

## 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.

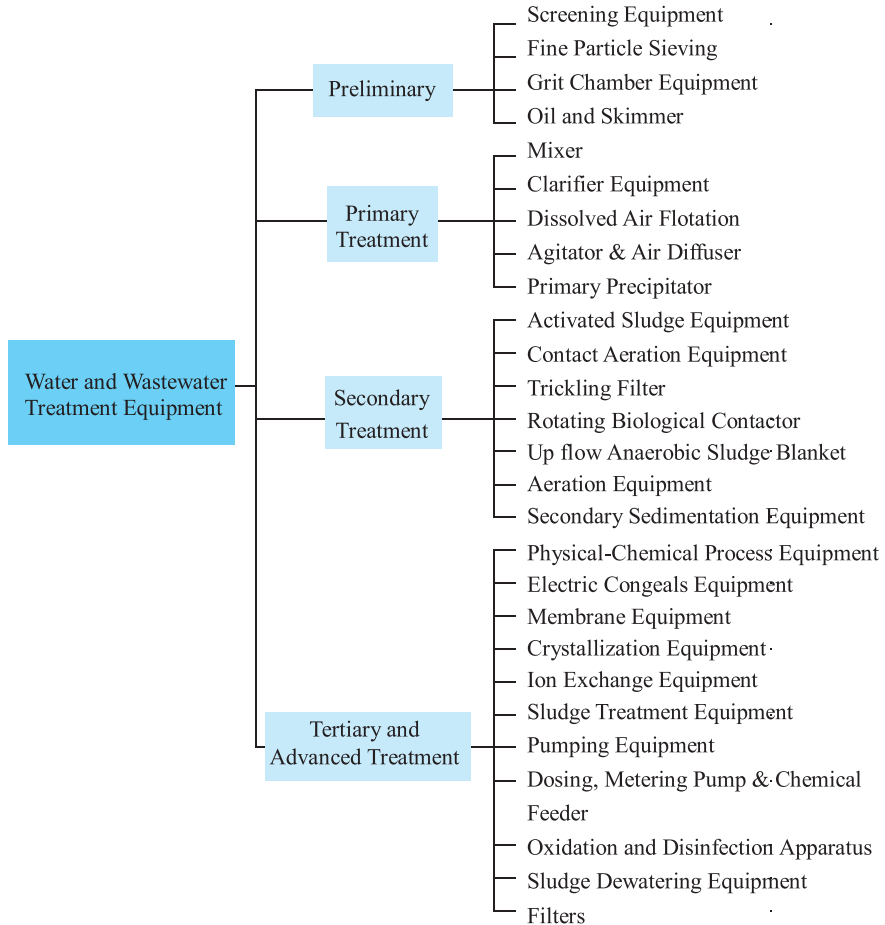


Figure 1 : Classification of Commonly Used of Water and Wastewater Treatment Technology and Equipment

## 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 purificator 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.



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

## **Overview**

**Water Treatment Equipment**

**Pure Water Treatment Equipment**

**Physical Treatment Equipment**

**Chemical Treatment Equipment**

**Biological Treatment Equipment**

**Flotation and Sedimentation Equipment**

**Pump Equipment**

**Aeration Equipment**

**Prefabricated Sewage Treatment Equipment**

**Related Apparatus**



## 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

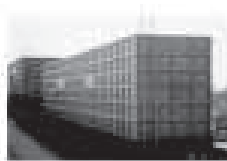
- (1) Ultra low-noise, no vibration, environmentally conscious.
- (2) Free of conventional cooling towers' and mechanical and electromagnetic noises, the equipment is built of static components. Except for water sound during operation, it produces no noise and no cooscillation effect-complies with noise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

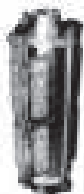
### 2. Purpose

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.

台中市龍井區中華路一段 15 號 No.15, Sec. 1, Zhonghua Rd., Longjing Dist., Taichung City, Taiwan

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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 eddy 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



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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

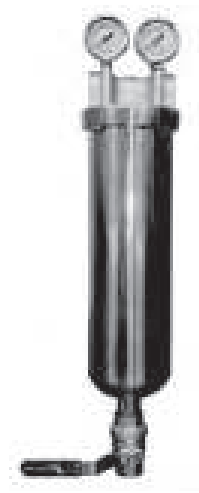
For the in-line processing and the protection before water tower.

### 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



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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  $\mu\text{m}$  ) 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.

### 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.

- (2) No Pre-filter required! Suitable for high turbidity feed water (up to 500 NTU).
- (3) Low power requirement due to short flow path & low transmembrane pressure, high flux, and low back wash flow.
- (4) Dead-End filtration operation, no friction on membrane surface.
- (5) Designed with internal air distribution tube for optimum air scrubbing effect.
- (6) Small foot print, lower running cost & better filtration quality than conventional filtration.

