59	7,150	1,850	3,200

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# MULTI-CYCLONE DUST COLLECTOR

## 1. Structure and Principle

Operation of the multi-cyclone tube element is similar to that of standard cyclones except for higher collection efficiency brought by increased centrifugal force action and optimum tube diameter.

Multi-cyclone duct collector occupies less space than standard cyclones, especially when handling large air volume; the height of multi-cyclone is lower than standard cyclone.

Pressure drop of a multi-cyclone is less than a standard cyclone with the same collecting efficiency. Lower fan pressure and lower power consumption is required.

Modular housing designed with variable inlets and outlets makes this multi-cyclone ideal for new installation or as an add-on to existing systems.

## 2. Purpose

- (1) Combustion & Drying : Boilers, Incinerators, Kilns, Spray Dryers, Fluid Bed Dryers, Pre-Cleaners.
- (2) Chemical Industries : Grinders, Mixers, Conveyors, Silo Inlet, Bag Filling.
- (3) Machinery Industries : Grinder, Lathe, Polishing.
- (4) Wood & Furniture Industries : Sawing, Wood Planning, Sanding.
- (5) Fertilizer Industries : Silo Inlet, Conveyor, Mixer, Bag Filling.
- (6) Steel Industries, Foundries, Mining Industries, Cement Plants, ceramic Industries.

## 3. Features

- (1) Minimum maintenance, no moving parts
- (2) Compact design saves valuable space and is easy to install.
- (3) Versatile assembly according to requirements
- (4) Wide application throughout the plant.

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#### 4. Specifications and Functions

Specification Model No.	A	B	C	D	Inlet Dimension	Exit Dimension
FMC-22	950	950	1,850	560	950 × 80	300 × 150
FMC-32	950	1,325	1,850	980	950 × 75	300 × 220
FMC-33	1,325	1,325	2,000	980	1,325 × 120	400 × 250
FMC-43	1,325	1,700	2,000	1,400	1,325 × 150	400 × 330
FMC-44	1,700	1,700	2,150	1,400	1,700 × 175	600 × 300
FMC-54	1,700	2,075	2,150	1,800	1,700 × 200	600 × 375
FMC-55	2,075	2,075	2,300	1,800	2,075 × 220	700 × 400
FMC-65	2,075	2,450	2,300	2,200	2,075 × 250	800 × 550
FMC-66	2,450	2,450	2,450	2,200	2,450 × 260	900 × 450
FMC-76	2,450	2,825	2,450	2,600 (1,400 × 2)	2,450 × 280	900 × 500
FMC-77	2,825	2,825	2,600	2,600 (1,400 × 2)	2,825 × 300	1,100 × 500
FMC-87	2,825	3,200	2,600	3,025 (1,800 × 2)	2,825 × 330	1,100 × 600
FMC-88	3,200	3,200	2,750	3,025 (1,800 × 2)	3,200 × 350	1,300 × 550
FMC-98	3,200	3,575	2,750	3,450 (2,200 × 2)	3,200 × 375	1,300 × 650
FMC-99	3,575	3,575	2,900	3,450 (2,200 × 2)	3,575 × 400	1,300 × 700
FMC-1009	3,575	3,950	2,900	3,900 (2,600 × 2)	3,575 × 420	1,400 × 700
FMC-1010	3,950	3,950	3,050	3,900 (2,600 × 2)	3,950 × 450	1,400 × 800

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# BAG FILTER FACILITY

## 1. Structure and Principle

High-efficiency membrane bag filter filters emission by sucking polluted gas into the bag filter for solid/gas separation. Particles are captured on filter surface; the frequency of the filter is controlled by a timer. Cleaning is done by shaking particles off the filter bag surface, which is enabled by injection of high-pressure air into the funnel. Dusts are collected into the barrel underneath for regular removal. Air processed through the filter is then released into the atmosphere via a suction fan.

## 2. Purpose

For sites of drilling, shaping, grinding, particle conveyance, mixing, stirring, incineration, chemical, cement, lime, wood shaving, painting.

## 3. Features

- (1) Space saving: for the same size, the filter surface is several times more than that of conventional models. The filter is free-standing; no frames are required. It is also wear-resistant for longer usage

- (2) The surface has porous membrane for high screening efficiency to prevent dust from entering the filter for prolonged filter life. It is lighter, more resilient and more durable than conventional models.
- (3) Changing filter is simple and quick to shortens operation-halt time and in turn increases production capacity.

## 4. Specifications and Functions

- (1) Elastic filter head, excellent installation seal
- (2) Filter head is one-piece molded, which tightly attached to the bag
- (3) Pleated design offers optimum and even support and retains elasticity of filter fabric.
- (4) Wide-fold design allows effective particle shake-off.
- (5) Elastic pleated design enables effective flush-out function.

**達晟工業股份有限公司      DA SHENG INDUSTRIALS CO., LTD**

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life.

- (6) The two sides are sealed with steel for effective protection of filters and support the tough base, as well as reinforcing the fastness of the filter bags.
- (7) Aero dynamic exterior design optimizes air flow and maintain minimum pressure differentiation during filtering and flushing °

## 5. Product Photo



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# WET STATIC REACTOR FACILITY

## 1. Structure and Principle

This system applies DC to charge the electrode wire with negative high voltage and create an electromagnetic field between the discharge electrode and the grounding hub. It mainly utilizes anions to fuse with particle of pollutants to achieve filtering. Water is used for carrying away the pollutants collected by electrodes and sheets and maintain the reactor in optimal operating conditions.

## 2. Purpose

Air pollution prevention for boiler, steel industry's furnace, nonferrous refinery industry's cement kiln, glass kiln, chemical engineering industry's pigments, papermaking, painting, asphalt, DOP, incinerator, food industry, distillery, cogeneration plant, etc.

## 3. Features

- (1) High-efficiency, resistant to various particle properties.
- (2) No re-entrainment and bypass leakage; excellent for capturing fine particles.
- (3) Operating under dew point, small equipment, suitable for treating explosive, flammable particles.
- (4) Emission is frozen to under dew point into particles for charging and capturing to achieve the purpose of elimination.
- (5) Recovery solvent can be added to the spray water to remove gas pollutants.
- (6) Low breakdown rate, easy maintenance, high safety, low operating cost.
- (7) Equipped with demist function for steam collection.
- (8) Can be incorporated into scrubber for enhanced efficiency.

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#### 4. Specifications and Functions

- (1) Discharge electrode: wire type, needle type, star type, cross type, fishbone type.
- (2) Hub: plate, rectangular pipe, round pipe, beehive, bar screen.
- (3) Nozzle: impact, cone, helix; cold water, hot water, steam, liquid alkali.
- (4) Capable of continuous or intermittent flushing.
- (5) Hot-air fan.
- (6) Draw fan.
- (7) Demister.

#### 5. Product Photo



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## BAG FILTER FACILITY

### 1. Structure and Principle

This system uses dispersion inertial impact, shielding, and gravity to achieve dust capturing. This filter facility employs high-pressure air to continuously flush out particles without halting up operation, offering high stability and screening efficiency.

### 2. Purpose

For sites with processes such as grinding, loading/unloading, mixing, stirring, particle conveyance, dry oven, dissolve tank, pharmaceutical, chemical, cement, lime, wood, powder painting.

### 3. Features

- (1) 99.99% particle capture rate.
- (2) Instant shake-off by jetting, meaning constant pressure loss and marginal air fluctuation for high efficiency.
- (3) To solve the problems of different factory layout and space constraints, prefabricated models have been developed for easy installation to achieve minimum impact to ongoing works during installation.
- (4) Easy installation and maintenance.

漢揚環保機械股份有限公司

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# LOW VOLUME MOBILE DUST COLLECTOR

## 1. Structure and Principle

Same as the Pulse jet dust collector, utilize the effects of diffuse inertial impact, blocking and gravity to conduct dust collecting, this dust collector uses continuous high-pressure air backwashing for bag cleaning, there is no need to stop operation while the dust is shaken down. It has stable performance and high dust collection efficiency.

## 2. Purpose

Used for workplaces of granular material grinding, handling, conveying, mixing, and stirring, drying furnace, melting furnace, medical, chemistry, cement, lime, woodwork, and powder coating, etc. with low air volume and large variability.

## 3. Feature

- ( 1 ) Dust collecting efficiency up to 99.99%.
- ( 2 ) High pressure blast of air shock, shaking down dust, thus the pressure loss is fixed, air volume change is low, and efficiency is high.
- ( 3 ) Suitable for working processes with low air volume and large variability.

- ( 4 ) Compact equipment with good maneuverability, with telescopic jib suction hood, easy to operate.
- ( 5 ) Easy to install and maintain.

## 4. Representative Performance

- ( 1 ) Taiwan Cheng Sheng Foundry 2019.03.
- ( 2 ) SiDen Industrial Co., Ltd 2018.09.

## 5. Product Photo



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# PULSE AIR JET BAG FILTER

## 1. Structure and Principle

Particle-carrying air enters the bag filter via the inlet, passing through a stopper; at this point, heavier powders settle first, while lighter powders attach to the filter evenly; the PLC then controls the electromagnetic valve to trigger the membrane valve for input of pressurized air, which passes the venturi tube to flush the filter by shaking off powders into the collection chute, whereas the clean air passes through the filter to be released by the fan.

## 2. Purpose

Applicable for powder treatment and recycle at all types of factories.

## 3. Features

- (1) The entire facility is controlled by PLC for easy operation.
- (2) The venturi tube is specially designed to flush the filter with minimum pressure loss and large volume of air supply.

- (3) The filter bags are highly breathable with minimum wear and long usage life.
- (4) Filter change can be done from the top of the machine without having to enter the system. It is simple to remove and install for easy maintenance.

## 4. Specifications and Functions

- (1) Material: structural steel sheet, stainless steel sheet, alloy sheet.
- (2) Filter material: Polyester, FRP, Nomax, Teflon, Ryton, P-84, Nylon, PP, 90%Polyester + 10%Carbon Fiber, Acrylic.

## 5. Product Photo



Pulse-Air-Jet Bag Filter

Capacity : 5,000 m<sup>3</sup>/min.

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# VENTURI SCRUBBER

## 1. Structure and Principle

Exhaust carrying sulfur oxides and powders enter the venturi scrubber to interact with the recovery solvent. When passing through the neck, the section surface constricts and the high velocity gas pressurizes the solvent into mist to for an inertial impact for removal of the particles.

## 2. Purpose

Applicable for treatment of high-temperature exhaust.

## 3. Features

- (1) High filtration efficiency.
- (2) Recovery solvent can be recycled to minimize water consumption.

## 4. Specifications and Functions

Can be customized according to exhaust properties or client requirement.

Material : Stainless steel or FRP.

## 5. Product Photo



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# COMMERCIAL-GRADE TUBULAR STATIC VENTILATOR

## 1. Structure and Principle

Static filter is principally built on attraction between opposite electrodes: AC high voltage is rectified to create a static magnetic field positive and negative electrodes. Smoke is sent to the magnetic field, and ionized by positive and negative electrodes for  $\mu\text{m}$  smoke to attach to tube wall in forming a liquid layer, which then flows down to the chute for collection. The process solves the problem of grease smoke, and contributes to environmental protection.

## 2. Purpose

Prevent public hazard and environment pollution; enhance working environment quality; recycle valuable substances.

## 3. Features

It is designed to eliminate grease smoke produced in commercial kitchens according to specific requirement. The device is engineered for high static strength and low power consumption with 99.9% elimination efficiency. It is a complete solution for air pollution and recycling.

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# PIPE TYPE ELECTRO-STATIC PRECIPITATOR

## 1. Structure and Principle

Static filter is principally built on attraction between opposite electrodes: AC high voltage is rectified to create a static magnetic field positive and negative electrodes. Smoke is sent to the magnetic field, and ionized by positive and negative electrodes for  $\mu\text{m}$  smoke to attach to tube wall in forming a liquid layer, which then flows down to the chute for collection. The process solves the problem of grease smoke, and contributes to environmental protection.

## 2. Purpose

Prevent public hazard and environment pollution; enhance working environment quality; recycle valuable substances

## 3. Features

For screening off particles, and removal of smoke, grease mist, acid mist of various industries

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# HIGH-PERFORMANCE STATIC GREASE SMOKE PROCESSOR

## 1. Structure and Principle

This static grease smoke filter employs the physical property of charging particles to create diameter swelling and achieve the propose of filtering. Grease smoke is shrouded by the shield and sucked through the windpipe via a negative pressure crated by the fan at a speed of 5-8M/S in the chamber. The front mesh filter evenly channels the flow to the separation area. The first electrode is pressurized to inducer the wire to fizz and charge the exhaust particles, which in motion attaches to the second polarized sheet of the opposite current. With excellent capture efficiency, grease deposit accumulates and drops into the collection chute. The capturing plate should be cleaned very 1~5 weeks pending upon frequency of use.

## 2. Purpose

Bolster filtration of hot air and grease smoke produced in restaurant cooking; prevent grease captured on the shield from dripping back into food; improve air quality in work environment; reduce accident, occupational hazard and fire occurrence; enhance work environment safety and hygiene; reduce machine and factory cleaning cost; increase work efficiency

## 3. Features

- (1) Available in mono- and multi-section plate, and varied pipe lengths to suit different needs; filtration efficiency over 98%.
- (2) Low power consumption, low pressure loss from resistance; spray-cleaner can be added for different models to save labor costs.
- (3) The operate/control system can be designed in PNP or SCR. It is equipped with stable voltage, and current; frequency adjustment control; simple operation.

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#### 4. Specifications and Functions

- (1) Machine and polarized wires, plates can be made of SS400, aluminum plate, argon plate, SUS304, SUS316 stainless steel. Models available in mono, multi-section sheets and varied pipe lengths
- (2) For specification, there are manual and auto-clean polarized plates.
- (3) Standard models' capacity : 50-1,000cmm.
- (4) Industrial models' capacity : 50-5,000cmm.

#### 5. Product Photo



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# DUST COLLECTING SYSTEM



## 1. Structure and Principle

There are main two types of collecting system, which is cyclonic type and bag filter. The principle of cyclonic type is Centrifugal force. And bag filter use many bags to filter the fine powders

## 2. Purpose

In some industries, there's must be some sawdust or fine powder occurs during production, such as furniture factory, sawmill, painting factory, ink factory.... To avoid inhalation by working staff and also environmental protection. Collecting system is good for air pollution control.

## 3. Features

The blade of industrial fan has been improved and re-design. The pipe of collecting system is produced by customer's actual demand. That all increase efficiency of whole system.

## 4. Specifications and Functions

No matter cyclonic system or bag filter system (auto opti flow conveyor available), we all design and build for customer by their factory size.

## 5. Representative Performance

- (1) Lacquer Craft MFG group in China.
- (2) Latitude Group in Malaysia, Vietnam and Thailand.
- (3) Shing Mark group in China and Vietnam.
- (4) HOPMA 2020.

## 6. Product Photo



總昌機械股份有限公司 TSUNG CHANG MACHINERY CO., LTD

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# ACTIVATED CARBON ABSORPTION DEVICE

## 1. Structure and Principle

After the filtering net filters the dust powder at the preceding process, activated carbon is then used to absorb organic agent and adores with a wide absorbing surface. After passing through absorption by the activated carbon, the clean air can then be discharged to the air purifier to the flue before releasing.

## 2. Purpose

Chemical industry, painting & coating industry, plastic industry, paints production flow and various circles.

## 3. Product Photo



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# FLUE GAS DESULFURIZATION SYSTEM

## 1. Structure and Principle

Waste-gas enters from bottom into the cyclone dust gatherer and mixed with treatment liquid to remove smoke dust, SO<sub>x</sub>, NO<sub>x</sub>. Waste gas passes through the through Venturi washer in a down-up direction for absorption reaction. This system uses different treatment chemicals for absorption reaction to achieve air quality that is compliant with release standards.

## 2. Purpose

Various industries, plants, and exhaust gas from chimney.

## 3. Features

- (1) One system with two units to reduce costs of equipment purchases.
- (2) High performance for dust removal, desulfurization, and deodorizing.
- (3) Automatic chemicals feeding - low operation cost.

## 4. Specifications and Functions

Specifications vary according to the field operation environment. Different designs are tailored for different pollutants, Material quality SUS304, SUS316, PP, FRP, PVC, galvanize, SS400... etc.

## 5. Product Photo



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# WET SCRUBBER

## 1. Structure and Principle

Waste gas goes through the down-below scrubber to enable absorption in the reversing direction to achieve the purpose of neutralizing. After which, the gas is separated into gas and liquid. Purified gas is then discharged into the atmosphere. The cycle liquid can added with an auto chemical supply System for recycled use to minimize the problem of water pollution.

## 2. Purpose

Chemical engineering/electroplating industry and improvement on all waste gas and oil dust with acid and alkaline, and reducing the odor production.

## 3. Features

- (1) May coordinate overall factory planning to design a system for the needed process volume.
- (2) Simple structure; low breakdown rate, easy maintenance.
- (3) Low setup cost and low service cost.

- (4) Available in the single stage or the multistage type chemical absorption designs.
- (5) The process chemical can be recycled and reused to saves water and minimize wastewater discharge.
- (6) Completely automated control, does not need the personnel attention.

## 4. Specifications and Functions

- (1) Material quality : SUS304, SUS316, PP, FRP, PVC, galvanize, SS400... And so on.
- (2) Specification varies according to the field operation environment and the nature of pollutants.

## 5. Product Photo



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# **HIGH-TEMPERATURE WET DESULFURISATION EXHAUST AND DUST-COLLECTOR SYSTEM (WET CENTRIFUGAL TREATMENT TANK + VENTURI GAS REACTOR + DEACIDIFICATION FEED SYSTEM + WET FILLER REACTOR)**

## **1. Structure and Principle**

The system consists of a wet centrifugal treatment tank, Venturi gas reactor and wet filler Reactor.

The system utilizes centrifugal force of the wet centrifugal treatment tank to fully mix the induced exhaust with the recovery solvent to achieve binding and remove SO<sub>x</sub>, NO<sub>x</sub>, HCl, fluorides and partial dust and heavy metals. This system further employs the 100% heat exchange capability of the wet centrifugal treatment tank to reduce exhaust temperature to cut down the initial equipment cost for the second-half of this system.

The exhaust from the first treatment tank is inducted into the gas reactor; the exhaust flow and spray are designed to form a straight angle, and, through the high-velocity collision theory, captures particles under 0.5 $\mu$ . It is capable of capturing 90% strong of particles under 1 $\mu$ .

The wet filler Reactor of this system consists of a treatment tank,

filler, high-pressure nozzle, demister, chemical feeder, chemical tank, pH controller, ORP controller and liquid level controller, and where necessary (pertaining to environmental protection law), essential auxiliary equipments may be fitted according to the properties of the pollutants.

The waste-air exhausted from the Venturi is then inducted to the wet filler Reactor, and, via the filler's porous structure, disperses the recover solvent for maximum exposure to achieve the purpose of separating, capturing and neutralizing. The liquid flow rate is determined according to the properties of the waste-gas. Then, HOG coefficient is calculated from the curve to determine the depth of the filler layer, and the pressure loss at filler layers is also calculated to serve as the basis for fan selection.

## **2. Purpose**

It is designed to remove SO<sub>x</sub>, NO<sub>x</sub>, HCl, fluorides and partial dust and heavy metals from exhaust produced by high-temperature combustion.

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circulation tank, circulation pump,

### 3. Features

- (1) Capable of processing high-temperature gases with moisture content.
- (2) Capable of neutralizing dry and high concentration exhaust that are prone to explosion and ignition.
- (3) Powerful wetting capability.
- (4) Large-flow nozzle keeps from blockage to prevent compromises in treatment efficiency.
- (5) Flexible selection of filler and quantity to accommodate different industries and waste-gas properties for optimal treatment efficiency and equipment cost saving.
- (6) The discharge end is fitted with a gas/liquid separator capable of eliminating moisture particles over  $10\mu$  up to 95% to reduce loss of circulation water.
- (7) Low cost and easy operation.

### 4. Specifications and functions

The system is designed for exhaust volume derived from mass energy balance calculation and combustion temperature; hence there is no set specification. The measurements of the equipment and specifications of auxiliary equipments are based on the numeric data of the designs. Materials used are SUS 304, 316 or 316L grade.

### 5. Product Photo



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# WASTE INCINERATOR'S DUST-GATHERING AND TREATMENT SYSTEM ( COOLING TANK + DEACIDIFICATION TANK + PULSE FABRIC FILTER )

## 1. Structure and Principle

The system consists of a cooling tank, deacidification tank, activated carbon injector, pulse fabric filter, pipeline system and other essential equipment. High-temperature exhaust from a waste incinerator contains acidic substances, dust particles and dioxin that requires cooling, liquid alkaline, activated carbon injection systems and bag-filter type fabric filter to process the particles, gas pollutants, and dioxin. Processed air is drained by the fan to the stack for release.

The system is a semi-dry deacidification and dust removal system that operates on the theory as follows:

A vaporizer is employed for ratio control to reduce the exhaust inducted into the cooling tank to the set temperature; then the vaporizer turns the recovery solvent into mist of tens of  $\mu$  diameter water droplets, which are then used for neutralizing the exhaust in the deacidification tank. Given the high exposure surfaces, the substance transformation and heat conduction rates are excellent.

In heat conduction, the droplets' temperature rises from absorbing the exhaust heat, and in substance transformation, acidic gases are subjected to the gas/liquid interface for absorption, whereas the droplets' moisture content are gradually evaporated through heat absorption.

By this time, the droplets reached the tank bottom, and the water content would have been entirely evaporated and turned into powder to achieve wastewater treatment. The powders derived are partially released from the tank bottom, and the remainder is left on the fabric filter. Besides gathering powder dust, the fabric filter can further react with the pollutants remaining in the exhaust via the active recover solvent to achieve maximum overall system-processing efficiency.

In addition to injecting activated carbon into the process between the deacidification tank and the fabric filter, the activated carbon injection system can also reduce dioxin discharge to meet with legal requirement.

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## **2. Purpose**

It is designed to remove SO<sub>x</sub>, NO<sub>x</sub>, HCl, dioxin, fluorides and partial dust and heavy metals from exhaust produced by high-temperature combustion.

## **3. Features**

- (1) Precision mass and energy balance calculation determines the exhaust volume produced from waste combustion and the auxiliary fuel combustion.
- (2) PLC fully automatic control and on-line monitoring.
- (3) Temperature control is enabled by a ratio-type control valve and 2 fluid nozzles to set precise water volume and achieve vaporization.
- (4) The entire system operates at a temperature above acid emergence point that prevents equipment corrosion.
- (5) The cooling water is completely evaporated to preclude the need for wastewater treatment.
- (6) The treatment process is capable of eliminating dioxin to meet legal standards together with removal of other pollutants.

## **4. Specifications and Functions**

This system is designed for exhaust volume derived from mass energy balance calculation and combustion temperature; hence there is no set specification. The measurements of the equipment and auxiliary equipment specifications are based on the numeric data of the design, Materials used are SUS304 or SS400 grade.

## **5. Product Photo**



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# WET DESULFURIZATION AND DEODORISATION SYSTEM (WET FILLER REACTOR + ACTIVATED CARBON DEODORISER)

## 1. Structure and Principle

The system is a complete facility designed according to requirement of specific gas and organic release. It comprises a wet filler reactor, tank proper, circulation tank, circulation pump, filler, high-pressure nozzle, demister, solvent feeder, solvent tank, pH control system, ORP control system and liquid level controller.

The deodorizer is designed with recovery material according to exhaust properties to enhance filter performance. Properties of gases are taken into account when designing the flow rate and fitting the primary mesh filter/catalyst filter to enhance the capture rate.

## 2. Purpose

The equipment has extensive application in cleaning hazardous and odorous gases from manufacturing, sewage treatment plants to incineration plants.

- (1) Treatment of exhaust from refuse landfill seepage tank,
- (2) Treatment of exhaust from sewer, catchments,
- (3) Treatment of exhaust from incinerators,
- (4) Treatment of organic gases from various petrochemical processing,

- (5) Array of toxic gases including  $H_2S$ ,  $SO_x$ ,  $HCl$ ,  $Cl_2$ ,  $HF$ ,  $SF$  and neutralization of putrid gases.

## 3. Features

- (1) Capable of treating high-temperature and moisture-carrying gases.
- (2) Capable of neutralizing dry and highly concentrated exhaust susceptible to explosion and ignition.
- (3) Powerful hydrating capacity.
- (4) Large-flow nozzle prevents clogging that may hinder performance efficiency.
- (5) Filler type and volume are selected according to industry and exhaust properties to ensure maximum treatment efficiency and reduce initial setup cost.
- (6) Gas/liquid separator is fitted at the outlet, which is capable of removing over 95 % of  $10\mu$  droplets to cut circulation water loss.
- (7) The filter surface of the charcoal reactor may be determined according to exhaust properties for minimization of wastes.
- (8) The two-section filter design for treating hazardous and odorous gases cuts down the frequency for charcoal replacement operating cost.

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- (9) Charcoal replacement does not require personnel to enter the reactor; it can be pulled out directly from outside to prevent accidents.

#### 4. Specifications and functions

- (1) Material of tank proper : For high-temperature gases, the material can be SUS304, 316, 316L grade stainless steel, SS400 rustproof treated and spray-painted. For acidic and alkaline gases: PP、PVC, PE
- (2) Charcoal deodorizer: The tank and interior framework are made of SUS304 or SS400 rustproof treated and spray-painted.
- (3) Filler material: can be SUS 304, PP, and PVC according to exhaust's physical properties.

#### 5. Product Photo



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# WET PACKING REACTOR

## 1. Structure and Principle

Wet filler reactors are widely used for cleaning hydrophilic exhausts; the only recover solvent required is easily-accessible water, which may also be recycled. These features make the system the most reasonably priced and easiest to operate and maintain among all environmental protection equipments. It incurs hardly any cost for wear parts.

This equipment consists of a tank unit, circulation tank, circulation pump, filler, high-pressure nozzle and demister, and where necessary suitable chemical may be added according to the exhaust's physical properties to enhance treatment efficiency.

## 2. Purpose

- (1) Soluble (hydrophilic) gases.
- (2) Liquid particles.
- (3) Solid particles.
- (4) Odors.

## 3. Features

- (1) The equipment is capable of processing high-temperature and water-containing gases.
- (2) It is capable of minimizing explosion from overtly dry state or flammable dust gases.
- (3) High wetting capability
- (4) The equipment's own pressure loss is lower than 50mmAq that greatly slash the initial setup cost of suction fan.

- (5) Large-volume nozzle prevents blockage that can affect treatment efficiency.
- (6) The circulation tank is designed with two-section filter to reduce impact on the pump.
- (7) Filler and its volume are selected according to industry and exhaust properties to bolster treatment efficiency and reduce initial setup costs.
- (8) The discharge end is fitted with a gas/liquid separator capable of eliminating over 95% of water droplets over  $10\mu$  to reduce water circulation loss.

## 4. Specifications and Functions

- (1) Reactor Material : For high-temperature gases, the material may be: SUS304, 316, 316L grade stainless steel、SS400 rustproof treated and spray painted.
- (2) Filler material may be SUS304, PP or PVC according to exhaust properties.

## 5. Product Photo



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# FLUE GAS DRY FGD SYSTEM

## 1. Structure and Principle

Dry FGD System comprises a centrifugal reactor, a high temperature ducting, a bag house, a main exhaust fan, and an adsorption powder injection system.

The waste flue gas and the adsorbent piping are connected to the centrifugal reactor at tangential direction to obtain perfect mixing and adsorption efficiency. The airflow then leads to an acid/ heat resistant bag house to remove the dust and fume. Meanwhile the powder cake on the bag surface will adsorb the acid once again while filtering.

This FGD system equipped with auto temperature and static pressure control, ensures stable operation of furnace.

## 2. Purpose

For Treatment of All Kinds of Flue Gas.

Remove : Fume, Dust, Dioxin, Sox,  
HCl, Nox, Fluoride,  
Mercury, H<sub>3</sub>BO<sub>4</sub>, etc.

## 3. Features

- (1) All Pollutants Removed Simultaneously.
- (2) Economic System Arrangement for High Control Efficiency.
- (3) Simple Machinery for Easy Operation and Maintenance.
- (4) Over Dew Point Operation, No Corrosion Occurred.
- (5) No White Smoke Exhausted.
- (6) Discharge Dry Dust, No Sludge, No Waste Water.

## 4. Product Photo



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# SEMI-DRY & WET FGD SYSTEM

## 1. Structure and Principle

Utilize semi-dry or wet scrubber method to achieve cooling, de-dust, and neutralization for high temperature exhaust flue gas. The flue gas normally contains fume, dust and toxic gas.

This system is designed to comprise several of following equipment, depends on the quality of flue gas.

- (1) Spray Tower
- (2) Cyclone Scrubber
- (3) Turbulent Scrubber
- (4) Venturi Scrubber
- (5) Packed Tower
- (6) Bag House
- (7) Electrostatic Precipitator

## 2. Purpose

Semi-Dry or Wet Treatment for All Kinds of Flue Gas.

Remove : Fume, Dust, Dioxin, Sox, HCl, Nox, Fluoride, Mercury,  $H_3BO_4$ , etc.

## 3. Features

- (1) All Pollutants Removed Simultaneously.
- (2) No Fire & Explosion Risk by Wet System.
- (3) Low Initial Cost.
- (4) Needs Careful PH Control to Maintain Good Efficiency and Avoid Corrosion.
- (5) Might Exhaust Water Vapor (White Smoke) at Tail Gas.
- (6) There Might Be Waste Water From The System.

## 4. Product Photo



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# WASTE VOCS OXIDATION RTO & HEAT RECOVERY SYSTEM

## 1. Structure and Principle

RTO Components:

- (1) Twin Bed of Low Pressure Ceramic Heat Media.
- (2) Combustion and Oxidation Chamber with High Density Insulation.
- (3) Two Inlet Plenums with Puppet Valves for Rapid Flow Direction Control.
- (4) Pre-Piped Fuel Train with NGI System.

The VOCs laden waste air enters “A” ceramic bed to be preheated, then passes through the central combustion chamber where VOCs are oxidized into  $\text{CO}_2$  and  $\text{H}_2\text{O}$ , and exits into “B” bed where combustion heat transfer from the hot gas back into the ceramic. The gas flow direction is auto controlled to maintain an even temperature profile between the twin beds.

An additional Heat Recovery System can be specially designed for high concentration VOCs exhaust process, such as coating process, etc. After the waste VOCs is decomposed completely by a fuel-free RTO, the hot exhausted gas will be led to a Heat Recovery System. This Heat Recovery System employs Air/Liquid heating

Direct/Indirect contact heat transfer. Almost all the heat energy of waste VOCs can be recovered and back to the plant process.

## 2. Purpose

- (1) Treatment for all kinds of VOCs & Odors exhaust.
- (2) Specially designed to be applied to the high VOCs exhaust industries, such as coating processes, drying process, heating process, etc. The additional combustion heat can be recycled by a Heat Recovery System. Not only eliminates the VOCs pollution problem, but also recovers heat energy, saves the plant fuel cost.

## 3. Features

- (1) Oxidation Temperature at 800 ~ 1,000 °C, VOC Destruction Efficiency Over 99 %.
- (2) Fuel Free Operation at Inlet VOC Lording Over 3 % LEL (about 450 ppm).
- (3) Low Pressure Drop Ceramic Media with 95 % Heat Recovery.

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media for

- (4) Positive Pressure Operation and NGI System, Ensures Process Line to Maintain A Stable Static Pressure.
- (5) PLC Auto Controlled, Remote On Line Service Diagnostics.
- (6) Flameless VOC Oxidation, No NOx Occurred.
- (7) Puppet Valves for Rapid Air Direction Change, Within 0.7 Second.
- (8) Auto heat recovery control by pneumatic high temperature damper.
- (9) Reduces fuel expense, provides a most economical manufacturing process.

#### 4. Product Photo



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# ACTIVATED CARBON ADSORPTION SYSTEM

## 1. Structure and Principle

The equipment mainly employs activated carbon to adsorb toxic gases and odors; aluminum fibers and non-woven filter are utilized for screening off particulates that makes it an excellent purifying system.

## 2. Purpose

For benzene, toluene, carbon tetrachloride, sewage odor, etc.

## 3. Features

- (1) Capable of removing particles from air flow, and adsorbing hazardous pollutants in air.
- (2) Modular design requiring small space; simple structure reducing breakdown rate.

(3) Employing multi-mix charcoal's physical and chemical adsorbing properties for effective treatment of corrosive, odorous and toxic gases.

(4) Effectively clean particulates under 1 $\mu$ m.

(5) VOC can be completely eliminated without leaving odor.

## 4. Specifications and Functions

Customized design to meet environmental requirements.

## 5. Product Photo



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# WET GAS SCRUBBER

## 1. Structure and Principle

Contaminated air contact the fluid, which absorbs, neutralizes some of the hazardous elements in the air, and clean particles also.

## 2. Purpose

For processing various industrial exhausts and particle pollutants.

## 3. Features

The process covers cooling, wetting, screening and absorbing.

For some gas pollutants, wet absorbing/screening can produce or recycle useful chemical substances.

## 4. Specifications and Functions

Customized according to environment

## 5. Product photo



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# FANS

## 1. Structure and Principle

Years of research and experiment have enabled a type of design that minimized turbulence at fan input and output, which in turn diminishes noise and bolsters efficiency.

- (1) Shield : The device can effectively convert air pressure from the wide-wheel, and a thick steel plate is employed to fully prevent vibration and noise and strengthen its rigidity.
- (2) Wide-wheel : The design bends backward, and the curve radius, outlet angle, and inlet angle are coordinated with the shield dimensions. The dynamic is calibrated for optimal balance.
- (3) Axle : Premium carbon steel is used to assure against vibration.
- (4) Bearing : NSK bearing is selected for operation safety. All parts are precision made for durability.

## 2. Purpose

- (1) For boiler blowing and draining.
- (2) For dust draining and collection at grinding, powder manufacturing plants.
- (3) For ventilation at micro-dust worksites.
- (4) Powerful ventilation for chemical plants.

- (5) Air conditioning of buildings.
- (6) Cooling and ventilation of machinery.
- (7) Hot air circulation and emission.

## 3. Features

- (1) Comes with low, middle and high switches for varied wind volume and pressure.
- (2) Solid structure, economical and durable.
- (3) Outlet direction can be designed according to site requirement.
- (4) Accommodates dust filters.

## 4. Specifications and Functions

- (1) Dynamic curve : As the wheel bends backward, it is endowed with the feature of “limited loading”, yet motor can be selected to meet specific requirement.
- (2) Air volume, static pressure : The overall operation is very stable, enabling high efficiency for industrial operation and chemical manufacturing.
- (3) Yield and parallel operation : As the wheel bends backward, there is marginal yield impact, and hence enabling parallel operation for optimal efficiency.
- (4) Noise : High-performance but noise-free operation.

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# TURBINE FAN

## 1. Structure and Principle

Following the laws of nature - hot-air ascents/cold-air descents. Wind drives the waterproof arch blades and solid turbine acceleration blades, which withstands 120 miles per hour of wind velocity to drive out hot air, odor, humidity, smoke, mist, steam and pollutant, and bring in fresh air to keep the interior fresh and comfortable as well as prolong lifespans of production machineries, materials and buildings.

## 2. Purpose

Drain and dissipate heat, ventilation.

## 3. Features

- (1) One-piece assembly of stainless steel.
- (2) Require no power, offering energy saving.
- (3) No limitations to installation location.
- (4) Special patented waterproof design.

## 4. Specifications and Functions

Made with SUS304 grade corrosion-resistant stainless steel, standard arch blade design, sealed gaps, designed for rain to drain off blades without leaking indoor. Simple installation, no operating noise, no operating cost.

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# ACID/ALKALI RESISTANT FAN

## 1. Structure and Principles

Runner blades are designed in the back-leaning structure and the axial drive serves as a constant load device; therefore, there is no worry about motor overload. It is mainly consists of blades, a shell, driver mechanism, and supporting mechanism. Its theoretical efficiency is high and is applicable to a wide range of air exhaust and blowing purposes.

## 2. Purpose

It is applicable to a wide range of industries that have needs to convey acid/alkaline gases; ex: electronic, plating, petrochemical, and surface treatment industries.

## 3. Features

- (1) It was development through a joint venture with the Mechanical Industry Research Laboratories of the Industrial Technology Research Institute.
- (2) The blades, shells, and protective accessories are made of FRP; therefore, they have good anti-acid/alkaline and anti-corrosion qualities.
- (3) Certified by AMCA experimental test - Its efficiency is as high as 74.76%, which enables the users to save a large amount of operating costs.

- (4) Patented oil-bath axle design upgrades the usage life of the axle.
- (5) Over Lap design for the vent opening prevents back-flow and leakage loss.
- (6) The shell is covered with special FRP to enhance its anti-UV function.

## 4. Specifications and Functions

- (1) Process volume 50 ~ 2,800 cmm.  
Press still pressure 25 ~ 800 mmAq.
- (2) Exterior specifications :  
Please refer to the catalog.

## 5. Product photo



## 6. Award (Certified) Items

Taiwan Environmental Manufacturers Association certified the product for environmental protection quality standard in 2000.

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# FRP SCRUBBER

## 1. Structure and Principles

This system transmits contaminants in gas into liquid through gas/liquid contact and then separates clean gas from the liquid containing contaminants to achieve cleaning.

## 2. Purpose

It is suitable for all types of acid/alkaline gas generated in various industrial production processes.

## 3. Features

The body of the tower is made of special anti-UV FRP and the smooth reflective exterior surface further increases the usage life of this product.

## 4. Specifications and Functions

- (1) Gas process volume: 50~1800cmm.
- (2) The unit is design as a vertical type-washing tower; horizontal type is also available upon request for customization.

## 5. Product Photo



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# ACTIVITY CARBON DEODORIZER

## 1. Structure and Principle

This system uses the absorbability of activated carbon to conduct organic waste gas. After absorbed by activated carbon, the treated air is then discharged into the atmosphere. For waste gases of various properties, an initial filter can be install in front of the activated carbon to reduce clogging.

## 2. Purpose

It absorbs organic waste gas and odor.

## 3. Features

- (1) It is use to twitch for primary filter net.
- (2) Activated carbon filters are fed form top and removed from the side and for easy replacement.
- (3) It's can also be use on other pollution control equipments.

## 4. Specifications and Functions

Capacity : 10 ~ 400 m<sup>3</sup>/min.

## 5. Product Photo



高幟通風工程股份有限公司

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# TURBO FAN

## 1. Structure and Principle

This system uses backward-leaning wind wheel, the material is a steel plate, and an acid-proof F.R.P.cover can be placed over the blades.

## 2. Purpose

Air conditioner, ventilation, and all kinds of air pollution control equipment.

## 3. Features

This product is strong and durable. Every fan is tuned for balance and has long usage life.

## 4. Specifications and functions

- (1) Capacity : 10~2,500 m<sup>3</sup>/min.
- (2) Static pressure : 100~1,500mmAq.
- (3) Power : 1~300hp.

## 5. Product Photo



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# PACKING WET SCRUBBER

## 1. Structure and Principle

The basic design of this wet scrubber is to transfer those fumes into water through contacts between the waste gas and water or solution. Surface area provided by various packing offers a basis for inducing interaction between the liquid and the gas. The air or gas enters the bottom of the tower and receives a preliminary washing as the scrubbing liquid drains in an opposing flow from the packed and irrigated bed. This liquid, which is pumped into the top of the tower, flows down over the packing bed and covers the surface areas of the packing with a liquid film to accomplish the work of collection. Finally, the airstreams pass through a mist eliminator section before it is released.

## 2. Purpose

- (1) PCB manufacturing-Plating, Pickling, Dipping, Anodizing, Etching,etc.

## 4. Specifications and Functions

	A	B	C	D	E	F	G	H	I	J	L	d1	d2	d3	d4
PA-20	500	500	1,200	1,800	800	75	250	3,075	300	600	4,850	180	50	50	25
PA-30	600	600	1,200	2,000	800	75	300	3,075	350	1,000	5,300	240	50	50	25
PA-50	800	800	1,500	2,500	1,000	75	350	3,075	400	1,000	5,550	300	65	50	40
PA-80	1,000	1,000	1,800	3,000	1,000	100	400	3,300	500	1,000	5,900	300	80	65	40
PA-110	1,200	1,200	2,000	3,000	1,000	100	450	3,300	600	1,000	6,000	360	80	65	40
PA-150	1,400	1,400	2,000	3,500	1,000	100	540	3,350	700	1,000	6,150	480	80	65	40
PA-200	1,600	1,600	2,000	4,000	1,000	125	600	3,625	800	1,500	7,050	480	80	65	40
PA-260	1,800	1,800	2,500	4,000	1,000	125	635	3,625	900	1,500	7,150	600	100	80	50
PA-310	2,000	2,000	2,500	4,500	1,200	125	720	3,700	1,000	1,500	7,525	600	100	100	50
PA-450	2,400	2,400	3,000	4,500	1,350	125	800	3,700	1,000	1,500	7,675	800	100	100	50

- (2) Plating Industries-Plating, Pickling, Dipping, Anodizing, Etching...etc\Pharmaceutical Plant-Grinding, Filling, Screening operation.
- (3) Chemical Industries and Food Industries.
- (4) All kinds of boilers and incinerators.
- (5) Machinery manufacturing-Oil mist.
- (6) Dust contained gas and combustion waste gases from various sources Odder removal.

## 3. Features

- (1) Highest absorption dust removal efficiency.
- (2) No moving parts in the mechanism, requiring minimum maintenance.
- (3) Various kinds of construction materials are available needs of various operations.
- (4) Constant and small pressure drop allows large air volume.
- (5) Widely applicable for various industries.