### 4. Specifications and Functions

Membrane Polymer/MWCO	PVDF/100K
Pore size( $\mu\text{ m}$ )	0.03
Configuration	Disk-Plate
Element Membrane Area( $\text{m}^2$ )	5.0
Element flow rate(LPH) @ 1bar, 25°C	1500
Operation Pressure	2bar
Max. TMP(bar)	2
Filtrate Turbidity(NTU)/DSI	$\leq 0.2 / \leq 2\text{bar}$
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.110, Sec.2, Gansu Rd.,Situn District, Taichung , Taiwan

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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) scrubbing 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

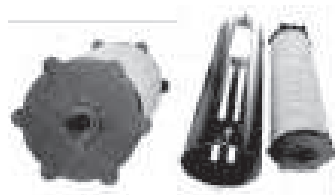
- (1) The UPVC vessel is designed for ease of operation while optimizing the advantage of the M - 80 UF element.
- (2) Inside the vessel installed with air distribution tube for optimum air scrubbing effect.

- (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

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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  
TEL : +886-3-436-0056 FAX : +886-3-456-9212    E-mail : p\_j@seed.net.tw    http://arcadia-filter.com

## 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 17M $\Omega$  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 m<sup>3</sup> / hr up.
- (2) Resistivity : up to 180 M $\Omega$  - CM.
- (3) Discharge : 0.

### 5. Product Photo



## 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



## 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.

### 2. Purpose

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

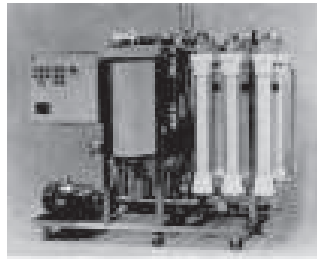
### 3. Features

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

### 4. Representative Attainments

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

### 5. Product Photo



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

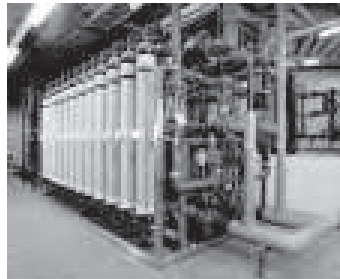
Soft, pure and ultrapure water purification.

### 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



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SUNRAY SCIENCE & TECHNOLOGY CO.,LTD.

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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 MΩ -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 MΩ -CM.

### 5. Product Photo



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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: 10~10,000 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.

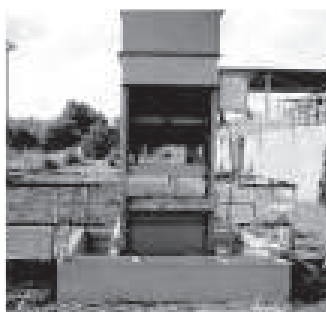
### 2. Purpose

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

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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 programmed 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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- (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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- (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

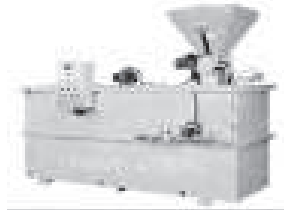
- (1) It can be formulated into diluent for use as polymer dry powder or concentrated liquid.
- (2) The storage hopper has a closed design to prevent the powder from being wet.
- (3) Innovative design of wet mixing device can prevent agglomeration and uneven mixing.
- (4) The screw conveying equipment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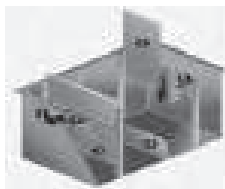
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## INTERCEPTION TANK

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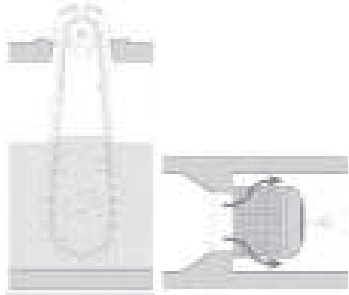
SUN HOME INTERNATIONAL DEVELOPMENT CO., LTD.

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## 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 desalination 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 basketshaped 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 pretreatment
- (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.