貫能技術工程有限公司

FAIR TECHNICAL ENGINEERING CO., LTD

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# VOC ADSORPTION DEVICE

## 1. Purpose

- (1) Washing of electronically and optical parts.
- (2) Tire renewal, Rubber, Glass fiber, Dye, Paint production.
- (3) Plastic, Printing, Glue, Agrochemical, Organic Solvent Production.
- (4) Aluminum to fit different circumstances.

## 2. Specifications and Functions

Specification Model No.	H (mm)	W (mm)	L (mm)	L1 (mm)	Filter area (m <sup>2</sup> )	Recommended Air Volume (cm <sup>3</sup> )
CEF-22A	1,100	1	1,200	1,000	1.44	43.2
CEF-22B	1,100	2	1,200	1,000	2.88	86.4
CEF-22C	1,100	3	1,200	1,000	4.32	129.6
CEF-23A	1,100	1	1,800	1,000	2.16	64.8
CEF-23B	1,100	2	1,800	1,000	4.32	129.6
CEF-23C	1,100	3	1,800	1,000	6.48	194.4
CEF-24A	1,100	1	2,400	1,000	2.88	86.4
CEF-24B	1,100	2	2,400	1,000	5.76	172.8
CEF-24C	1,100	3	2,400	1,000	8.64	259.2
CEF-32A	1,500	1	1,200	1,400	2.16	64.8
CEF-32B	1,500	2	1,200	1,400	4.32	129.6
CEF-32C	1,500	3	1,200	1,400	6.48	194.4
CEF-33A	1,500	1	1,800	1,400	3.24	97.2
CEF-33B	1,500	2	1,800	1,400	6.48	194.4
CEF-33C	1,500	3	1,800	1,400	9.72	291.6
CEF-34A	1,500	1	2,400	1,400	4.32	129.6
CEF-34B	1,500	2	2,400	1,400	8.64	259.2
CEF-34C	1,500	3	2,400	1,400	12.96	288.8
CEF-42A	1,900	1	1,200	1,800	2.88	86.4
CEF-42B	1,900	2	1,200	1,800	5.76	172.8
CEF-42C	1,900	3	1,200	1,800	8.64	259.2
CEF-43A	1,900	1	1,800	1,800	4.32	129.6
CEF-43B	1,900	2	1,800	1,800	8.81	288.2
CEF-43C	1,900	3	1,800	1,800	12.96	388.8
CEF-44A	1,900	1	2,400	1,800	5.76	172.8
CEF-44B	1,900	2	2,400	1,800	11.52	345.6
CEF-44C	1,900	3	2,400	1,800	17.28	518.4
CEF-45A	1,900	1	3,000	1,800	7.2	216
CEF-45B	1,900	2	3,000	1,800	14.4	432
CEF-45C	1,900	3	3,000	1,800	21.6	649

## 3. Features

- (1) Compact design, Easy for transportation and installation.
- (2) Rail type fixture of filter plenum, easy for installation and replacement.
- (3) Fit indoor and outdoor installation.
- (4) Can be combined with various of air pollution control equipments.
- (5) Fabricated with steel, Galvanized steel, stainless steel or Aluminum sheet.

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# AIR POLLUTION CONTROL

## 1. Structure and Principle

After chlorine is collected, it is sent to neutralization equipment to touch and adsorb high-concentrated NaOH; chlorine emitted can meet the emission amount defined in the environment protection code.

## 2. Purpose

Make acidic/caustic handling, dust handling, odor handling and chlorine neutralizing processes to waste gas.

## 3. Specifications and Functions

Use FRP, PP or other anti-corrosive material to build the body structure; main structure thickness varies corresponding to different models and capacities.

陸發國際股份有限公司 L & F INTERNTATIONAL CO.,LTD.

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# WET SCRUBBER

## 1. Structure and Principle

This facility mainly comprises a tank proper, circulation tank, filler layer, demister, circulation pump, fan, solvent system, power control system and sampling platform. This facility works by utilizing fan to create negative pressure for suction and draws flue gas into the tank. Through gas and liquid contact in the tank with mixture of recovery solvent, neutralization, oxidization or recovery of the mixture take place achieve the purpose of air purification.

## 2. Purpose

This product is suitable for surface treatment, the dip, the etching, the exhausted membrane, the development, the galvanization for the system regulation and so on processing sour alkalinity waste gas.

## 3. Features

Under the same condition, products designed by the company has lower pressure damages to the tower body, high processing efficiency, operation and maintenance, negative pressure, and strong structure.

## 4. Specifications and Functions

This product can be customized in dimension and specification according to required wind volume, and can be made in vertical and horizontal forms and in 2 or 3 sections. The main materials used include SUS304, PP, PVC, and FRP.

## 5. Product Photo



# HIGH-BOILING POINT ORGANIC SOLVENT TREATMENT FACILITY

## 1. Structure and Principle

Configuration : cooling pipe-coil,  
demister, thermal  
pipes (optional).

Principle : Gas temperature is lowered  
to below the relative stem  
pressure of specific  
chemical to allow the  
chemical to condense and  
achieving the purpose of  
separation.

## 2. Purpose

- (1) High boiling point organic  
gas of high concentration >1%.
- (2) Flue gas carrying chemical of  
high boiling point and low  
steam pressure.

## 3. Features

- (1) Designed in compliance with  
PHA.
- (2) Pioneered design of washing  
water systems (TSMC plant  
2, 10 years ago) . It is  
equipped with self-cleaning  
functions to ensure the  
heat-exchange efficiency of  
the condensation tubes and  
fire safety.
- (3) It is equipped with self-clean  
function to ensure the  
efficiency of heat exchange  
and fire safety.
- (4) High-performance demister:  
High hydraulic load, low  
clogging, high demist  
efficacy ( 99 % elimination  
rate for 3 $\mu$ m droplets ) .

- (5) Equipped with PLC and  
human/machine interface  
( optional ) .
- (6) Equipped with wind-volume  
adjustment system ( 25~  
120% ) .
- (7) Equipped with heat pipe-coil  
for thermal recovery, which  
cuts down fogging and  
frothing to a great scale.
- (8) Equipped with a circulation  
pump for controlling of the  
cool water temperature and  
adjusting of the condensing  
volume ( pipe-coiler equipped  
with exposed temperature ) .

## 4. Specifications and Functions

- (1) This equipment is made with  
SUS316 grade.
- (2) The outlet temperature of the  
condenser can be controlled  
to 10 ~ 14 °C.
- (3) The condensation efficiency  
of this facility reaches 70 ~  
95 % ( pending upon flue  
gas concentration ) .

## 5. Product Photo



華懋科技股份有限公司

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# VOLATILE ORGANIC EXHAUST TREATMENT FACILITY (FLUIDIZED BED)

## 1. Structure and Principle

Configuration: 1st fan, 2nd fan, suction, separator, condenser, site steam regeneration (SSR), chiller, THC Continuous Surveillance System.

Principle: VOC passes the fluid bed system (containing GBAC) for pollutants to attach to GBAC; the cleaned air is then released. After which, GBAC is stripped of VOC in the separator through electric heating (400°C). The removed VOC is then cold condensed into wastewater for further treatment.

## 2. Purpose

Manufacturing exhaust of semiconductor and related industries generally has greater wind volume (>10,000CMH) and low concentration (<800ppm as CH<sub>4</sub>), and often carries chemicals of high boiling point and low differentiation.

## 3. Features

- (1) High operating stability, easy operation: the suction system of the fluid bed and separation system of the mobile bed are carefully designed; the charcoal globe has good flow and stable operation that functions steadily despite wind volume fluctuation to attain the designed treatment efficiency.
- (2) Safety : Flow format means deposit does not build up on the charcoal bed which may lead to ignition. N<sub>2</sub> is employed as the safety gas to ensure safety in high-temperature operating zones.
- (3) N<sub>2</sub> circulation for low cost : Designed with a second suction system; cleaner N<sub>2</sub> can be recycled to cut running cost.
- (4) No wastewater : The scrubber system is divided into 3 electro-thermal sections for indirect heating that produces

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- (5) Flexible system : high condensation rate ( over 1000 times ) , back-end system offers flexible configuration to suit various condensers or combustors as required. It is an excellent solution for areas without gas supply; large wind-volume acceptance range, suitable for manufacturing systems of drastic wind volume fluctuation.
- (6) Continuous monitoring : man/machine interface enables direct monitoring of the system's operating status; treatment equipment's inlets and outlets can be fitted with THC ( optional ) for uninterrupted surveillance, and various report, spreadsheet designs that are available to meet legal requirements.

no wastewater.

#### **4. Specifications and Functions**

- (1) Wind Capacity : 3,000 ~ 100,000 cmh.
- (2) Concentration Capacity : 10 ~ 1,000 ppm ( as CH<sub>4</sub> ) .
- (3) Condensation Efficacy : over 1,000 times.
- (4) Elimination Rate : over 90 %.

#### **5. Product Photo**



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# VOLATILE ORGANIC EXHAUST TREATMENT FACILITY (WHEEL)

## 1. Structure and Principle

The system consists of a 1st fan, 2nd fan, wheel, incinerator (TO / RTO), THC Continuous Surveillance System

Principle : VOCs passes the wheel (containing hydrophobic inorganic recovery solvent) for reaction; clean air is then released, and pollutants attached to the wheel. VOCs are then stripped by high-temperature gas (180 °C); the stripped-off VOCs is then subjected to a vertical-burning incinerator.

## 2. Purpose

Manufacturing exhaust of semiconductor and related industries generally has greater wind volume (> 10,000 cmh) and low concentration (< 800 ppm as CH<sub>4</sub>), and often carrying chemicals of high boiling point and low differentiation.

## 3. Features

- (1) Fully automatic continuous operation: System purification effectiveness is maintained over 90% (design can be elevated to 95% according to requirement).
- (2) Non-coupling design offers low system pressure fluctuation; negative pressure operation produces low environmental odor.
- (3) PLC : Wheel part contains N<sub>2</sub> and fire auto sprinkler system; combustor is additionally designed with gas or diesel auto shutoff valve and flow adjust valve for precise control of fuel supply and emergency shutdown.
- (4) Heat is twice recycled with an aggregated rate of 80 ~ 90 %.
- (5) Wheel is water washable: in treating emission that carries difficult or non-stick VOCs of high boiling point, the deposits on wheel surface can be removed via the auto washer to quickly restore the wheel's

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function.

- (6) Continuous monitoring : man/machine interface enables direct monitoring of the system's operating status; treatment equipment's inlets and outlets can be fitted with THC ( optional ) for uninterrupted surveillance, and various report, spreadsheet designs are available to meet legal requirements.

#### 4. Specifications and Functions

- (1) Wind Capacity : 10,000 ~ 100,000 cmh.
- (2) Concentration Capacity : 50 ~ 200 ppm ( as CH<sub>4</sub> ) .
- (3) Condensation Efficacy : 6 ~ 15 times.
- (4) Elimination Rate : over 90 %.



#### 5. Product Photo

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# ABATEMENT SYSTEM

## 1. Structure and Principle

- (1) High plasma efficiency to treat the process gas.
- (2) High abatement efficiency for all Toxic Gas
  - Process Gas : Under TLV
  - PFC Gas > 99% ( Exception : CF<sub>4</sub> > 95% )
  - SiH<sub>4</sub> & NH<sub>3</sub> Gas > 99%
- (3) Corrosion resistance material and design.
- (4) Prevent the powder clogging design.
- (5) Multiple wet treatment chamber design.
- (6) Touch Screen Monitor.
- (7) Excellent safety interlock design.
- (8) Diversified Option for user demand.

## 2. Purpose

Unique Technique:

- (1) CNT Plasma Sources.
- (2) H/O Free Radical Provider.

## 3. Features

- (1) NO Fuel (NG/LPG or “H<sub>2</sub>”)

- (2) NO COF<sub>2</sub> & HCN (Toxic Byproducts)
- (3) High Energy Efficiency ( 90% ~ 99%)
- (4) Atmosphere System, can treat flammable gas.
- (5) Extreme High DRE% (CF<sub>4</sub> > 95%.

## 4. Specifications and Functions

AC 220V 、380V

## 5. Representative Performance

China Semiconductor company :  
SMIC 、CXCT 、UMSC 、Nexchip

## 6. Product Photo



## 7. Award (Certification) Project

Semi S2 、Semi F47.

**愛迪亞科技股份有限公司 ICS TECHNOLOGY CO., LTD.**

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# ACTIVATED CARBON REACTOR FACILITY

## 1. Structure and Principle

This facility employs porous solids to treat fluid mixture for one or multiple ingredients to concentrate on the surface of the solids to achieve particle separation. Since the process can effectively capture low-concentration pollutants, it is prevalently applied in public hazard prevention such as recycle and purification of organic solvents and air condition deodorization.

## 2. Purpose

Emission from PCB manufacturing, paint job, toxic emission from petrochemical manufacturing.

## 3. Features

- (1) Massive surface area.
- (2) Large capacity.
- (3) Selective adherence function for different gases.
- (4) High mechanical strength, thermal and chemical stability.
- (5) Wide supply sources and inexpensive.

## 4. Specifications and Functions

- (1) Cylinder mono-reactor.
- (2) Cylinder dual-reactor.
- (3) Rectangular mono-reactor.
- (4) Saturated charcoal can steam treated or directly replaced.
- (5) Capacity can be designed and manufactured according to requirement.

## 5. Product Photo



## STEEL-PLATE CENTRIFUGAL AIR-SUPPLY FAN

### 1. Structure and Principle

A type of air supply that applies centrifugal compression to compress air supply to the required specification.

### 2. Purpose

High efficiency, low noise and vibration.

### 3. Features

Applicable for incinerator air supply, flue-gas equipment air supply, mechanical processing, manufacturing, and various factory emission.

### 4. Representative Attainments

- (1) Taiwan Sugar : 650hp Sugarcane Residue Boiler I.D. Fan.
- (2) Taiwan Chemical : 215 hp. Petrochemical Manufacturing Equipment.
- (3) Formosa Plastics, No. 6 Naphtha Cracker Plant : 300hp Incinerator I.D. Fan.
- (4) Jen Yuan Kai Li : 200 hp. Incinerator, Singapore .

### 5. Product Photo



### 6. Award (Certification) Project

CNS compliant.

**達晟工業股份有限公司      DA SHENG INDUSTRIALS CO., LTD**

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# ACTIVE CARBON REACTOR FACILITY

## 1. Structure and Principle

This system employs the absorption property of active carbon., In which, emission-carrying organic gas is inducted into the charcoal filter layer for capturing before releases to the atmosphere. The charcoal filter mesh is arranged in layers to expand surface contact with air. Powder mesh can be added for various emission property for preliminary screening to deter clogging of the charcoal filter. Recovery solvent or other adhering matters can be added for chemical absorption.

## 2. Purpose

- (1) Cleaning of electronic parts, photoelectric instruments.
- (2) Tire rework, rubber industry, fiberglass, dye, paint manufacturing.
- (3) Plastic, printing, adhesive, pesticide, organic solvent manufacturing.

## 3. Features

- (1) Pull-out type filter for easy installation and replacement.
- (2) For both indoor and outdoor installation.
- (3) Can be incorporated with other pollution prevention equipments.
- (4) Can be customized in sub-steel sheet, galvanized sheet, stainless steel sheet, etc.

漢揚環保機械股份有限公司

HAN HWAN POLLUTION CONTROL MACHENICS CO., LTD.

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# CATALYST CONVERSION FACILITY

## 1. Structure and Principle

The facility utilizes the special property of catalysts in disintegrating hazardous emission for complete oxidation or conversion of exhaust gases into harmless gases or water at low temperature.

## 2. Purpose

Various odor-producing sources including paint industry, ink manufacturing, rubber and synthetic resin manufacturing, food processing, printing and chemical industries.

## 3. Features

- (1) High treatment efficiency, capable of complete combustion of pollutants.
- (2) Low operating temperature for great fuel saving.
- (3) Forestall second pollution through high-temperature combustion such as NOx, SOx.
- (4) Heat from gas treatment may be recycled.
- (5) Long catalyst lifespan; can be regenerated for reuse.

漢揚環保機械股份有限公司

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# EXHAUST GAS COMBUSTION TREATMENT EQUIPMENT

## 1. Structure and Principle

The main structure includes a series of processing equipment such as primary and secondary furnace, cooling system, acid removal tower, baghouse dust collector and blowdown stack with induced draft fans, etc., utilizing high temperature combustion to effectively treat volatile organic gases, also, use back-end processors such as packed tower, baghouse dust collector and activated carbon injection system to process SO<sub>x</sub>, NO<sub>x</sub> and dioxin and other pollutants. There is an operating condition linkage control system for ensuring operation safety and processing efficiency, and a real-time monitoring system for tracking the status of equipments.

## 2. Purpose

These equipments are intended to used in waste treatment plants, in chemical process with volatile organic solvent present and chemical process that produce high density volatile organic gases.

## 3. Feature

- ( 1 ) Highly efficient in processing volatile organic gases.
- ( 2 ) A set of integrated processing system, easy to planning, operating and monitoring.
- ( 3 ) For the constraints of plant site's terrain and ground features, we have developed a modular design system, to deal with the problem of demolition and relocation of existing plants and equipment during the installation of machines.
- ( 4 ) The operating condition can be adjusted in response to the manufacturing process change in the future.

## 4. Representative Performance

- ( 1 ) COSMOS ENVIRONMENT ENGINEERING CO., LTD.  
2013.03
- (2) KING SHINE EE TECHNOLOGY ENTERPRISE CO.,LTD.  
2011.04
- (3) JIUNG YUAN CO., LTD.  
2019.05

漢揚環保機械股份有限公司

HAN HWAN POLLUTION CONTROL MACHENICS CO., LTD.

台中市神岡區中山路 360 巷 45 號

No.45, Lane 360, Chung Shan Rd., Shengang District, Taichung City, Taiwan

TEL : +886-4-2561-3885 FAX : +886-4-2561-1440 E-mail : hanhwan@ms64.hinet.net



# VENTILATION AND EXHAUST DUCT SYSTEM

## 1. Main structures and Working principle

Design the lure with constant velocity and constant pressure principle, and base on the condition of pollutant source, apply air hood to collect pollutant, and connect each vent with branch-type air duct, each vent has damper to adjust air volume, and use draft fan induce air to the lure.

## 2. Purpose

Used for workplaces of granular material grinding, handling, conveying, mixing, and stirring, cement, lime, woodwork, and powder coating, etc. which need to collect diffuse pollutant in the production process.

## 3. Feature

- ( 1 ) Constant velocity design to reduce pressure loss and maintains collection efficiency at the distal of the lure.
- ( 2 ) Bag material is selected base on the environment of manufacture plant, to extend service life.
- ( 3 ) Customize designed gas hood and damper, to increase dust collecting efficiency.
- ( 4 ) Easy to install and maintain.

## 4. Representative Performance

- ( 1 ) APRO TECH CO.,LTD.  
2020.11.
- ( 2 ) YEONG LONG  
TECHNOLOGIES CO.,LTD.  
2021.01.
- ( 3 ) HENGXIANG RIBBON CO.  
2016.05.

## 5. Product Picture



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# VOC PACKING SCRUBBER

## 1. Structure and Principle

Emission enters from the tank bottom while the recovery solvent flows down from tank top to effectively react with the emission in the filler tank. The top of the tank is devised with a demister and a recovery solvent nozzle; the center is the filler tank; recovery solvent flows from the top and passes through the filler layer to reach the circulation chute at the bottom for recycling.

## 2. Purpose

Worksites producing VOCs such as chroming and spray-painting.

## 3. Features

- (1) High absorbability for various hazardous gases.
- (2) Even gas and liquid distribution for effective exposure and reaction.

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# WET SCRUBBER

## 1. Structure and Principle

Emission is inducted evenly into the reactor, and effectively interact with recovery solvent sprayed down from top in the filler layer, then passes through the gas and liquid separation system to eliminate moisture for releasing clean air.

## 2. Purpose

For treating industrial emission of petrochemical manufacturing, kiln-firing industry, electroplating, metal surface treatment, flue gas, boiler and furnace.

## 3. Features

- (1) High-efficiency flush scrubber of 99% elimination rate.
- (2) Large capacity, small system pressure loss.
- (3) Simple structure, low equipment cost: low breakdown rate, easy maintenance, low operating cost.
- (4) Light equipment weight, small equipment space for easy space planning.
- (5) Made with acid, alkaline resistant PP, PVC, FRP.

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# ACTIVE CARBON REACTOR FACILITY

## 1. Structure and Principle

This system uses the surface forces of solids to adhere certain substances in fluids onto recovery solvents. Is the most commonly used absorption agent is active carbon.

## 2. Purpose

Mainly for treating organic gases

## 3. Features

- (1) Type of active carbon can be selected according to exhaust properties; for large treatment capacity, equipment for recycling, active carbon may be fitted.
- (2) The preliminary mesh and active-carbon mesh may be designed as pull-out type for easy installation and replacement.