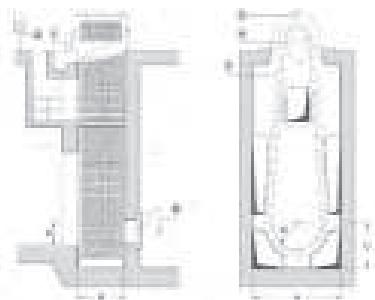
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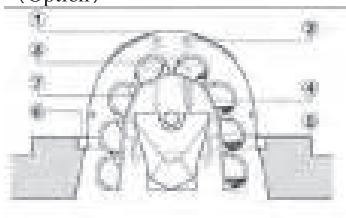
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#### 4. Specifications and Function



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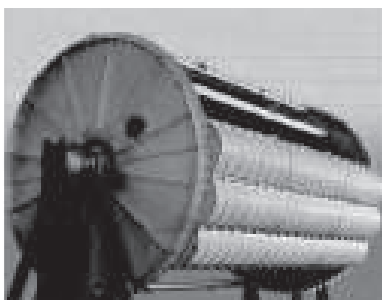
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- (7) The drum surface is composed by multi-semi-circular mesh baskets which increase more than 20 % filtration area compared to flat meshes and easy replacement without dismantlement of other components.
- (8) Two rotation speeds controlled by water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

#### 4. Product Photo

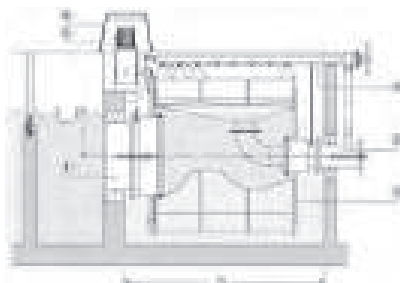


#### 5. Award (Certification) Project

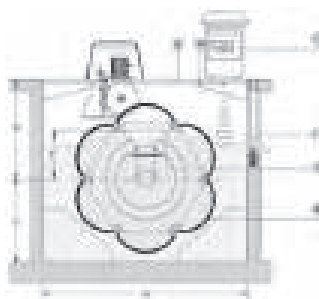
- (1) The product is ISO-9001 : 2000 certified for design, manufacturing and installation.
- (2) Taiwan Environmental Manufacturers Association certified the product for environmental protection quality standard in 2001.

#### 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
- ⑪ Over 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.

健鑫環境工程股份有限公司

H PLUS R ENVIRONMENTAL ENGINEERING CO., LTD

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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
≤ 1.0	0.55	0.75
≤ 1.6	0.75	0.75
≤ 2.0	1.10	0.75
≤ 3.0	2.20	0.75
≤ 4.0	3.00	0.75
≤ 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.

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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

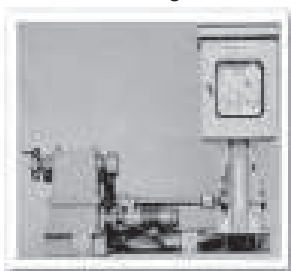
Specification									
Model	SSA-10	SSA-20	SSA-30	SSA-40	SSA-50	SSA-60	SSA-70	SSA-80	SSA-90
Lifting capacity Kg	1000	2000	3000	4000	5000	6000	7000	8000	9000
Driver HP	1/4	3/4	3/4	3/4	1	1	1	1	1

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



Specification					
Model	SSA-10	SSA-20	SSA-30	SSA-40	SSA-50
Lifting capacity Kg	1000	2000	3000	4000	5000
Driver HP	1/4	3/4	3/4	1	1.5

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



Double rods lifting device

Specification											
Model	SSA-10	SSA-20	SSA-30	SSA-40	SSA-50	SSA-60	SSA-70	SSA-80	SSA-90	SSA-100	SSA-110
Lifting capacity Kg	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
Driver HP	1/4	3/4	3/4	1	1.5	1.5	3	3	4	4	5
Dimension (mm)	Designed per gate dimensions										

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



Double Cables Lifting device

Specification									
Model	SSA-10	SSA-20	SSA-30	SSA-40	SSA-50	SSA-60	SSA-70	SSA-80	SSA-90
Lifting capacity Kg	1000	2000	3000	4000	5000	6000	7000	8000	9000
Driver HP	1/4	3/4	3/4	1	1.5	1.5	3	3	4

#### 5. Product Photo



健鑫環境工程股份有限公司

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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.