## 4. Specifications and Functions

Size can be designed according to site requirement.

Material : stainless steel, carbon steel, galvanized sheet, PP, P. V.C, F.R.P.

## 5. Product Photo



# AIR SUPPLY FACILITY

## 1. Structure and Principle

Fans are available in many types. However, the type, number, and arc of the blades dictate the air volume and pressure generation. It is important to select the materials and model that suits your needs.

## 2. Purpose

Collect dust, drain smoke, air supply and suction for high-temperature furnace, air conditioner and boiler, incinerator and public hazard prevention.

## 3. Features

- (1) Can be customized according to air volume and pressure requirement.
- (2) High efficiency, low noise.
- (3) Resilient structure for durability.

## 4. Specifications and Functions

- (1) Fan type: Stroke Fan, straight-blade, constant load, Turbo Fan, blade-cut, Axial Fan.
- (2) Material: a wide choice in stainless steel, carbon steel, FRP, PP, aluminum with rubber lining.
- (3) Taiwan Salt.

## 5. Product Photo



Double Inlet Airfoil Fans  
Q: 5,000 m<sup>3</sup>/min. P: 300 mmAq.

銓風機械股份有限公司 CHUAN FENG MACHINERY CO., LTD

台中市南屯區五權西路二段 1266 巷 11 號

No. 11, Lane 1266, Sec. 2, Wucyuan W. Rd., Nantun District, Taichung City, Taiwan

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E-mail : cf002@ms49.hinet.net http : //www.chuanfeng.com.tw

# FILLER AIR-JET SCRUBBER

## 1. Structure and Principle

Exhaust enters from the scrubber bottom; water or chemical added solvent is sprayed via a special nozzle to complete the initial cleaning. The solid filler spread on top of the filler layer serves as the medium for gas and liquid contact; the mixture is then demisted by the demist system; air is then released to the atmosphere to achieve the purpose of exhaust treatment.

## 2. Purpose

For treating exhaust produced from various types of manufacturing

## 3. Features

- (1) High scrubbing, purifying efficiency, easy operation and maintenance.
- (2) Recovery solvent can be recycled to minimize wastewater.
- (3) Multi-layer filler design for flexibility.

## 4. Specifications and Functions

Can be customized according to exhaust properties or client requirement.

Material : Can be stainless steel, carbon steel, galvanized sheet, PP, PVC, and FRP.

## 5. Product Photo



Wet Scrubber

Treatment Air Volume : 2,000 m<sup>3</sup>/min.

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# PUBLIC POLLUTION PREVENTION EQUIPMENT

## 1. Structure and Principle

Facility development procedure:

Planning → design → manufacture →  
install → test → service.

## 2. Purpose

Applicable for treatment of hazardous  
gases of various industrial emissions  
including casting, processing,  
petrochemical, kiln firing,  
electroplating, etc.

## 3. Features

Comprehensive service from  
planning, design, manufacture,  
installation, testing and trial run to  
after-sales service. It is economical  
and durable with excellent efficiency.

## 4. Product Photo



Cu, Al, Fe Foundry Waste Treatment  
Facility

銓風機械股份有限公司

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# AXIAL AIR-SUPPLY FAN

## 1. Structure and Principle

Our axial suction and supply fans are designed to cater to different environments and industries and developed under the requirement for space efficiency and large air capacity, which make them different from common centrifugal designs. Since the suction direction and release direction of an axial fans are aligned in straight-line to the motion, it is dubbed to the axial motion. This type of fans is driven by airflow on blades, thus making it possible to attain maximum air volume in minimum space.

(1) Machine body : Looking like a windpipe, the two ends are fitted with flange for connection to system pipelines. With its simple structural design, it takes up the least space for the same air output capability.

(2) VAF :

A. Aluminum alloy airfoil of 60-80% capture rate

B. Air volume can be adjusted as required; adjustable blade angle

C. High efficiency, marginal pressure fluctuation on axle drive, overload prevention

PBF-A : Fan-shape blade is made of aluminium alloy or steel sheet; large air volume, high efficiency, linear piping available

(3) Axle : Premium carbon steel is NC lathed and grounded with safety parameters fully considered in the design. It is assured against distortion or fatigue.

(4) Bearing : Ball bearing is employed for regular models, and roller bearing for larger models. The housing is in cast steel, fitted with a convenient dust shield for easy inspection. Lubrication is by means of grease for convenient maintenance.

## 2. Purpose

Fire ventilation; air supply for textile, air-con, tunnel; textile factory wetting equipment, ventilation for large factories and buildings, dry oven

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for power saving.

exhaust equipment.

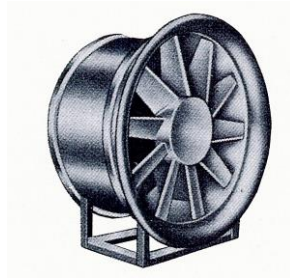
### 3. Features

Large air volume, low air pressure, small horsepower, simple structure, inexpensive, small space requirement, can be hanged or installed on ground, capable of straight-line connection

### 4. Specifications and Functions

- (1) Machine body is generally carbon steel, galvanised steel, stainless steel, FRP.
- (2) Horsepower 1 ~ 100 hp.
- (3) Air volume 50 ~ 2,000 cmm.
- (4) Static pressure 10 ~ 300 mmAq.

### 5. Product Photo



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## MULTI-BLADE CENTRIFUGAL FAN & BOX FAN

### 1. Structure and Principle

This multi-airfoil centrifugal fan can be tailored to suit various space and capacity requirements. Available models include mono-suction opening, dual-suction openings and box fan. Blades used for this multi-airfoil model are of front-arc design, and tens of blades may be fitted onto a wheel. This type of fan has features of low speed, low static pressure, and large air output that make it an essential model for air conditioner air supply.

- (1) Fan body: For smaller models, the side panels are polished or galvanized and pneumatically assembled with reinforcement and an inlet funnel, which is then welded together with the turbine. The wheel is installed from the outlet, followed by fitting of the flow-stopper on the roller-box, and then secured onto the two side panels. For larger models, after the two side panels are completed, reinforcement is carried out; the support base is installed and, after adjusting all parts, the housing of the roller is

The assembly is welded all around inside of the fan to reinforce the overall structure and prevent moisture/water penetration from seams to cause rusting. For constricted space, the housing can be cut into top and bottom, and reassembled on site for installation and subsequent maintenance needs.

- (2) The blades are designed with front arc for optimal efficiency and low noise. Smaller models: For 7"-18" diameter fans, the blade corners are formed by pulling, which is done by a machine for resilience and precision. Larger models: For over 20" diameter fans, the blades are individually produced via pneumatic and by rivet or welding, which are secured on to the center plate and inlet ring for strength and optimal output function. The assembled wheel is installed onto the housing and secured to the main plate with a stable leveler to bolster solidity, adjust alignment and prevent

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assembled.

- (3) Calibration by an imported balancer is then carried out for completion.
- (4) Axle : Premium carbon steel is NC lathed and grounded with safety parameters fully considered in the design. It is assured against distortion or fatigue.

**Bearing** : Ball bearing is employed for regular models, and roller bearing for larger models. The housing is in cast steel, fitted with a convenient dust shield for easy inspection. Lubrication is by means of grease for convenient maintenance.

## 2. Purpose

Air-conditioner/heater air supply, ventilation, basements, car parks, bathrooms and toilet ventilation and deodorisation, fire ventilation systems, kitchen ventilation, dryers, stores, transport terminals and stations, mines, tunnels.

## 3. Features

All blades are stamped molded, which are uniform in angle. Every wheel is calibrated by a precision balancer for stable operation and distinguished for features of low speed, low noise, low power consumption, low air pressure and large air volume. If required, a box fan may be fitted in the same unit. The housing is able to accommodate several dual-suction units to save space. The unit can also be hanged for convenient wiring.

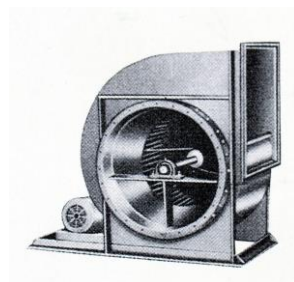
## 4. Specifications and Functions

Models are available in mono-suction, dual-suction, and box fan.

Material can be SS400#, galvanised steel, stainless steel, PVC, PP, FRP.

- (1) Horsepower 1 ~ 400 hp.
- (2) Air volume 50 ~ 9,000 cmm.
- (3) Static pressure 10 ~ 100 mmAg.

## 5. Product Photo



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# MULTI-BLADE CENTRIFUGAL FAN

## 1. Structure and Principle

Our Airfoil centrifugal fan is engineered based on the latest aeronomic development and application of Airfoil functions to expand application of fluid mechanics.

- (1) Machine body : The appearance is same as multi-airfoil model, but since the suction inlet is designed as bell mouth, it enables ideal flow pattern, thus reduces turbulence noise at the inlet greatly compared to other fans.
- (2) Wheel : The design has sectioned AWF (airfoil wheel type), blades are welded onto the main and sub-plates, making the structure sturdier than other fans for good adaptation to high speed rotation.
- (3) Axle : Premium carbon steel is NC lathed and grounded with safety parameters fully considered in the design. It is assured against distortion or fatigue. Axle direction and bolt cap connecting to the wheel husk are specially designed: wheel assembly does not require knocking about, and removal does not requires pull out of the wheel; axle direction linked to the belt is a dual-cone sleeve for

- (4) Bearing : Ball bearing is employed for regular models, and roller bearing for larger models. The housing is in cast steel, fitted with a convenient dust shield for easy inspection. Lubrication is by means of grease for convenient maintenance.

## 2. Purpose

Prevailingly applied in forced air supply; gas conveyance system; semiconductor, photoelectric, traditional manufacturing industries; particle conveyance, environmental protection equipment.

## 3. Features

Extant load-limited fans are improved into to an upgraded model of extant load-limited fan. AFO-S, AFO-D achieve higher efficiency and lower noise

- (1) As the blades are designed for minimum fluid dynamic loss, it yields limited load with high efficiency and low noise.
- (2) From the bell-mouth inlet through the wheel to the casing, the streamline design is ideal which ensues 10%dB less in noise than other models, especially effective for eliminating bothersome

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low-frequency noise.

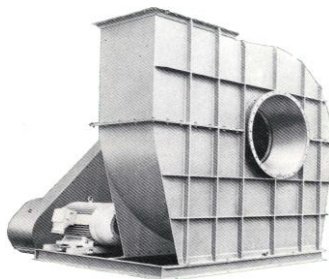
easy dismount of belt for convenient maintenance.

- (3) As the blade structure is more solid than others, the static application range is wider.

#### 4. Specifications and Functions

- (1) Comprehensive service from planning → design → manufacture → test → install → acceptance inspection according to client requirement.
- (2) Available in mono-, dual-suction and box assemblies according to actual needs.
- (3) A wide choice of materials - steel, galvanised steel, stainless steel, PVC, PP sheets, FRP.
- (4) Horsepower 1 ~ 1,500 hp.
- (5) Air volume 50 ~ 100,000 cmm.
- (6) Static pressure 50 ~ 1,000 mmAq.

#### 5. Product Photo



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# RADIAL CENTRIFUGAL FAN

## 1. Structure and Principle

The Radial centrifugal fan is developed to address the needs of individual industry.. This model and other fans developed by the Company employ the function of pressurised floatation to achieve object moving through wind power in conjunction with the windpipe and other filter facilities.

- (1) Machine body : As the machine body is customized to accommodate the passage of voluminous powders and particles, the body of the machine is generally made of wear-resistant metals such as carbon steel, stainless steel, and galvanized steel sheets. For prolonged operation, the fan is structured with greater solidity than other models.
- (2) Wheel : The wheel is made by cold stamping and welded onto the main plate and sub-plate; the assembled blades radiate outward. For papermaking, the fan may be fitted with a cutter on top of blades and at inlet for breaking up pulp and fast transport.

- (3) Axle : Premium carbon steel is NC lathed and grounded with safety parameters fully considered in the design. It is assured against distortion or fatigue.
- (4) Bearing : Ball bearing is employed for regular models, and roller bearing for larger models. The housing is in cast steel, fitted with a convenient dust shield for easy inspection. Lubrication is by means of grease for convenient maintenance.

## 2. Purpose

PCB suction and filtration, grinding/polishing, textile and fibre manufacturing, carpentry, pulp and powder conveyance, general boilers' powerful ventilation, reactor exhaust

## 3. Features

The equipment employs high negative pressure; the air supply and suction systems are capable of conveying large air volume and high pressure. The wheel has greater resilience against wear and withstands solid particles. However, since the fluid dynamics has to be compromised, the model is less efficient due to its sharper horsepower curve; the factor should be taken into account when selecting

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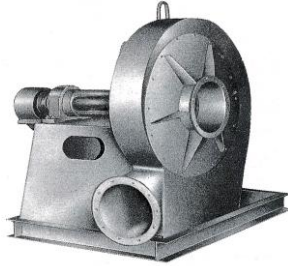
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models.

#### 4. Specifications and Functions

- (1) Comprehensive service from planning → design → manufacture → test → install → acceptance inspection according to client requirement.
- (2) Most models are designed with mono-suction.
- (3) A choice of materials - steel, galvanised steel, stainless steel, PVC, PP sheets.
- (4) Horsepower 1 ~ 1,000 hp.
- (5) Air volume 50 ~ 3,000 cmm.
- (6) Static pressure 50 ~ 1,500 mmAq.

#### 5. Product Photo



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# ROOFTOP AXIAL VENTILATOR, CENTRIFUGAL VENTILATOR & NON-POWER VENTILATOR

## 1. Structure and Principle

In an age of progressive technology and industrialization, traditional crafts handed down by our ancestors appear insignificant. Old buildings are generally confining in space, and hence have few windows for airflow; people have been contented with such little contact with the nature up to the 20th century. Nonetheless acceleration in technology in recent decades has gradually alienated people; taller and larger buildings continue to spring up, which inevitably ensues new needs. Thus for buildings forbidding installation of air conditioning and its piping, rooftop ventilator is invented, which is the only means of ventilation at present that does not take up living space, nor requires piping, yet ventilating the entire building with the greatest airflow at the most reasonable price.

- (1) Machine body : As it is for installation on rooftop, both axial and centrifugal models are one-piece molded of FRP for the material's lightweight and anticorrosive properties. For mono-unit models of larger capacity requirement, SS400, galvanised steel or stainless steel can be considered. Non-powered ventilator models are available in aluminium alloy, galvanised steel and stainless steel. The non-powered turbine design is available in aluminium alloy, galvanised steel, stainless steel and FRP.
- (2) Wheel : All wheels include axial, centrifugal and turbine ventilators come with blades that are pneumatically formed, riveted, tuned and balanced. Material used is consistent with the body of the machine for uniformity.

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- (3) Axle : As rooftop ventilators are installed on the roof, about 80% are designed as motor-driven units to minimize maintenance requirement.
- (4) Bearing : Motor-driven for maximum stability, requiring nearly no maintenance.

## 2. Purpose

For ventilation, deodorization, dehumidification, filtering of factories, hospitals, stadiums, auditoriums, theatres, labs, office/convention buildings and large architectural structures

## 3. Features

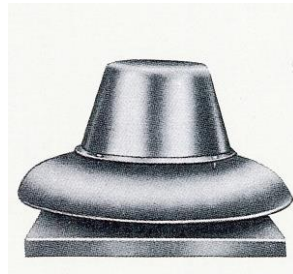
Aesthetic appearance, weatherproof, no piping, smooth exhaust, not occupying useful space, minimum horsepower for maximum airflow, nearly no maintenance motor-driven design

## 4. Specifications and Functions

Available in axial, centrifugal, non-powered, turbine non-powered. Materials can be aluminium alloy, galvanised steel, stainless steel, FRP, nylon fibre.

- (1) Horsepower : 1/2 ~ 30 hp.  
(2) Air volume : 50 ~ 1,000 cmm.  
(3) Static pressure : 3 ~ 25 mmAq.  
(4) Non-powered ventilator.

## 5. Product Photo



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# TURBO CENTRIFUGAL FAN

## 1. Structure and Principle

Turbo centrifugal fan is also known as wheel fan; its moving direction is the opposite of multi-airfoil fans. As multi-airfoil model has many blades on the same wheel, the blades are slim and long; in operation they lean forward. Whereas, the Turbo model is to satisfy high air volume and pressure requirement, hence the blade structure leans backward in motion. For excellence of structure and performance Turbo tops all other fans and is one of the mainstream model employed in industries.

- (1) Machine body : Housing is designed for heavy-duty usages, which is made of high strength steel. The base supporting both the body and the motor is a steel chute assembled for structural reliability and long operating life. To accommodate installation site, the housing can be cut into top and bottom and the wheel can be removed for installation without moving the inlet/outlet pipes for convenient maintenance. The beveled-in parts of the housing are welded on the inside against infiltration to prevent rusting. After assembly, the unit is 100% buffed and ground and then painted with several coats of paints for protection.

- (2) Wheel : Backward leaning in operation: The sheet material and blade thickness have been computed for strength and analyzed for flow precision. Welded wheel, through stress neutralization and lathing, is computer calibrated for high-speed rotation, offering benefits like stable operation, marginal vibration, high efficiency and low noise.
- (3) Axle : Premium carbon steel is NC lathed and grounded, and as safety parameters have been fully considered in design, it is assured against distortion or fatigue. Axle direction and bolt cap connecting to the wheel husk are especially designed: wheel assembly does not require knocking about and removal does not require pull out of the wheel; axle direction linked to the belt is a dual-cone sleeve for easy dismount of belt for convenient maintenance.
- (4) Bearing : Ball bearing is employed for regular models, and roller bearing for larger models. The housing is in cast steel, fitted with a convenient dust shield for easy inspection. Lubrication is by means of grease for convenient maintenance.

錦風股份有限公司 JEEN FONG CO., LTD.

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TEL : +886-3-350-0183 FAX : +886-3-359-4727

E-mail : jeen.fong@msa.hinet.net <http://www.jeenfong.com.tw>

## 2. Features

The computer-aided design of backward leaning blades have such benefits as optimal efficiency, stable operation, low noise, making it a better choice for conveying powder-carrying emission than the airfoil-type. Each fan is tested according to CNS, and documented with function curves. reference.

## 3. Specifications and Functions

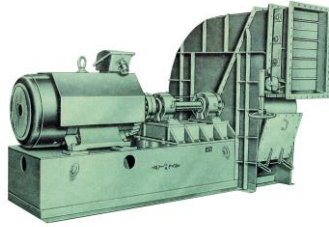
Available in single or multiple sections for meeting function requirement

- (1) Mono-section material can be SS400, galvanised steel, stainless steel, PVC, PP, FRP
  - A. Horsepower 1 hp ~ 2,000 hp.
  - B. Air volume 50 ~ 3,500 cmm.
  - C. Static pressure 50 ~ 1,500 mmAq.
- (2) 2 to multi-section spec

For configuration of two or more sections, the machine body is available in carbon steel, stainless steel, cast iron and aluminium, and the transmission is available in both belt and motor driven.

  - A. Horsepower : 1 ~ 400 hp.
  - B. Air volume : 10 ~ 220 cmm.
  - C. Static pressure 800 ~ 8,000 mmAq.

## 4. Product Photo



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# HEAT PUMP HEATING SYSTEM

## 1. Structure and Principle

- (1) During the operation of a heat pump, liquid refrigerant at a low temperature and pressure flows through the evaporator and absorbs heat from the atmosphere, evaporating into a gas. Its pressure and temperature is then increased further by means of a compressor. The hot refrigerant flows into a condenser and releases heat to water, heating the water while itself condensing back into a liquid. The liquid refrigerant undergoes a reduction in pressure and temperature via a thermal expansion valve and the cycle begins once more.
- (2) Heat pump systems consume three to four times less energy than a traditional electric heater for the same amount of heat produced.
- (3) There is no risk of electrical leakage (as with electrical heaters), or carbon monoxide poisoning (as with gas heaters).

## 2. Purpose

Heat pump systems are versatile, finding use in both residential and commercial applications. They can also serve as auxiliary air coolers..

## 3. Features

- (1) Multi-unit design: running an array of small units in parallel can provide a more stable source of heating.
- (2) Process integration: heat pumps can be incorporated into existing projects to magnify energy savings.
- (3) Heat pump energy system : energy-saving, efficient, and environmentally friendly.
- (4) Intelligent control system : user-friendly design with an easy-to-use interface.
- (5) Anti-corrosion treatment : customizable heat exchanger designs can handle demanding environments (such as hot springs and coastal areas).

二方企業股份有限公司     DILEMMA CO., LTD.

桃園市八德區廣福路 879 巷 192 弄 8 號

No. 8, Aly. 192, Ln. 879, Guangfu Rd., Bade Dist., Taoyuan City, Taiwan

TEL : +886-3-375-6081    FAX : +886-3-301-1763E-mail : w\_j\_95@hotmail.com    <http://dilemma.com.tw>

#### 4. Specifications and Functions

Heating capacity: 3.5kW  
Power consumption: 0.8kW  
COP: 4.3  
Refrigerant: R32  
Size: L30xW79xH58cm  
Weight: 35.5kg  
Water supply: 75L/hr  
Max temperature: 60°C

#### 4. Representative performance

TAI PERNG CHEMICAL  
INDUSTRY CO., LTD.201908

#### 5. Product Photo



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# HEAT PUMP FOOD DRYER ( INTEGRATED MODEL )

## 1. Structure and Principle

- ( 1 ) The dryer consists of a drying unit and a drying chamber. The racks/containers/etc. within can be customized based on product characteristics, drying rate, drying method, etc.
- ( 2 ) It operates based on the energy amplification of a heat pump, consuming three to four times less energy than a traditional electric heater for the same amount of heat produced. Dry, low temperature air (30~70°C) is cycled through the product, absorbing its moisture. The moist air gets cooled in the condenser, releasing water as condensate, and is reheated for the next cycle. No exhaust is released into the environment, allowing the products to retain their original flavor and nutrients after dehydration.eaters).

## 2. Purpose

Heat pump systems are versatile, finding use in both residential and commercial applications. They can also serve as auxiliary air coolers..

## 3. Features

- ( 1 ) Multi-unit design: running an array of small units in parallel can provide a more stable source of heating.
- ( 2 ) Process integration: heat pumps can be incorporated into existing projects to magnify energy savings.
- ( 3 ) Heat pump energy system : energy-saving, efficient, and environmentally friendly.
- ( 4 ) Intelligent control system : user-friendly design with an easy-to-use interface.
- ( 5 ) Anti-corrosion treatment : customizable heat exchanger designs can handle demanding environments (such as hot springs and coastal areas).

二方企業股份有限公司     DILEMMA CO., LTD.

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#### 4. Specifications and Functions

- ( 1 ) Heating capacity: 3.5 kw
- ( 2 ) Power consumption: 0.8 kw
- ( 3 ) COP: 4.3
- ( 4 ) Refrigerant: R32
- ( 5 ) Size: L30 x W79 x H58 cm
- ( 6 ) Weight: 35.5 kg
- ( 7 ) Water supply: 75 L/hr
- ( 8 ) Max temperature: 60°C

#### 5. Representative performance

TAI PERNG CHEMICAL  
INDUSTRY CO., LTD.201908

#### 6. Product Photo



**二方企業股份有限公司     DILEMMA CO., LTD.**

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# DUCTS AND DAMPERS FOR CHEMICALS EXHAUST SYSTEM

## 1. Structure and Principle

- (1) Semiconductor manufacturing process involves many solvents, acids, and organic solutions; hence, chemical resistant exhaust systems play a critical role.
- (2) A-Tech ductwork uses stainless steel as the base material. Its interior is coated with ECTFE, which has excellent chemical and electric resistance and is fire retardant. A-Tech ductwork is widely used for chemical exhaust systems for semiconductor manufacturing industries.

## 2. Purpose

Corrosive and toxic exhaust applications.

## 3. Features

- (1) Interior of the duct and damper is coated with ECTFE coating, which is highly resistant to chemical, electricity and fire.
- (2) The base material used is SUS 316, which is rust resistance.
- (3) Pre-fabricated in factory and assembled on site for faster installation.
- (4) FM Approved.

## 4. Specifications and Functions

- (1) Duct (Round and Rectangular) :
  - A. Material : External SUS316L , Interior ECTFE coating.
  - B. Property : Chemical, Corrosive, Electric and resistance.
  - C. Dimension :
    - a. Round duct :  $\phi$  4" ~  $\phi$  100" .
    - b. Rectangular : 4"  $\times$  4" ~ 100"  $\times$  100" .upon customer's request.
- (2) Damper ( Round and Rectangular ) :
  - A. Material : External SUS316L , Interior ECTFE coating.
  - B. Property : Chemical, Corrosive, Electric and resistance.
  - C. Dimension :
    - a. Round Damper :  $\phi$  4" ~  $\phi$  50"
    - b. Rectangular Damper : Upon customer's request.

千附實業股份有限公司 CHEN FULL INTERNATIONAL CO., LTD

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E-mail : gmr@chenfull.com.tw http : // www.chenfull.com.tw



# SPRAY SYSTEM EQUIPMENTS for ODOR CONTROL

## 1. Structure and Principle

- (1) ECOLO AirSolution is a complex mixture of essential oils, volatile odoriferous substances derived from plants.
- (2) Keep four kinds safety document :
  - A. Primary skin irritation study.
  - B. Primary eye irritation evaluation.
  - C. Rat oral  $LD_{50}$  determination.
  - D. Acute inhalation study.
- (3) Keep for various AirSolution Material Safety Data Sheet
- (4) Types of Odors Treated with various Air Solution to primary odor control action by Neutralization.

## 2. Features

- (1) Convenient 、 Easy Installation, Operation to spray according to presetting cycle time & spray time.
- (2) 1 ~ 6 Spray Units, Operation to spray according to presetting cycle time & spray time.
- (3) 3 ~ 50 Nozzles Operation to spray according to presetting cycle time & spray time.
- (4) 60 ~ 150 Nozzles, Operation to spray according to presetting cycle time & spray time.

Product	Types of Odors Treated	Application Areas
Air Solution#123 Misting Spray AirSolution	Airborne $H_2S$ 、 $NH_3$ 、 Mercaptan Odors	Landfill Sites & Transfer Stations Wastewater Facilities
BioStreme 111F Foaming Surfaces Biochemical	$H_2S$ 、 Mercaptan 、 Other Odors	Landfill Sites 、 Transfer Stations 、 Compost Operations 、 Recycling Centers
BioStreme 222 Saturated Wastewater Solution	Septic Wastewater Odors Digested Sludge Odors Mercaptan Odors	Septic Tank Wastewater 、 Treatment Systems Holding 、 Tanks 、 Ponds 、 Lagoons 、 Dairy Waste Anaerobic Digesters
Predator $H_2S$ $H_2S$ Scrubbers Solution	$H_2S$ 、 Mercaptan Odors	Scrubbers Tower

光騰工業科技股份有限公司

EASTON ENGINEERING INTERNATIONAL CORP.

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# U-Tec AIR PURIFIER (INCLUDING PHOTOCATALYTIC OXIDATION)

## 1. Structure and Principle

“Photo-Catalytic Oxidation” destroys Toxic chemicals and eliminates household odors and kill disease germs on contact. Activated carbon adsorbs toxic gases, and HEPA filter remove allergens. Five-layer filters of U-Tec AIR Purifier, offer the totally clean air.

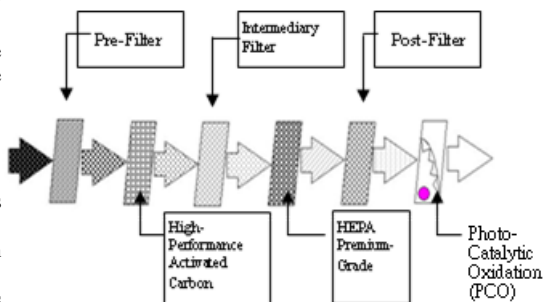
Factory exhausts (As/ C<sub>6</sub>H<sub>6</sub>/ Cl<sub>2</sub>/ HCHO/  
HF/ Hg/ H<sub>2</sub>S/ Mn/ O<sub>3</sub>/ SiF<sub>4</sub>)

Chemical, pharmaceutical smells/volatile  
organic compounds (VOC)/automobile  
exhaust (SO<sub>x</sub>/ NO<sub>x</sub>/ CO/ HC/ Pb)

Germ contamination (hazardous  
micro-organisms, dust, fungi, bacilli,  
spores, parasites on animals)

General pollutants  
(particulates/pollens/carbon  
powders/cigarette smoke/odor/human  
body odor)

Infection from patients' saliva (virus  
infections including GI bacteria, asthma,  
TB)



## 2. Purpose

As general air quality deteriorates, most offices, hospitals and families are using air purifier to keep air fresh.

The pollutants as particles, animal furs, dead skin cells, spores, dusts, pollens, viruses, cigarette smoke and general corrosive gases, odors, and toxic gases that cause allergy, asthma, lung cancer, skin cancer, leukemia, respiratory diseases, Parkinson's and nausea.

## 3. Features

Simultaneously execute four major functions: eliminate particulates, deodorize, neutralize toxic gases, and kill bacteria.

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E-mail : easton99@ms21.hinet.net [http:// www.easton-eng.com.tw](http://www.easton-eng.com.tw)

#### 4. Specifications and Functions

Model	ETA-560 For 100-200m <sup>2</sup>
Dimensions	680 <sup>L</sup> ×400 <sup>W</sup> ×1410 <sup>H</sup> (mm) With brake wheel
Flow Capacity	750 cfm max
Blower Motor	110V/ 1 Ø / 60Hz, 1/3Hp
Gross Weight	≒ 150 Kgs

High-efficacy Filter	Model Items	H	HP	HB	C/I	C/IP	C/IB
	Profiteer	1 unit	1 unit	1 unit	1 unit	1 unit	1 unit
	Multi-Mix Media	1 set	1 set	1 set	2 sets	2 sets	2 sets
	HI-TECH Filter or Intermediate Filter (85%)	1 unit	1 unit	1 unit	1 unit	1 unit	1 unit
	HEPA Filter	1 unit	1 unit	1 unit			
	Post Filter	1 unit	1 unit	1 unit	1 unit	1 unit	1 unit
	UV	1 unit					
	BI-Polar			1 unit			1 unit
	PCO		1 unit			1 unit	

#### 5. Product Photo



光騰工業科技股份有限公司

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# PHOTOCATALYST

## 1. Structure and Principle

Certain materials can absorb light at specific wavelength to stimulate molecules into excited state and show active properties, able to react with other materials; these materials are called the “photocatalysts”.

For pollution protection application, when light is illuminating to titanium dioxide surface, it will generate super strong decomposing capability and gradually disassemble dirt sticking on its surface into CO<sub>2</sub> & water. This theorem is applied to the illumination lamp cover of freeway tunnel that can long-term keep lamp cover clean with good luminance efficiency.

## 2. Purpose

In brief, the photocatalyst can boost chemical reaction after exposed to light yet no change occurs to itself. For example, volatile organic materials contained in soil, underground water or air can be decomposed by way of photocatalytic effect and turn harmful material to harmless one.

## 3. Feature

On the photocatalyst surface, since the inner electronics are stimulated after absorbing UV, it will form active oxygen material including the superoxide and

hydro atomic group; they will disassemble and eliminate the organic material touching the photocatalyst surface (causing moldy or odor). Thus, use this function it can disinfect, deodor, prevent dirt and remove environmental pollutants. Since the free radical of hydrogen has powerful decomposition capability and hydrophilic character, therefore, photocatalyst has the disinfecting, deodor and dirtproof capability.

## 4. Specifications and Functions

The photocatalyst is a skill of “catalyst using photo energy to make catalytic reaction”. Before using it, we will coat or spray the catalyst on article surface forming a film; then, using photo energy to activate and remove dirt, disinfect, inhibit bacteria or clean up the reacted surface by oxidation or deoxidization actions. 40W × 12UV tubes (2.2 A power consumption), stainless steel outer casing and 220V power voltage.

## 5. Product Photo



冠誠環境科技工程股份有限公司

GUAN CHENG ENVIRO TECH PROTECTION CO., LTD.

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# CARTRIDGE FILTER

## 1. Structure and Principles

This system expands the dimension by folding the filter materials into star shapes to accomplish maximum filtering with minimum dimension. The two ends of the filter are molded with Poly Urethane into a tube to form a self-supportive unit. Users can also chose to install specially designed insulation chips to enable the tubes to sustain high-pressure dust gas while maintaining good ventilation without distortion. Various filter materials are available for various usages; they include Polyamide, Polyester, Polypropylene, Nomex, Teflon, Glass, Cellulose, and more.

The filter materials are strong and washable and are capable of filtering dusts from rough  $30\text{ }\mu\text{ m}$  to as fine as  $0.1\text{ }\mu\text{ m}$ . They also have high heat-tolerance, sustaining heat from  $80^{\circ}\text{C}$  to  $120^{\circ}\text{C}$ . Special anti-static filters are also available.

## 2. Purpose

- (1) Dust collection and recycling of industrial dust: ex: asbestos, fertilizer, animal feed, PVC, rubber grinding, power conveying, powdering, mixing, sand spay, ceramic production, tile production, spray paint, leather, coloring, paper, cement, coal, plywood, wood products, and chemical materials.
- (2) Powder conveying: gas conveying, end-collection for Roots blowers
- (3) Material storage air vent
- (4) Steam turbine power generator, air inlet for air-compressor.
- (5) Dustless air-vent system: japanning paint room, spray paint room, offices, and family air-ventilation.

## 3. Features

- (1) Easy to maintain.
- (2) Good air permeability.
- (3) Wide-range of choices. Special chemical-resistant and anti-corrosion materials are also available.

封固企業股份有限公司      FENG GUH ENTERPRISE CO., LTD

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E-mail : fengguh@ms8.hinet.net      [http : //www.feng-guh.com.tw](http://www.feng-guh.com.tw)

- (4) Filter tubes can be back-washed by using the pressure-differentials to extend its usage life.
- (5) Comes with round and square disk designs as well as upward pull-out, downward pull-out, and track types to suit various dust gathering machines.
- (6) Small with minimum filtering dimension.
- (7) Tough and durable.

#### **4. Product photo**



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# ANTI-AIR POLLUTION EQUIPMENT

## 1. Structure and Principle

The main principle is using catalyst to reduce the activation energy and reduce the temperature of reaction to achieve the purposes of saving energy.

The main structure includes heaters, heat exchangers, blowers, and catalyst, control units.

## 2. Purpose

- ( 1 ) Reduce the emission of VOCs.
- ( 2 ) Reduce odors.

## 3. Features

- ( 1 ) Available design of equipment complied with demands and locations.
- ( 2 ) Size, weight and pressure drop, converter efficiency, temperature limit, conversance of operation and maintenance.
- ( 3 ) Low cost of investment and operation.

## 4. Specifications and Function

- ( 1 ) Multiple-application with industries.
- ( 2 ) Range of air flow: L/min to m<sup>3</sup>/min.
- ( 3 ) The design of catalyst incineration systems and manufacturing of catalyst were made in Taiwan.

## 5. Representative Performance

- ( 1 ) NAN YA PLATICS.
- ( 2 ) China Man-Made Fiber Corporation.
- ( 3 ) TAYA Group.
- ( 4 ) Walsin Lihwa Corporation.
- ( 5 ) CPC Corporation, Taiwan.
- ( 6 ) Chang Chun Group.

## 6. Awards (Certified) Items

- ( 1 ) Excellent domestic environmental equipment certification.
- ( 2 ) Excellent environmental engine award.

## 7. Product Photo



凱德利斯特國際有限公司

CATALYST INTERNATIONAL CO., LTD

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# CATALYST FOR VEHICLES AND MOTORCYCLES

## 1. Structure and Principle

Coating precious metals on the surface of various carriers. Catalyst helped harmful gas converter into harmless gas by chemical reaction.

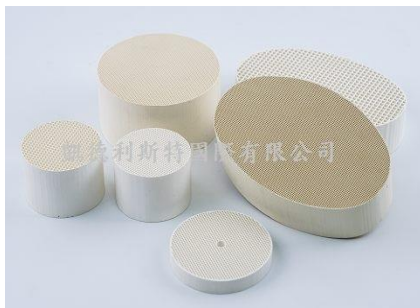
## 2. Purpose

Reduce the emission of CO, HC and NO<sub>x</sub>

## 3. Features

- ( 1 ) High conversion of VOC reduction.
- ( 2 ) Extensive applied industries.
- ( 3 ) Customize catalyst with demands in real situation.
- ( 4 ) OEM.

## 7. Product Photo



## 4. Specifications and Function

- ( 1 ) Ceramic catalyst
- ( 2 ) Metal catalyst
- ( 3 ) Great variety of products online, please contact us.

## 5. Representative Performance

- ( 1 ) ADLYMOTOR INDUSTRIAL CO., LTD
- ( 2 ) Standard Motor Company
- ( 3 ) CPI Motor CO., LTD.

## 6. Award (Certification) Project

National quality golden award  
Excellent domestic environmental equipment certification.



凱德利斯特國際有限公司

CATALYST INTERNATIONAL CO., LTD

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# DPF REGENERATION

## 1. Structure and Principle

Honeycomb ceramic structure consisted with filter walls which were formed with multiple, tiny, adjacent and parallel flues. Filter walls could capture particulate while exhaust flowed through.

## 2. Purpose

- (1) Inspect appearance: if DPF was broken, cracked or chapped. DPF cannot be regenerated.
- (2) Remove oil sludge and smudge.
- (3) Combust the soot particles.
- (4) Inspect DPF was not broken, cracked or chapped caused by heat treatment.
- (5) Collision avoidance package, rapid delivery.

## 3. Features

- (1) High conversion of VOC reduction
- (2) Regeneration online.

## 4. Specifications and Functions

All specification could be renewable.

## 5. Representative Performance

- (1) Chiauying Electric CO., Ltd
- (2) United Microelectronics Corporation
- (3) Chung-Hsin Electric & Machinery Mfg. Corp.
- (4) Automotive Research & Testing Center

## 6. Award (Certification) Project

- (1) National quality golden award.
- (2) Excellent domestic environmental equipment certification.

## 7. Product Photo

Before regeneration



After regeneration



凱德利斯特國際有限公司

CATALYST INTERNATIONAL CO., LTD

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# ENVIRONMENTAL CATALYST(VOC, SCR)

## 1. Structure and Principle

The functions of catalyst were extensive and relative to our daily life. Catalyst could make harmful gas transformed into harmless gas rapidly.

## 2. Purpose

There were four kinds of main application:

- ( 1 ) Vehicle exhaust: catalyst converters.
- ( 2 ) De-NO<sub>x</sub> (SCR).
- ( 3 ) Handle VOC and odors
- ( 4 ) Other : processing of toxic organic materials

## 3. Features

- ( 1 ) High conversion.
- ( 2 ) Various applications.
- ( 3 ) Customized.
- ( 4 ) OEM

## 4. Specifications and Functions

- ( 1 ) Honeycomb:150\*150\*100mm.
- ( 2 ) Particle ceramic: Ø3~6mm.

## 5. Representative Performance

- ( 1 ) Nan Ya Plastics.
- ( 2 ) China Man-Made Fiber Corporation.
- ( 3 ) TAYA Group.
- ( 4 ) Walsin Lihwa Corporation.
- ( 5 ) CPC Corporation, Taiwan.
- ( 6 ) Chang Chun Group.

## 6. Awards (Certified) Items

- ( 1 ) National quality golden award.
- ( 2 ) Excellent domestic environmental equipment certification.

## 7. Product Photo



凱德利斯特國際有限公司

CATALYST INTERNATIONAL CO., LTD

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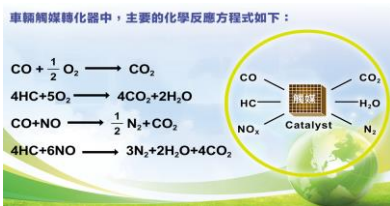
TEL : +886-37-615-816 FAX : +886-37-615-502 E-mail : kjentech@ms17.hinet.net <https://tw-catalyst.com>



# EXHAUST HANDLING EQUIPMENT FOR REGULAR INSPECTION STATION

## 1. Structure and Principle

Coating precious metals (Pt, Pd,,Rh) on the surface of honeycomb carriers to purify the emission of engines with chemical reaction of precious metals. Catalyst helped harmful gas converter into harmless gas by chemical reaction



## 2. Purpose

While engines were testing, purify the emission and converter harmful gas (CO 、 HC 、 NO<sub>x</sub>) into harmless gas(CO<sub>2</sub> 、 H<sub>2</sub>O 、 N<sub>2</sub>).

## 7. Product Photo



## 3. Features

- ( 1 ) Customize catalyst.
- ( 2 ) OEM.
- ( 3 ) Reduce the emission.

## 4. Specifications and functions

- ( 1 ) Processing capacity : 100 ~ 300 L/min.
- ( 2 ) Power : 110v / 60HZ / 15A.
- ( 3 ) L 45cm x W 45cm x H 75cm.

## 5. Representative Performance

- ( 1 ) Da-zhuyin Station.
- ( 2 ) TaiYi Station.
- ( 3 ) Department of Labor, Taipei City Government.

## 6. Awards (Certified) Items

- ( 1 ) National quality golden award
- ( 2 ) Excellent domestic environmental equipment certification
- ( 3 ) The product was certified the award from IDB for environmental protection equipment application benchmark in 2018.

凱德利斯特國際有限公司

CATALYST INTERNATIONAL CO., LTD

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# ODM & OEM FOR CATALYST

## 1. Structure and Principle

Match up catalyst design and client's demands to comply with environmental regulations of nations and clients' standards. We also provide OEM to shorten manufacturing periods, cut down clients' cost and reduce expenses.