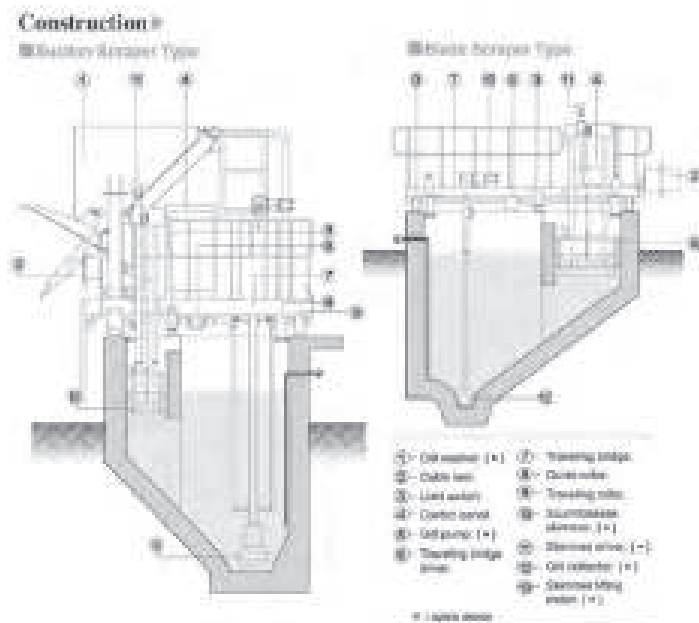
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#### 4. Specifications and Function



#### 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.

健鑫環境工程股份有限公司

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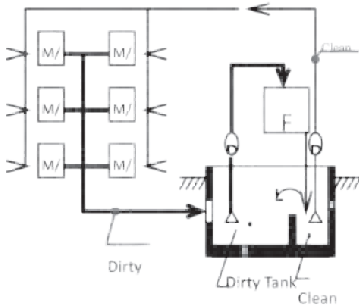
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## COOLANT FILTERATION, DEODORIZATION & WASTE REDUCTION SYSTEM

### 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.



### 2. Purpose

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

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.

光騰工業科技股份有限公司

EASTON ENGINEERING INTERNATIONAL CORP.

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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  $\text{CO}_2$  &  $\text{H}_2\text{O}$ .

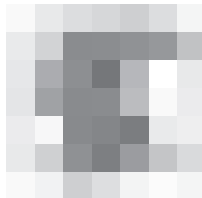
### 2. Purpose

- (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	$> 2.0 \text{ kg / cm}^2$	$> 2.0 \text{ kg / cm}^2$	$> 2.0 \text{ kg / cm}^2$
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	$< 60 \text{ dB}$	$< 80 \text{ dB}$	$< 100 \text{ dB}$
Temp	4 ~ 60 °C	4 ~ 60 °C	4 ~ 60 °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.

高雄市左營區重安路 80 號 No.80, Chong'an Rd., Zuoying Dist., Kaohsiung City, Taiwan  
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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.

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TEL : +886-7-787-0024 FAX : +886-7-787-0026  
E-mail : molykem.service@msa.hinet.net [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.

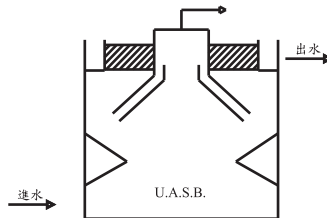
### 2. Features

- (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.

Process Flow



尚磊科技股份有限公司

SUNRAY SCIENCE & TECHNOLOGY CO., LTD.

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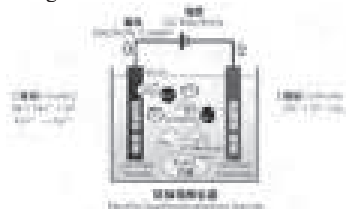
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# FRP ELECTROLYTIC DENITRIFICATION AND DEPHOSPHORIZATION JOHKASOU WASTEWATER TREATMENT PLANT

## 1. Structure and Principle



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.



## 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

## 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

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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## 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.

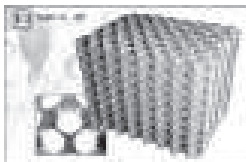
### 3. Features

- (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

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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.

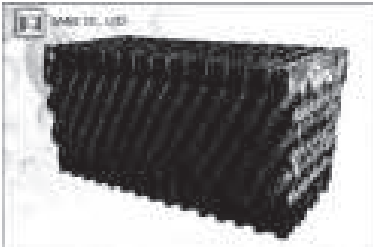
### 4. Specifications and Functions

### 3. Features

Large contact surface translates to large treatment capacity for effective capturing of organisms in water and forming of bio-contactor to purify water.

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



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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 to 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.

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- (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.

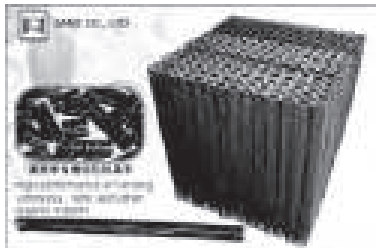
### 3. Features

- (1) Capable of forming membranes in a very short time.
- (2) Large mechanical strength, each  $\text{m}^2$  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 ( $\text{m}^2/\text{m}^3$ )	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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