## 2. Purpose

- ( 1 ) Industries using organic solvent.
- ( 2 ) Handle NO<sub>x</sub>.
- ( 3 ) Improve odors and air pollution
- ( 4 ) Improve indoor air quality of fields.
- ( 5 ) Replace original anti air-pollution equipment.
- ( 6 ) Replace old, invalid and broken up catalyst.

Insist the concept of environmental protection. We continue to develop environmental technology and products. We also hope to play a more important role in pollution prevention.

## 3. Features

- ( 1 ) High conversion efficiency.
- ( 2 ) Application for many fields.
- ( 3 ) Customization.
- ( 4 ) OEM.

## 4. Specification and Functions

Design changes with demands, please contact with us.

## 5. Representative Performance

- ( 1 ) Automotive Research & Testing Center
- ( 2 ) Chiauying Electric CO., Ltd

## 6. Awards (Certified) Items

- ( 1 ) National quality golden award
- ( 2 ) Excellent domestic environmental equipment certification

## 7. Product Photo



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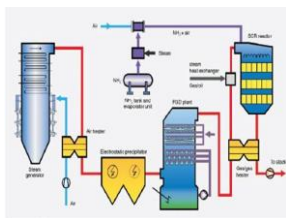
# SCR, De-NO<sub>x</sub> SYSTEM

## 1. Structure and Principle

- ( 1 ) De-NO<sub>x</sub> technology.
- ( 2 ) Using NH<sub>3</sub> as reducing agent to selectively react with NO<sub>x</sub> in the exhaust and convert NO<sub>x</sub> into harmless N<sub>2</sub> and H<sub>2</sub>O.
- ( 3 ) SCR has become the most mature and efficient method of De-NO<sub>x</sub> in the world.
- ( 4 ) SCR has remarkable effect on controlling NO<sub>x</sub> of boiler gas with high denitrification efficiency. SCR technology is mature and easy to operate. It can be used as one of main methods for controlling NO<sub>x</sub> in the coal-fired power plants or fuel-fired boiler in the world.

## 2. Purpose

Reduce the pollution of NO<sub>x</sub>.



## 3. Features

- ( 1 ) High conversion.
- ( 2 ) Low working temperature.
- ( 3 ) Big reacting area.

## 4. Specifications and functions

Honeycomb 150\*150\*100mm.

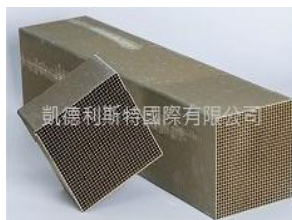
## 5. Representative Performance

- ( 1 ) Nan Ya PlasticS
- ( 2 ) China Petrochemical
- ( 3 ) Development Corporation
- ( 4 ) CPC Corporation, Taiwan
- ( 5 ) Chang Chun Group

## 6. Awards (Certified) Items

- ( 1 ) National quality golden award.
- ( 2 ) Excellent domestic environmental equipment certification.
- ( 3 ) Excellent environmental engine award.

## 7. Product Photo



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# VOCS EMISSION REDUTION SYSTEM

## 1. Structure and Principle

The main principle is using catalyst to reduce the activation energy and reduce the temperature of reaction to achieve the purposes of saving energy. The main structure includes heaters, heat exchangers, blowers, and catalyst, control units.

## 2. Purpose

- ( 1 ) Reduce the emission of VOCs.
- ( 2 ) Reduce odors.

## 3. Features

- ( 1 ) Low cost, high conversion efficiency.
- ( 2 ) Small size without construction.
- ( 3 ) Easy to operate and maintain.
- ( 4 ) Easy to move with demands.

## 4. Specifications and Function

- ( 1 ) Multiple-application with other anti-pollution equipment.

- ( 2 ) Range of air flow: L/min to  $\text{m}^3/\text{min}$ .
- ( 3 ) Available to design by demands.
- ( 4 ) Easy to operate and maintain.
- ( 5 ) The design and manufacturing of catalyst systems were made in Taiwan.

## 4. Representative Performance

- ( 1 ) Toyo Advanced Science Taiwan Co., Ltd.
- ( 2 ) Siliconware Precision Industries Co., Ltd.

## 5. Awards (Certified) Items

- ( 1 ) National quality golden award.
- ( 2 ) Excellent domestic environmental equipment certification.
- ( 3 ) Excellent environmental engine award.

## 6. Product Photo



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# ZERO AIR GENERATOR

## 1. Structure and Principle

The zero air generator transformed normal air in air compressors or steel cylinders into high purified zero air by principals of catalyst converter.

## 2. Purpose

Purify normal air into zero air to supply various instruments : THC, GC-MS, TG, GC, FPD, FID, air compressor.

## 3. Features

- (1) Independent development and manufacturing.
- (2) High conversion of zero air, HC < 0.1ppm (as methane).
- (3) Continuous operation to generate high purity zero air.
- (4) Economy and safety.
- (5) Customize with customer's demands.

## 4. Specifications and Functions

Model	AZ-3000	AZ-5000
Operating flow rate	1,000 ~ 3,000 ml/min	3,000 ~ 5,000 ml/min
Catalyst Temperature	350 - 450	350 - 450
Operating Pressure	1-5 kg/cm <sup>2</sup>	1-5 kg/cm <sup>2</sup>
Electrical requirement	110V / 220V	110V / 220V
Dimensions	19" Cabinet Server Rack	19" Cabinet Server Rack
Inlet and outlet	1/4"union	1/4"union

## 5. Representative Performance

- (1) Everligh chemical
- (2) Longong dafa envirnmental corp.
- (3) Measurment pioneer inc.

## 6. Awards (Certified) Items

- (1) National quality golden award.
- (2) Excellent domestic environmental equipment certification.

## 7. Product Photo



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# DIESEL ENGINE EXHAUST FILTER



## 1. Structure and Principle

This equipment is an innovative invention that is designed to improve the smoke and dust emitted by combustion diesel. Its structure includes a set of Heater + catalyst-type smoke filters + a set of control systems that enable a diesel generator with a fixed source of pollution from start-up Its black smoke, within three minutes on the toxic and catalytic white smoke up to 90 ~ 99%, while the beginning of automatic regeneration, to achieve the operation in addition to smoke and smelly, automatic regeneration and reduce noise can be completed in operation.

## 2. Purpose

Any fixed source of diesel engine exhaust smoke improved.

## 5. Features

Unprecedented innovation inventions, patent No. I448614, is the only practical creation.

## 6. Specifications and Functions

In addition to black smoke, white smoke, toxic, PM 2.5 elimination rate of 90 to 99 %.

## 7. Awards (Certified) Items

The product was certified the award from IDB for environmental protection equipment application benchmark in 2020.

## 8. Product Photo



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# SMART SMOKE MUFFLER

## 1. Structure and Principle

Innovation and invention of a group of whirlwind combustion chamber will be a small amount of combustion to reach the soaking, and then connected to the ceramic filter after the combination of ceramic filter to capture the diesel engine emissions of black smoke particles by the creation of direct fire regeneration so that the filter can be used continuously 2500 hours You can. This equipment has been tested and corrected for two years in the field.

## 2. Purpose

Any fixed or any moving diesel engine smoke and smelly.

## 3. Features

Unprecedented invention, practical and effective function, the only creative invention.

## 4. Specifications and Functions

Diesel engine to start the whole process of purification of black smoke, white smoke, toxic smell, sound and automatic regeneration, diesel engine operation without load or load can achieve the above functions.

## 5. Product Photo



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# CERAMIC FIBER FILTER WITH CATALYST



## 1. Structure and Principle

**FIBROUS CERAMIC BASE MATERIAL :** This is the heart of this new technique. It ensures that a porous body allows gas to pass through the filter and leaves all dust particulate on the surface of the filter. The filter even removes PM 2.5 dust and has a measurable HEPA (High Efficiency Particulate Arrestor) performance. This is the highest performing filter used in industrial scale filter plant and gives unsurpassable performance with dust emission levels below 2 mg/m<sup>3</sup>. It can operate at high temperatures even up to 900°C without damage and because it is ceramic it possesses the ability to withstand chemical attack even under the most aggressive conditions.

### **FIBROUS CERAMIC SURFACE :**

The surface of the fibrous ceramic accumulates dust particles and if a suitable chemical sorbent is used the dust cake on the filter surface gives an ideal bed for acid gas scrubbing to remove SO<sub>2</sub>, SO<sub>3</sub> and HF and HCl gases. This technique is well proven and forces the acid gases into very close proximity with the sorbent, ensuring that the reaction rate is extremely high while sorbent levels are kept to a minimum.

These acid gas scrubbing reactions can take place at high efficiency levels at temperatures up to 350°C which enables the filter plant to be operated at temperatures in excess of acid dewpoints where many problems with corrosion and dust handling can occur with old techniques.

**OPEN POROUS INTERIOR :** The open porous interior of the filter is the ideal location for a catalyst that will reduce emissions of NO<sub>x</sub> and VOCs and dioxins. The ability to operate at higher temperatures allied with the high removal efficiency of fine particles provides an ideal reaction bed for the catalyst to work. The filter prevents the blocking or blinding of the catalyst by fine dust particles and also prevents chemical poisons from reducing catalytic activity. This will maintain not only very high levels of efficiency but will also extend the working life of the catalyst.

## 2. Purpose

The catalyst and ceramic filter both operate very well at 300 – 350°C. . This temperature is outside the zone where there may be liquid dewpoint excursions and is above the temperature where ABS, Ammonium Bisulphate, is present which can detract from the

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performance of the catalyst. This is the optimum temperature zone for the deNOx reaction too. This new filter can also be used for reducing SOx. Normally deSOx takes place at around 140oC, an operating temperature which can give corrosion problems as this is at dewpoint conditions. It is not widely known but the deSOx reaction tails off to around 240oC, where, as the temperature continues to rise the efficiency picks up. At 250oC the reaction proceeds at around the same rate as at 140oC, but without the issues associated with liquid formation.

### 3. Features

The combination of ceramic filter and catalyst also has other benefits. By embedding the catalyst within the ceramic filter wall the catalyst is protected against these two mechanisms affecting performance. The ceramic filter is so efficient in removing even sub-micron particles from the gas that there is no contact whatsoever between dust and catalyst. This enhances performance and of course lifetime of the catalyst and negates the need for cleaning and maintenance of the catalyst. This is a very important advantage over the old traditional catalyst systems. One other important advantage is that there is no

observable diffusion restriction in catalyst performance. In standard catalytic systems there is a competing gas flow in and out of the pores of the catalyst beads in the SCR. In the new hybrid catalytic ceramic filter the catalyst is finely divided through the body of the filter rather than just coating a ceramic bead surface. This enables nano sized needles of catalyst to be exposed to the gases as they flow through the filter. There is no diffusion in and out of the catalyst and the flow is unidirectional across the catalyst. This in effect increases the catalyst/gas contact opportunities and improves the efficiency of the reaction.

### 4. Product photo



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# ROOTS BLOWER SILENCER

## 1. Structure and Principle

There are two kinds of aerodynamic noise in Roots blower: rotating noise and vortex noise.

The rotating noise of Roots blower is the noise caused by the interaction between the circumferential uneven air flow and the volute when the impeller rotates. The main sound sources are volute, blade and wind tongue. When the impeller rotates, the velocity and pressure of the air flow are not uniform at the outlet of the blade along the circumferential direction. This kind of uneven air flow rushed to the volute before it was flattened, thus forming the pressure pulsation on the volute at any time and becoming a noise source. The stronger the nonuniformity, the greater the noise. The non-uniform exit along the circumference could have been a kind of steady motion, but the existence of the wind tongue has the pressure fluctuation with time,

which in turn affects the flow of the impeller, so the air flow on the blade also has the pulsation property with time, so the force on the blade fluctuates with time, making the blade become the second noise source. It, together with the noise source on the wind tongue, is caused by the rotation of the impeller, so it is called rotating noise, also known as discrete frequency noise.

## 2. Purpose

When roots blower is running, it will produce strong noise. According to the mechanism of noise generation, fan noise includes pneumatic noise, mechanical noise and electromagnetic noise; according to the parts of noise generation, there are intake noise, exhaust noise, casing noise, gear noise (using booster or transmission) and motor or turbine noise, etc.

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# NOISE ABSORBER

## 1. Structure and Principle

Sound wave passing through different mediums produces varied intensity diminution; hence greater sound muting materials can be utilized for noise reduction.

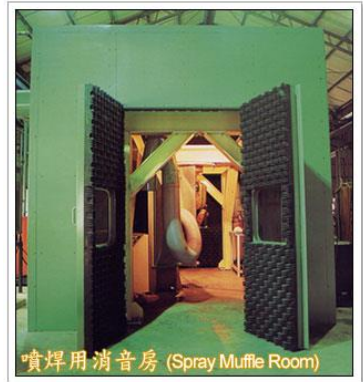
## 2. Purpose

Prevent various noises generated during processing, such as, Spray rod welding, Sand Spraying, Compressor, Windmill, Blower, Cooling Water Tower, Punch.

## 3. Features

Noise material should be selected according to operating temperature for minimum pressure loss.

## 4. Product Photo



Spray Muffle Room

銓風機械股份有限公司 CHUAN FENG MACHINERY CO., LTD

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# Overview of Waste Treatment and Recycling Equipment

A waste is the useless substance in gas, liquid and solid forms produced and discarded by human during the process of production and consumption. According to the definition presented in the 2<sup>nd</sup> article of Our Nation's current "Wastes Cleaning Regulations", the general wastes refer to domestic or other non-industrial refuse, human and animal discharges as well as carcasses in solid and gas forms, which will pollute the environmental sanitation. Hazardous industrial wastes are defined as the toxic, dangerous discarded substances with concentration and quantity high enough to affect human health or pollute environment. The general industrial wastes stand for any non-hazardous industrial wastes.

The concept of managing solid wastes has changed drastically recently. "Discarded Wastes" are no longer considered as useless substances; they are considered as temporarily misplaced resources. Thus, implementing resources recovery and reuse of discarded wastes is a universally accepted value. The Government has drafted "Resources Recovery and Reuse Regulations" to facilitate the recovery tasks and set the direction for future waste disposal. Recovery of resources from wastes must be the first priority. If the waste cannot be reused, it will then be discarded and disposed of.

## I 、Technology for Waste Disposal

The waste disposal refers to applying physical, chemical and biological methods to speed up the cycling process in the natural environment in order to rapidly decompose the wastes into harmless

products to achieve the objectives of reducing quantity, resource recovering, removing hazards and stabilizing. The primary consideration for disposal of wastes is to conform to the regulations of current laws and regulations in achieving waste reduction, recovery and reuse. When the recovery is not required by laws and regulations or when cost-effective technology is not available, the subsequent disposal methods will be considered for achieving the non-hazardous objective in order to avoid environmental pollution.

The technology for disposal of wastes includes preliminary, intermediate and ultimate disposal. 1. Preliminary Disposal: consisting of collection, classification, temporary storage, transportation, cracking, recovery and reuse. 2. Intermediate Disposal: encompassing (a) the various physical and chemical methods, e.g. neutralization, oxidation, activated carbon adsorption and reverse osmosis, etc., and (b) biological methods, including sanitary landfill and composting, and (c) thermal method: consists of thermal cracking, wet oxidation and various forms of incineration, and 3. Ultimate Disposal : including: (a) stable landfill, (b) sanitary landfill, (c) close landfill, and (d) ocean disposal. Commonly used waste disposal technology and equipment are shown in Figure 1.

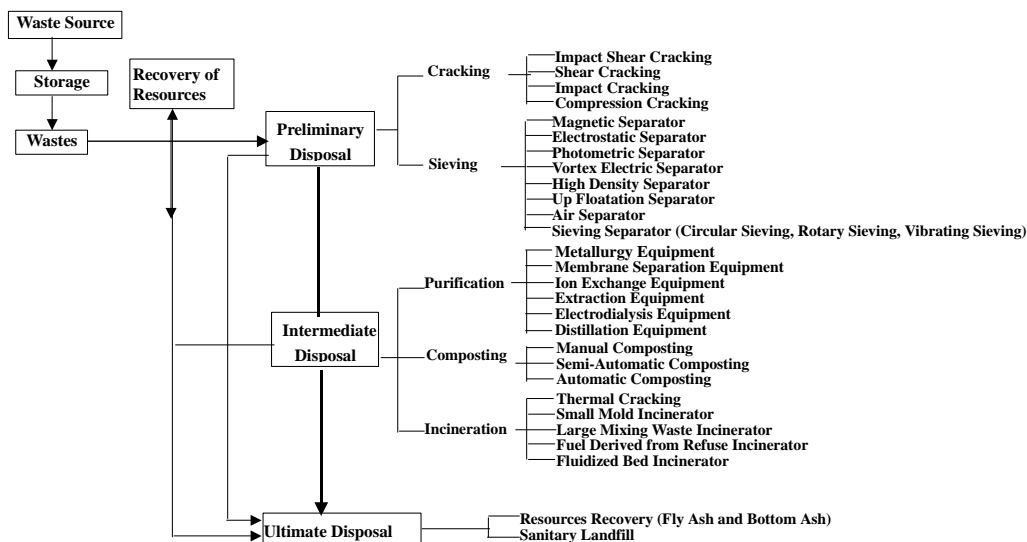


Figure 1: Classification of Commonly Used Waste Disposal Technology and Equipment

## II 、 Commonly Used Domestic Waste Treatment Equipment

### 1 、 Preliminary Treatment

The objective of preliminary disposal is to protect the subsequent disposal operations in addition to categorizing valuable resources. Preliminary disposal methods include cracking and sieving. Waste cracking will increase the apparent specific weight of the waste and to increase the efficiencies of waste separation and incineration. The cracking can be accomplished using pressurized cracking, impact cracking, shear cracking and impact/shear cracking. Sieving waste is to group valuable components of the waste to facilitate recover and reuse. It is usually combined with the cracking operation using gravitation, wind, magnetic, sieving, vortex and electricity, electrostatic and photometric separators. Using a proper material for cutting blades is of great importance to manufacturing



the cracking equipment. Domestic companies currently do not have the capability to produce the blade and thus it is imported. The general cracking equipment can be manufactured by domestic companies.

## **2、Intermediate Treatment Equipment**

The intermediate disposal refers to the physical, chemical and biological reactions used to achieve waste quantity reduction, hazard removal and resource recovery. The function of intermediate disposal can be classified into three categories of incineration, composting and purification. Incineration is a rapid oxidation reaction. It is the most widely used technology in Taiwan. This method uses various forms of incinerators to achieve quantity reduction with exceptional results. Thermal cracking can be said as another form of low-temperature incineration. Composting is the biological process using microorganisms to degrade, convert and stabilize organic substances. The resulting product is organic fertilizer that can be used as soil conditioner. The composting equipment can be used to carry out natural piling, static piling and reactor composting. The objective of purification is to raise the purity of the recoverable components contained in the waste such that its economic value can be boosted. Main equipment used in purification consists of distillation, electro dialysis, chemical extraction, ion exchange, membrane separation and metallurgy, etc.

As domestic equipment manufacturers on incinerators are concerned, most companies produce medium- and small-scale industrial waste incinerators. Large incinerators are produced based on technical cooperation with European or Japanese companies. In recent years, conventional industries have been moved out of Taiwan.

Further, the policy of reducing domestic wastes in cities has been successfully implemented. Thus, the need of incinerator capacity is reduced. In recent years, the domestic market has shifted toward composting and companies have the capability of designing and manufacturing most equipment used in the composting system. As the purification equipment is concerned, although the process and equipment are mostly developed as for chemical engineering applications, the domestic companies invest in the manufacturing already.

### **3、Ultimate Treatment Equipment**

The sanitary landfill is the ultimate disposal of general wastes. Its function is to separate wastes from the environment in a safe and sanitary manner. The wastes are converted into solid, liquid and gas by-products through the degradation by microorganisms contained in the wastes and the soil such that quantity reduction, stabilization of the wastes and safety are warranted.

Most cities and villages have built refuse incinerators. After resource recover, the remaining wastes are incinerated. The resulting fly ash and bottom ash are the target of resource recovery and reuse. Thus, the ultimate goal of zero discharge will be achieved.

Except the impermeable membrane and methane collector & burner, future ultimate disposal of wastes will be implemented via resources recovery and the equipment will be designed and constructed as a resources recovery plant instead of waste disposal facilities.

## YK-100 LOW TEMPERATURE SPRAY SOLID LIQUID SEPARATED MACHINE

### 1. Structure and Principle

At treatment processing, sewage liquid is continually pumped up to the nozzle installed at the top of the drying chamber, then is sprayed in the form of a fine droplet dispersion into a circulating current of air. The sewage solids may be dried at the drying chamber, water molecules will be condensed at cooling system. The processing outlet connected to two tanks. One tank contains water. One tank contains concentrated solid. The sewage treatment is accomplished at real-time.

### 2. Purpose

The solid and liquid separation processing of electroplate waste liquid, industrial waste liquid.

### 3. Features

A significant advantage of this type of technology is entirely different from so called traditional high temperature spray dryer. (normally above 100 °C) (212 °F). It provides a means of comparative low temperature (or be defined medium temperature / 30°C~60°C) . It is very energy efficient, no any impacts to the environment protect. It should become best, people-friendly solution of sewage treatment.

### 4. Specification and Functions

- (1) Operating temperature: 30 °C ~ 50 °C.
- (2) 1 ~ 5 liter per hour / process source.
- (3) according to the viscosity & density of material /product.

### 5. Product Photo



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# YK-111 LARGE SPACE LOW TEMPERATURE COOL WIND SOLID-LIQUID-SEPARATING MACHINE

## 1. Structure and Principle

The industrial waste is poured in the plate of the equipment. It would arise low / medium temperature air current at processing procedure.

The circulating air current arisen from the main machine would blow the liquid molecule to condense apparatus, then condense it and dilute it to be in conformity with legal standard. Then, retrieve or burry or emission it sees the after usage difference.

## 2. Purpose

The solid and liquid separation processing of the electroplate waste liquid, industrial waste liquid.

## 3. Features

A significant advantage of this type of equipment is entirely different from so called traditional high temperature spray dryer. (normally above 100 °C) ( 212 °F ).

It provides a means of comparative low temperature ( or be defined medium temperature / 20 °C ~ 50 °C ).

It is very energy efficient, no any impacts to the environment protect. It should become best, people-friendly solution of sewage treatment.

## 4. Specification and Functions

For example : the best seller model: YK-111-3.

- (1) Refrigeration Ton : 6 RT.
- (2) Outside dimension : L 350 cm × W 135 cm × H 258 cm.
- (3) temperature range : +20 °C ~ +50 °C .
- (4) disposed capacity : 150~240kg ,depend on different material.
- (5) disposal time : depends on different material, thickness, temperature setting.
- (6) Power consumption: 15kw.
- (7) Cart : 3.
- (8) Tray : 120 (Size : 62 cm × 48 cm × 1.8 cm )

## 5. Product Photo



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# WASTE RECYCLE

## 1. Structure and Principle

Shredders are used to shred large wood wastes collected in urban cities into wooden blocks and if necessary, the blocks are shredded into mid-sized blocks by mid-sized shredders. Otherwise, the wooden blocks are directly shredded by fine shredders into fine and small debris for use as a type of fuel heating the boilers in place of petrol, thus lowering the heating cost. The wooden debris may also be used as fillings of the green wooden products.

## 2. Purpose

- (1) Turn the recycled wastes into environmentally friendly regenerated items.
- (2) Used as a type of fuel for boilers instead of high cost petrol or coal.

## 3. Features

- (1) High investment yield.
- (2) Ability to solve wood wastes in urban cities.
- (3) Ability to achieve a green environment and waste recycle.

## 4. Product Photo



封固企業股份有限公司      FENG GUH ENTERPRISE CO., LTD

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# REFRACTORY MATERIAL

## 1. Structure and Principle

High-temperature kiln lining and insulation.

## 2. Purpose

High-temperature kiln lining and insulation.

## 3. Features

- (1) Long equipment usage life.
- (2) Low energy loss.
- (3) Reasonable price.

## 4. Specifications and Functions

- (1) High-aluminum-content manufacturing : resistance against high temperature and corrosion, high machining.
- (2) Silicon carbon product manufacturing : excellent resistance against wear, chemical erosion, and high machining and thermal conduction.
- (3) Insulation product manufacturing : low thermal conduction, excellent thermal insulation.

友和耐火材料工業股份有限公司 YUHO REFRACTORIES CO., LTD

高雄市大寮區中庄村仁愛路 336 號 No.336, Jen Ai Rd, Taliao Hsiang Distruct, Kaohsiung City, Taiwan

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# SMALL SCALE WASTE INCINERATOR

## 1. Structure and Principle

Water-Cooling the crematory mixes using the turbulent flow, Facilitates completely burns achieves the smokeless not smelly effect.

Small crematory in view of present enterprise reject more universal packing material, reverted, guarantees styrofoam, but designs may high calorific value of energy sufficient share use the above reject release to goal of the complete burning.

## 2. Purpose

The cremated processing coating, the sludge, the lumber, the kitchen -odd, the reverted, the rubber, guarantee styrofoam, soaks the cotton and kapok and so on to be ordinary or the enterprise reject.

## 3. Features

- (1) Easy to prate, manpower saving and no danger.
- (2) Complete combustion, no smoke and odor.
- (3) Discharge value is assured to meet the standard specification.

- (4) Recovery large capacity of hot water, steam vapor.
- (5) Stand-type design, only small space required.
- (6) High perform an of incineration to be more than 99 % .

## 4. Specifications and Functions

The specification according to the field operation environment, the reject nature, the quantity makes the different design.

## 5. Product Photo



**三鵬企業股份有限公司**      **SAN PERNG ENTERPRISE CO., LTD.**

苗栗縣苑裡鎮新復里4鄰50之2號      No. 50-2, Lin 4, Sinfu Village, Yuanli Township, Miaoli County, Taiwan

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E-mail : sanperng@ms47.hinet.net      <https://www.sanpeng.com.tw>

# ALL-PURPOSE INCINERATOR

## 1. Structure and Principle

Adopting ox-reserve combustion theory, this system inducts flow to the second combustion chamber for recombustion and control temperature by burning off redundant fuel to achieve full incineration. used with a filter facility, this system is completed with three functions - incineration, filtering, and pollution control. The 3-in-1 feature enables space efficiency.

## 2. Purpose

- (1) General waste: mix rubbish from communities, offices and kitchen, etc.
- (2) Business waste: including packaging materials, separation sheets, plastics, etc.

## 3. Features

- (1) Complete incineration, no smoke or odor.
- (2) Unique reverse high-temperature incineration.
- (3) Low maintenance costs and long product life.

## 4. Specifications and Functions

- (1) Combustion capacity : 800kg/8hr.
- (2) Outer dimension : 3,635 mm x 2,190 mm x 2,130mm.
- (3) Feed opening size : 1,420 mm x 600 mm.
- (4) Grate surface : 1.8 m<sup>2</sup>.
- (5) Combustion chamber size : 1.7 m<sup>3</sup>.
- (6) Total height including stack : 5,000 mm.
- (7) Motor power requirement : one motor of 3 phase, 222V, 5hp.

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# SMALL WASTE INCINERATOR

## 1. Structure and Principle

### (1) Water cooling incinerator

The furnace wall of the combustion chamber is composed of two layers of steel plates, and the middle part is filled with cooling water to form a water wall, so the inner furnace wall can withstand the high temperature when the garbage is burned, and the sturdy and durable will not be damaged.

### (2) Injection gas combustion method:

The blower is used to supply the necessary combustion air. The air is discharged through hundreds of nozzles distributed through the inner furnace wall, and is mixed with the garbage to burn. The combustion temperature is high, so the combustion can be smokeless and odorless.

## 2. Purpose

(1) General garbage, solid waste, waste paper, waste wood, wood dust, plant leaves.

(2) Waste plastics, waste packaging materials, waste fibers, waste cloth strips, waste rubber, etc

## 3. Features

(1) Simple operation, high sales performance, and widespread adoption by the factory.

(2) The furnace wall does not require refractory bricks, and the structure is simple, durable and durable.

(3) using 3T complete combustion principle design, smokeless and odorless when incineration.

(4) It can burn at high temperature with garbage as fuel. It requires only a small amount of cooling water and blower power, so the operating cost is low.

(5) There is a dust collector to collect fly ash after burning.

(6) You can mix and burn various garbage together.

(7) There is clean hot water for recycling.

(8) The fuel chamber is designed for negative pressure to prevent backfire and increase

新國環境開發股份有限公司

NEW FACE ENVIRONMENTAL DEVELOPMENT CO.,LTD.

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TEL : +886-3-363-3135 FAX : +886-3-363-3215

E-mail : newface@ms19.hinet.net http : //www.nface.com.tw

## 4. Specifications and Functions

Model	Capacity kg/hr	Volume m <sup>3</sup>	Blower kw	Feed gate W×H(cm)	area L×W(cm)
NA-8003	30~40	0.63	1.5	60 × 60	200 × 120
NA-8005	50~65	1.11	2.2	65 × 65	250 × 150
NA-8008	80~95	1.53	3.7	70 × 70	300 × 200
NA-8010	100~125	2.17	3.7	70 × 70	335 × 220
NA-8012	150~180	3.20	5.5	100 × 75	350 × 230
NA-8015	180~220	4.58	7.5	120 × 80	365 × 240
NA-8020	250~300	6.17	7.5	130 × 80	400 × 250
NA-8025	300~350	7.69	11.0	140 × 150	400 × 250
NA-8030	350~400	8.50	11.0	140 × 150	450 × 360
NA-8050	400~800	11.35	15.0	160 × 150	970 × 480
NA-8080	800~1,200	20.40	37.0	180 × 150	1,200 × 750

## 5. Product Photo



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# ROTARY KILN INCINERATOR

## 1. Structure and Principle

- (1) Rotary incinerator is a multi-functional incinerator that can treat wastes of different natures, including solid and liquid wastes, individually or at the same time.
- (2) The furnace body is in the shape of a horizontal conical straight barrel. When the waste is burned, it will move forward and mix due to the continuous rotation of the furnace body, which has a good uniform combustion effect.
- (3) The first part of the combustion process of the rotary incinerator is heating and volatilization, the middle and the latter part is high-temperature combustion, oxidizing and decomposing combustibles, and the latter part is the function of continuing to complete combustion and discharge bottom slag.
- (4) The secondary combustion chamber is equipped with an auxiliary burner, which can lead the combustion exhaust gas into the secondary combustion chamber for reburning, and it can also be injected into the waste liquid for combustion.

- (5) In order to achieve complete combustion during incineration, the operating temperature of the secondary combustion chamber is usually between 850 and 1,100 °C.

## 2. Purpose

- (1) The use of incineration of medical waste, sludge, waste solvents, waste solutions, solid waste, residues, and various wastes.
- (2) The purpose of drying and firing raw materials for reuse.

## 3. Features

- (1) It can be designed for various garbage characteristics.
- (2) It can process various solid, liquid and wet garbage in different forms at the same time.
- (3) The burning residence time of garbage in the furnace can be adjusted.
- (4) Continuous operation, automatic feeding and automatic ash discharging are possible.
- (5) Stirring combustion method, can burn completely, and has a good reduction effect.

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- (6) There are complete pollution prevention equipment, which meets environmental protection requirements.

#### 4. Specifications and Functions

Model	Capacity( kg / hr )	Heat load ( kcal / hr)	Continuous operation
FO-3	100 ~ 200	$50 \times 10^4$	can
FO-5	300 ~ 400	$100 \times 10^4$	can
FO-10	500 ~ 600	$150 \times 10^4$	can
FO-15	600 ~ 800	$200 \times 10^4$	can
FO-20	800 ~ 1,000	$250 \times 10^4$	can
FO-25	1,200 ~ 1,400	$350 \times 10^4$	can
FO-30	1,500 ~ 2,000	$500 \times 10^4$	can

#### 5. Product Photo



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# INCINERATOR FACILITY

## 1. Structure and Principle

For waste treatment of various types of factory, hospital, campsite, school, scenic area, waste disposal service industry, restaurant, community.

## 2. Purpose

- (1) Combustion chamber can be designed according to the types of wastes.
- (2) Complete compliance with emission standards by law.
- (3) Fully automatic control system.
- (4) Incinerator's backend air pollution prevention equipment can be selected for specific systems.

## 3. Features

- (1) Fix Bed Incinerator.
- (2) Rotary Kiln Incinerator.
- (3) Fluidized Bed Incinerator.
- (4) Coating Product Incinerator

## 4. Product Photo



Packaged Small-scale Incineration System  
Capacity : 500 kg / hr

銓風機械股份有限公司 CHUAN FENG MACHINERY CO.,LTD

台中市南屯區五權西路二段 1266 巷 11 號

No.11, Lane 1266, Sec. 2, Wucyuan W. Rd., Nantun District, Taichung City, Taiwan

TEL : +886-4-2389-2832 FAX : +886-4-2389-0168

E-mail : cf002@ms49.hinet.net http : //www.chuanfeng.com.tw

# HEAT PUMP VACUUM WASTE LIQUID EVAPORATION CONCENTRATION REDUCTION PROCESSOR

## 1. Structure and Principle

The main unit consists of a refrigerant compressor, a heat exchanger, a vacuum pump, etc. The concentrated waste liquid in the concentrated tank is repeatedly concentrated several times and stored in a concentrate tank. The vacuum distillation method is to automatically suck the waste liquid into the concentrating barrel, vaporize it by depressurizing the low temperature, and then turn it into condensed water through a cooling device. Using the working principle of the heat pump to heat the oil and water waste liquid, the vacuum pump draws a negative pressure to lower the boiling point and raises the evaporation amount, and the ice water system condenses and evaporates the vapor to reduce the effect, and then filters and condenses the condensed water for reuse.

## 2. Purpose

- (1) Metal processing cutting oil and water waste liquid concentration reduction.
- (2) Surface treatment, electroplating wastewater waste liquid concentration reduction.

- (3) Degreasing, leather industry, dyeing and finishing industry waste liquid concentration reduction.
- (4) Water-soluble paint, varnish washing, and dampening water waste liquid concentration reduction.
- (5) Inorganic and organic wastewater from organic pollutants and mixed wastewater containing inorganic substances.
- (6) Food processing waste liquid, chemical wastewater, and papermaking wastewater are concentrated..

## 3. Features

- (1) Use a vacuum pump to draw waste liquid into the waste liquid heater.
- (2) The water-sealed vacuum pump vacuums the internal pressure of the concentrated barrel to a negative pressure.
- (3) Heat the concentrated barrel to a low temperature boiling temperature ( 42 °C ~ 70 °C ).
- (4) Fully automatic and stable discharge of water quality is beneficial to "zero emission" and environmental protection.

元錫工業股份有限公司 YUAN CHANG TSAY INDUSTRY CO., LTD.

台中市梧棲區向上路九段 382 巷 106 號

No. 106, Lane 382, Sec. 9, Xiangshang Rd., Wu-Chi District, Taichung City, Taiwan

TEL : +886-4-2630-5899 FAX : +886-4-2630-8299 E-mail : ycycl@ycl.com http : // www.ycycl.com

#### 4. Specification performance

- ( 1 ) Low-temperature vacuum distillation operation mode, equipment footprint is small, minimum operating cost, and COD value is greatly reduced.
- ( 2 ) Recycling of reclaimed water not only greatly reduces the total amount of waste liquid discharge, but also greatly reduces the cost of discharge treatment. At the same time, condensed filtered water reuse also saves water resources.

#### 5. Product Photo



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# EXTRACTION AND WASHING SYSTEM FOR HEAVILY POLLUTED SOIL BY HEAVY METALS

## 1. Structure and Principle

**Extraction and Washing System:** The Extraction and Washing System separates the physical solid particles based on its size, weight or shapes by using the technique utilizing the driving force in liquid. The extraction system uses an extracting chemical to break the chain between pollutants and the soil in order to extract and separate the pollutant from the soil.

**Sewage treatment plant:** The Wet Process generally produces large amount of suspended solids and heavy metals, which are removed at the Sewage Treatment Plant by the chemical coagulation technique so as to comply with the wastewater standards.

**Air Pollution Control System:** Dusts and particle pollutants produced by the process are collected using the bag-filter dust collection equipment in an effectively way and the auto water spray is activated to prevent widespread of the air particles.

## 2. Purpose

This equipment can be used to treat the soil of the site polluted severely by heavy metals. The soil surface is contaminated by heavy metal pollutants due to absorption effect. Depending on the soil's surface area and electric charges, soils with smaller particles usually contain higher amount of heavy metals. With the processes provided by this equipment, most of the heavy metals contained in soils with smaller particles can be effectively removed, thereby increasing the efficiency of the pollution mitigation and decreasing the cost of the site maintenance.

## 3. Features

The Extraction and Washing Equipment uses liquid driving force and chemical extraction technique along with the Wet Process Equipment to separate pollutants from the soil. Then the soil is purified by extracting the soil's heavy metals to a liquid using an extracting chemical.

台境企業股份有限公司

TAIWAN ENVIRONMENT SCIENTIFIC CO., LTD.

台南市關廟區關新路二段 567 號 No.567, Sec. 2, Guanxin Rd., Guanmiao Dist., Tainan City

TEL : +886-6-595-6868 FAX : +886-6-595-6258 E-MAIL : tesc@tesc.com.tw <http://www.tesc.com.tw>



#### 4. Specifications and Functions

##### **Extraction and Washing System:**

Separator, feeder, washer (disintegration rate 20 - 35 ton/h), clay washer (capacity: 200 ton/h), sand separation machine (separates 0.1-10 mm soil particles), extraction tank (processing capacity of 320 CMD), metering pump, sieving machine (able to extract 0.05 - 0.1 mm soil particles) and centrifuge machine (processing capacity of 40 - 60 m<sup>3</sup>/h).

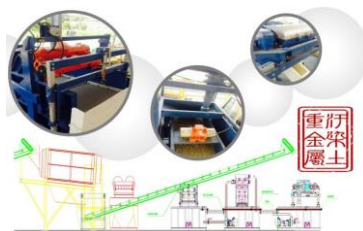
##### **Sewage treatment plant:**

Equalization pond, air blower, sedimentation pond, reactor tank, soil scalper, discharge tank, recycle tank, disposal tank, and water dehydrator ( 944 L/batch).

##### **Air Pollution Control System:**

Bag-filter dust collector (air flow rate: 200 m<sup>3</sup>/min).

#### 5. Product Photo



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# REFRIGERANT RECYCLING AND LIQUEFACTION EQUIPMENT

## 1. Structure and Principle

Recycling: After processing the refrigerator in the disintegrator, the R-11 refrigerant contained in the foam is guided into the liquid recycling machine through the wind draft at the entrance, and then sent into the energy-saving system, where the outward cold wind and the inward hot wind perform heat exchange to accomplish energy saving; heat exchange is performed via condensation, which is then sent back into the recycling tank for the second recycling process. The wind after processing will enter the active carbon tank for absorption and emission after being heated by the energy-saving heating system.

Desorption: The wind draft and the steam propel the air to pass through the system via the active carbon tank, where the recycled refrigerant is sent into the separating system for separation, and then condensed into purified Freon for storage.

Drying: After the active carbon tank desorption, then treat and reduce activated carbon adsorption function through the specially-made drying system, extend the service life of activated carbon.

## 2. Purpose

Handles refrigerator's heat insulating foam refrigerant  
Applicable to waste home appliances (refrigerator)

## 3. Features

- (1) The whole recycling system uses SUS-304 stainless steels, which is durable and will never rust or corrode.
- (2) It's thoughtfully-designed and more convenient for you to maintain and to replace activated carbon, reduce the time cost.
- (3) Liquefy Freon by condensation system, and then purify the recycled Refrigerant, make them more pure.
- (4) PLC automatic controlling system, real-time monitoring, quick maintenance, saves time and labor both.
- (5) Equipped with energy-saving heat exchanger which is environmentally friendly and helps with energy conservation and carbon emissions reduction.
- (6) Professional design and manufacture, convenient maintenance, and not easily damaged.
- (7) The simultaneous process of recovery and desorption helps to save time and double efficiency.
- (8) Refrigerant recovery has a efficiency of more than 95 %.

堯銓實業有限公司 YAO CHUAN ENTERPRISE CO., LTD

高雄市仁武區後安里永宏巷 42-38 號 No.42-38, Yonghong Ln., Renwu Dist., Kaohsiung City, Taiwan

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# REFRIGERANT RECYCLING EQUIPMENT

## FR-999

### 1. Structure and Principle

- (1) Once the recycle process is finished, machine will stop, unload automatically.
- (2) During recycle process that impurity, vapor, oil air, acid material can be separated and exhausted automatically.
- (3) Special regeneration treatment system, using the latest distillation of refrigerant processing technology, the quality of recycled refrigerant is more pure.
- (4) Liquid Storage Tank, Oil Separator and Heat Exchanger are made of galvanized iron material to guarantee rust-free and longer life of Recovering Equipment.

### 2. Purpose

- (1) Recycle refrigerant of air conditioning, refrigerator and automotive. (R-22, R-12, R-134a)
- (2) Appliance Sites :
  - A. Waste home appliances, automobiles, refrigerant recycling plants.
  - B. Large Refrigeration and air conditioning repair assembly plant.
  - C. The refrigerant-packing plants.

### 3. Features

- (1) Simple operation, just need to turn on the machine to work.
- (2) Three-stage - vacuum recovery, recycling, purification.
- (3) Auto-exhausting and dewatering devices, Manual and automatic emptying devices.
- (4) Recycling process, the impurities, water, oil, acid separated out side by side, the air will be discharged automatically.
- (5) Liquid storage tank, oil separators and heat exchangers all use Stainless material, never rust, lengthen the life span of recycling machines.
- (6) Equipped with senior globe valve switch and a number of protection measures, strong and safe, the machine would be more durable.
- (7) Equipped with automatic compressor cooling device, it can be used to protect the compressor operation from overheating damage even for a long time using.
- (8) Equipped with lubricator, make oil change more convenient.
- (9) Suitable for a long time operation, refrigerant purification, trace of refrigerant recovery, quick recovery.

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# TITANIUM EQUIPMENT – TITANIUM HEAT EXCHANGERS, STORAGE TANK, A VARIETY OF TOWER TYPE, KETTLE-TYPE, REACTOR, MMO ANODE

## 1. Structure and Principle

In Conformity Standard Jb/T4745-2002.

## 2. Purpose

Petroleum industry 、 chemical engineer 、 pharmaceutical 、 Chlor-Alkali chlorate electrolytic tank 、 chemical fertilizer 、 electroplating 、 spend recovery equipment.

## 3. Features

Provided with powerful technical force, compete and adequate processing equipment, superior detecting means and advanced manufacturing, technology.

## 4. Product Photo



昶昕實業股份有限公司 AMIA CO., LTD.

新北市土城區永豐路 195 巷 19 號 No. 19, Lane 195, Yongfong Rd., Tucheng Distrcit, New Taipei City, Taiwan

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# WASTE AND BIOMASS THERMAL TREATMENT & ENERGY RECOVERY PLANT

## 1. Structure and Principle

Organic wastes are incinerated / oxidized. The process generates thermal energy for electricity generation or induces thermal exchange to produce heated water. The steam generated from thermal exchange will be recycled for reuse.

## 2. Purpose

Produce fossil fuels that contain combustible organic materials such as used wood, sawdust, straw, bark, solid fuel and etc., other industrial and urban wastes are incinerated and the thermal energy released therefrom is recycled and reused for heating purpose, steam generation or electricity generation.

## 3. Features

- ( 1 ) Provided more than 1,000 waste thermal treatment/Energy recycling plants for biomass, municipal and industrial waste.
- ( 2 ) Proven technology, high performance and profitable solutions.

## 4. Product Photo



數字科技顧問有限公司 ECO-DIGITAL TECHNOLOGY INC.

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# Overview of Environmental Pollution Control Instrument and Related Equipment

Any machinery must be related to instrumentation and electricity. There is no exception for environmental protection equipment. The environmental protection equipment equipped with instrumentation and control will elaborate its functions and process “intelligence” and have more add-on values.

## I 、Instrumentation and Control Equipment

Instrumentation and control have been extensively used for control as well as for monitoring, and recording. In other words, any instruments capable of performing monitoring and control are considered as instrument and control. Through the normal operation of instrument and control equipment, one can easily collect the various information and variables of a process for analysis and determination. The instrument and control to a system is like brain and nerve system to the body. The sensing portion is monitoring and the reaction is controlling. It is also like the monitoring gauges and instruments in an automobile. Regardless of how the function of the car is, the control is indispensable equipment to the driver.

In order to achieve the objective of monitoring and control, the basic components of instrumentation and control consists of (1) measuring element: sensor and transmitter, (2) deviation detector: the controller that compares the information received to the expected value and send out the control signal to the final control element, and (3) final control element: receiving the signal to alter the input to a process, e.g. control valve and

frequency alternator, etc.

There are numerous categories of instrument and control equipment. The commonly-used instrument and control equipment in environmental protection and control are listed in Table 1.

II 、Accessories

Commonly used accessories include sampling, chemical addition, control valves and parts and depleted materials.

Table 1 : Commonly Used Instrument and Control Equipment in Environmental Protection

Item	Commodity Name	Remark
Temperature	Thermometer, Temperature Control	
Humidity	Hygrometer	
Pressure	Pressure Meter 、 Vacuum Meter	
Liquid Level	Ball Valve, Hydrostatic Pressure Liquid Level Indicator, Magnetic Float Liquid Level Indicator, Supersonic Liquid Level Indicator	
Flow Rate	Float, Flows the orifice, Venturi tube, Supersonic wave, Batardeau, (hot line) anemometer Float, Flows the orifice, Ventruri Flow Meter, Supersonic, Weir, (Hot Wiree) Wind Gauge	
Weight	Load Cell	
Torque	Torsion killer 、 Maximum Torqu Limite, Torque Switch	
Revolving Speed	Tachometer	
Vibration	Vibrometer	
Noise	Noise Meter	
Quantity	Flow Control Pump, Chemical Dosing Pump, Sampling Pump	
Time/Procedure/ Logic	Timer, Programmable Controller	

**Table 1 : Commonly Used Instrument and Control Equipment in Environmental Protection**

Item	Commodity Name	Remark
Specific Gravity	Densitometer	
pH	pH Meter	
ORP	ORP Meter	
Conductivity	Conductivity Meter	Water quality target
Turbidity	Turbidity Meter	Original water target
Sludge Concentration	Sludge Concentration Meter	
Interface	Interface Meter, Sludge Interface Meter	
DO	DO Meter	
Water-Borne Grease and Oil	Water-Borne Grease & Oil Analyzer	
Total solid dissolution quantity	Total Dissolved Solid Meter	
Total Carbon	HC analyzer, Total Organic Carbon Analyzer	
Total Nitrogen	Total Nitrogen Analyzer	
Total Phosphorus	Total Phosphorus Analyzer	
COD	COD Analyzer	
Residual Chlorine	Residual Chlorine Monitor, Effective Chlorine Concentration Meter	
Chemical Composition	Gas Chromatography, Spectrophotometer, Photo -ionic Detector, Flame Ionic Detector	On-line the gas phase chromatographic analysis meter only then may supply using of the monitoring
Metal Composition	Atomic Absorption	On-line the product is rare
VOCs	VOC Detector, Photo Ionic Detector, Flame Ionic Detector	
Oxygen (Residual Oxygen)	Oxygen Detector, (Excess Air) Incineration Efficiency Analyzer	
Oxygen	Oxygen Detector, Oxygen Deficiency Detector, Oxygen Analyzer	



**Table 1 : Commonly Used Instrument and Control Equipment in Environmental Protection**

Item	Commodity Name	Remark
Ozone	Ozone Detector	
Atmospheric Quality Detector	Air Quality Monitoring Device ( Generally Including SO <sub>2</sub> 、CO、O <sub>3</sub> 、NO <sub>2</sub> 、HC、PSI)	
Indoor Air Quality	Carbon Dioxide Detector, Odor Detector, VOCs Detector	
Flue Gas	Emission Gas Analyzer (Usually Including O <sub>2</sub> 、CO <sub>2</sub> 、CO、HC、SO <sub>x</sub> 、NO <sub>x</sub> )	
Combustible Gas	Combustible Gas Detector, Methane Detector	
Toxic Gas	Carbon Monoxide Detector, Sulfur Hydrogen Detector, Chlorine Gas Dector	
Particle	Powder Meter, Particle Analyzer	

# PORTABLE GAS DETECTOR

## 1. Structure and Principle

Sensors are selected in according to the characteristic the gas and worksite, such as semiconductor sensors, electrochemical sensors or Non-dispersive Infrared (NDIR) and so on, integrated into the portable gas Detector modules.

## 2. Purpose

- (1) GT200 series can be used to detect carbon monoxide, methane, hydrogen sulfide and oxygen.
- (2) GT300-AQ/VOC air quality detector. General targets are Hydrocarbon Compounds, Smoke, Odor. GT300-AQ has high sensitive in Hydrogen. GT300-VOC has high sensitive in Ammonia, Toluene and Hydrogen sulfide.
- (3) GT220N model is suitable for detecting carbon dioxide.
- (4) GT500-NH<sub>3</sub> models can be used to detect ammonia.

## 3. Features

- (1) Durable : The sensor has a durability of 2~3 years under normal use.
- (2) Economical : The cost is approximately 1/2 of traditional detector.

## 4. Specifications and Functions

- (1) General specifications:  
audible alarm and message  
backlight alphanumeric LCD,  
Dimensions:  
131mm×46mm×25.5mm,  
Weight about 135g, Built-in  
2,000mAH rechargeable  
lithium-ion battery.
- (2) Targets and Range of  
GT200-3G: carbon monoxide  
0 ppm to 600 ppm, methane 0  
ppm to 700 ppm, oxygen 3.0  
vol % to 25.0 vol %.
- (3) GTF300-AQ/VOC, air quality  
detector; range: 1-200 CIAQ.
- (4) Targets and Range of  
GT220N : Carbon dioxide 0  
ppm to 8,000 ppm.
- (5) Targets and Range of  
GT500-NH<sub>3</sub> : Ammonia 0  
ppm to 150 ppm.

## 5. Product Photo



育強科技股份有限公司 GASTECH CO., LTD.

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# WALL-MOUNT TYPE GAS DETECTOR

## 1. Structure and Principle

Sensors are selected in according to the characteristic of gas and worksite, such as semiconductor sensors, electrochemical sensors or Non-dispersive Infrared (NDIR), Photo Ionization Detectors (PID) and so on, incorporated into wall-mount type gas detector modules.

## 2. Purpose

- (1) GTF200 series of models can be used to detect carbon monoxide, methane, hydrogen sulfide and oxygen.
- (2) GTF300-AQ, air quality detector. General targets are Hydrocarbon Compounds, Smoke, Odor and high sensitive gas is Hydrogen.
- (3) GTF300-VOC, air quality detector. General targets are Hydrocarbon Compounds, Smoke, Odor and high sensitive are Ammonia, Toluene and Hydrogen sulfide.
- (4) GTF220N, carbon dioxide detector.
- (5) GTF400 series can be used to detect chlorine, sulfur dioxide.

- (6) GTF500 series can be used to detect CFCs, HFCs and ammonia.
- (7) GTF600 series can be used to detect various oxygen concentrations.
- (8) GTF700 series can be used to detect hydrocarbons and TVOC.

## 3. Features

- (1) Durable : The sensor has a durability of 2 ~ 3 years under normal use.
- (2) Economical : The cost is approximately 1/2 of traditional detector.

## 4. Specifications and Functions

- (1) General spec: Highly safe with IP65 enclosure design for aluminum alloy casing, sensor housing and buzzer housing, standard type offers precision current loop 4~20 mA or optional relay output, audible alarm and message, backlight alphanumeric LCD, Dimensions: 193 mm×91 mm×40 mm, Weight about 700g.

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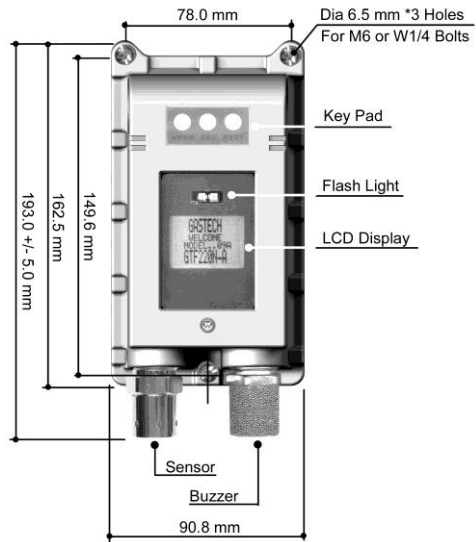
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- |  |  |
|--|--|
| <p>(2) All this category oxygen detector, range: 0 ~ 25.0 / 1 ~ 96 vol %.</p> <p>(3) GTF200-CO, carbon monoxide detector, range: 0 - 250 ppm (standard), optional 0-999ppm.</p> <p>(4) GTF200-FL, flammable gases detector, range: 1.00 - 40.00 % LEL (methane base, standard model), optional 1.0 - 100.0 % LEL.</p> <p>(5) Specified gas of flammable gases detector, which are available for Hydrogen, Toluene, Acetylene, etc.</p> <p>(6) Specified hydrogen detector, range: 0 - 2,000 ppm. There is no sensitivity to the combustible gas.</p> <p>(7) GTF300-AQ, air quality detector; range: 1 - 200 CIAQ.</p> <p>(8) GTF300-VOC, air quality detector; range: 1 - 200 CIAQ.</p> <p>(9) GTF200N, carbon dioxide detector, range: 0 - 8,000 ppm.</p> | <p>(10) GTF400 series of models can be used to detect chlorine, sulfur dioxide, range: 0 ~ 20 ppm.</p> <p>(11) GTF500 series can be used for R-12, R-22, R-134a, R-410a, R-407c, R-404a, range: 0 ~ 1,000 ppm. Or Ammonia, range: 0 ~ 150 ppm.</p> <p>(12) GTF700 series can be used to detect hydrocarbons, range: 0 ~ 300 ppm.</p> |
|--|--|

### 5. Product Photo



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# BATTERY LIFE EXTENSION EQUIPMENT

## 1. Structure and Principle

Patented pulsed wave technology is used to eliminate chemical degradation of the battery. It is a large-capacity charge and discharge system that can be used together.

## 2. Purpose

The life extension technology that can be used now increases battery life, reduces purchase costs (saves costs), and improves battery operating efficiency

## 3. Features

- (1) Decommissioned batteries are treated
- (2) with the equipment's life extension technology, and their performance can be restored and reused, which has the benefits of green energy, carbon reduction and environmental protection
- (3) The battery energy when the battery is discharged is returned to its own power supply system to save energy.
- (4) There are 1 ~ 3,000AH, DC250V~2,000V battery life extension capabilities and various specifications of battery charging, discharging and performance testing function
- (5) Battery monitoring equipment management can accurately detect battery quality, display data and graphics and monitor the whole process.
- (6) This equipment is used in battery life extension maintenance, which can save a lot of costs.
- (7) There is a 6-type battery program mode life extension recovery technology.
- (8) Professional products integrating IT technology
  - A. Charger, discharger
  - B. Battery Monitoring System (BMS)
  - C. Electric forklift battery monitoring system (FBMS).
  - D. Golf Car Battery Monitoring System (CBMS).
  - E. Communication room, energy storage system base station battery monitoring

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system (BBMS).

4. Specifications and Functions

MODEL	M-1	M-5	M-7	M-9
POWER	AC / 1ph / 220V	AC / 3ph / 220V - 440V		
OUTPUT	1.2-100V , 0-30A	1.2-120V , 0-50A	1.2-150V , 0-100A	1.2-75V , 0-350A
CAPACITY	300 AH	500 AH	1,000 AH	3,500 AH
Applicable	Small battery	Medium battery	Large battery	Very large battery

5. Product Photo



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# WELL FLUID PARAMETER MEASUREMENT SYSTEM

## 1. Structure and Principle

A fluid flow testing equipment installed onsite in the well so as to obtain the required parameters by monitoring and testing in real time. The obtained parameters are transmitted to a designated touch screen data collection center, which then displays the real time monitored data, states, and past trend graphs. The system allows the user to quickly collect and interpret data of the monitored site.

## 2. Purpose

Installed onsite in the monitoring system for site improvement. The system collects the data of every measurement in real time, keeps track of the status of site improvement, optimizes the improvement method, and lowers the manpower cost.

## 3. Features

- ( 1 ) Eliminates the problem of unsustainable manual monitoring as well as human errors in sample collection.
- ( 2 ) Easy to operate and allowed to obtain the complete onsite parameter data of the fluid being monitored in the well.
- ( 3 ) Lowers the manpower cost and keeps track of the site improvement status.

## 4. Specifications and Performance

- ( 1 ) A system for being used on site to monitor the well fluid.
- ( 2 ) A system for remotely monitoring the well fluid parameters.

The systems mentioned above are able to instantly retrieve 8 well fluid data, which are PH, DO, EC, ORP, air pressure, water pressure, border temperature, water temperature.

## 5. Product Photo



## 6. Award (Certification) Project

All systems use certified measurement instruments and regulatory compliance equipment.

冠誠環境科技工程股份有限公司

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# GAS ANALYZER

## 1. Structure and Principle

Sensors are selected in according to the characteristic of gas and worksite, such as semiconductor sensors, electrochemical sensors or Non-dispersive Infrared (NDIR), Photo Ionization Detectors (PID) and so on, incorporated into analyzer module.

## 2. Purpose

- (1) GTF600/601/602/605, trace oxygen analyzer.
- (2) GTF220N, carbon dioxide analyzer.
- (3) GTF700 series can be used to detect hydrocarbons and TVOC.

## 3. Features

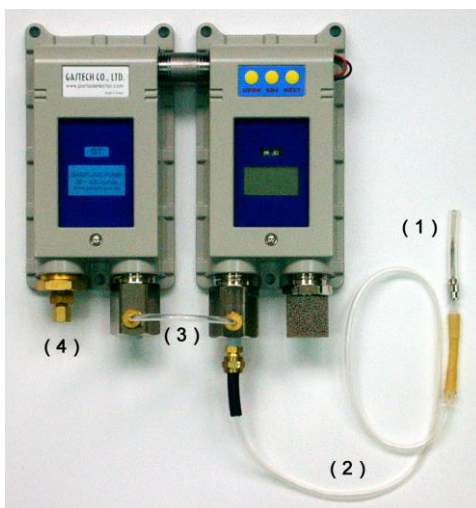
- (1) Durable : The sensor has a durability of 2 ~ 3 years under normal use.
- (2) Economical : The cost is approximately 1/2 of traditional analyzer.

## 4. Specifications and Functions

- (1) General spec : Highly safe and IP65 enclosure design with aluminum alloy casing and buzzer housing. Standard type offers precision current loop 4~20 mA, audible alarm and message, backlight alphanumeric LCD.

- (2) GTF600/601/602/605, trace oxygen analyzer, range: 10 ~ 1,000 ppm/ 100 ~ 10,000 ppm/ 200 ~ 20,000 ppm/ 500 ~ 50,000 ppm.
- (3) GTF220N, carbon dioxide analyzer; range : 0 ~ 8,000 ppm / 0-100 %.
- (4) GTF700-TVOC series can be used to detect hydrocarbons, range: 0 ~ 300 ppm.

## 5. Product Photo



(Photo: food packaging specific oxygen analyzer)

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# 100% CHEMICAL-FREE WATER PURIFICATION SYSTEM ( Copper-Silver Ionization Water Disinfection System )

## 1. Structure and Principle

### Concept

The Guen Young water purification system operates on the basis of the well-known oligo-dynamic principle through ions of the metals silver and copper.

The Guen Young module uses this well established principle, which not only ensures that an appropriate solution pressure of the metals is maintained but also creates a time-and power-controlled alternating current at the electrodes, which determines dosed emission of silver and copper ions. This system takes into account individual characteristics of the water to be processed - whether it is located indoor or outdoor, and whether it is hard or soft, this unit is a convenient and highly effective water purification system. It releases extremely low concentration (parts per million)of silver and copper ions based on your configuration.

## 2. Features

- (1) Prevent Legionella Pneumophila and lime buildup.
- (2) Simultaneous elimination of scale, germs and algae for improvement of water quality in cooling towers.
- (3) 100% chemical free and minimal maintenance cost.
- (4) Automatic flocculation.
- (5) Produce water with neutral odor and color; water contains no irritants.
- (6) Prolong usage life of the condenser in cooling tower.
- (7) Environmental factor does not affect the water quality.

## 3. Product Photo



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# SUPER-FINE FIBRE DUST-FREE RAG

## 1. Structure and Principle

The wiper is a polyester structure knitted with 100 % continuous micro-denier filaments, which features a specialty cross-section. Each filament is twenty-fifth in diameter of human hair. Ultrasonically cut, sealed and laundered with DI water in a class 1 cleanroom environment, it is designed to wipe off micro-contaminants from the surfaces of sophisticated high technology products and cleanroom tools. It exhibits excellent wiping performance, high absorbency and chemical resistance.

## 2. Purpose

Ideal for use in high technology industries, including semiconductor, TFT-LCD, optical electronics, biotechnology, cleanroom construction and equipment, for which operations are processed in cleanroom environment.

## 3. Features

- (1) All edges are ultrasonically cut and sealed to prevent release of fibers and particles.
- (2) All wipers are laundered and packed in class 1 cleanroom with ultra-low levels of particles, ions and residues assured

- (3) With diameter as twenty-fifth of a human hair, filaments are shaped to a specialty cross-section that features grooves for excellent absorbency and particle trapping.
- (4) Polyester has excellent chemical resistance.

## 4. Specifications and Functions

- (1) Basis Weight:  $142 \pm 3 \text{ g/m}^2$
- (2) Sorptive Capacity:  $\geq 380 \text{ ml/m}^2$
- (3) Sorptive rate:  $\leq 1 \text{ sec}$
- (4) Particlw s ( $\geq 0.5 \mu\text{m}$ )  $\leq 50$  counts
- (5) Ions
  - $\text{Na}^+$  : 0.9 ppm.
  - $\text{K}^+$  : 0.1 ppm.
  - $\text{Cl}^-$  : 0.2 ppm.
  - Non-volatile residue in IPA  $\leq 0.01 \text{ g/m}^2$

## 5. Product Photo



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