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GESU

ENVIRONMENTAL TECHNOLOGIES

MANUFACTURING AND EQUIPMENT



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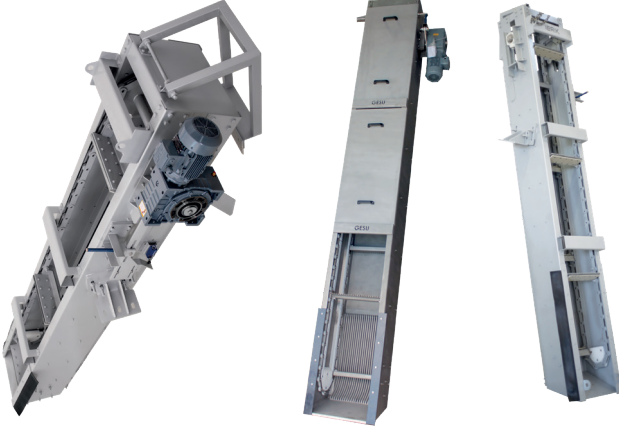
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PHYSICAL TREATMENT

AUTOMATIC COARSE SCREEN



Grid ; It is a physical treatment method that is used in waste water treatment plants at the entrance of the facility and designed to remove coarse solids that may damage the installation and equipment of the treatment plant that may be in the wastewater. The most commonly used screen models in large and medium-sized treatment plants are both fine and coarse screens.

They can work even in very deep channels, depending on the need, without limitation of channel height. Linear

mechanical screen is a mechanical equipment that cleans the bar screen mounted at 75° angle to the channel bottom by scanning vertically.

It is generally composed of chassis, fixed grid and stripping system. All movements of the scraper pallets are automatically controlled. The scraping movement, which starts from the bottom dead center, ends when the scraper at the top dead center transfers the wastes accumulated in the comb to the collection container. At the moment of descent, the comb changes its position and moves away from the grid.

Coarse Grids as production; main chassis material is ST37 epoxy paint coated and AISI 304 / 316. Grid and rakes are produced from AISI 304 / 316 material.

COMPACT PRETREATMENT UNIT

The compact unit efficiently separates solid particles, oil, and sand from wastewater in one machine. Wastewater passes through screens, then into the sand separation tank where solids are dewatered and discharged. Sand settles at the bottom, while oil rises and decomposes. A spiral mechanism moves sand to a funnel, preventing organic material buildup. Sand is conveyed upward for discharge and dewatering. Surface oil is removed using a scraper or weir system.



AUTOMATIC DRUM SCREEN

The external flow drum screen, crafted from AISI 304-316 or epoxy-painted carbon steel, separates solid materials (TSS) in wastewater via its drum housed in the main body. Designed to screen solids ranging from 0.25 to 3 mm, it's a popular choice in wastewater treatment plants. Its unique triangular cross-section and slotted design effectively capture solid waste, minimizing pollution while maximizing water passage efficiency.



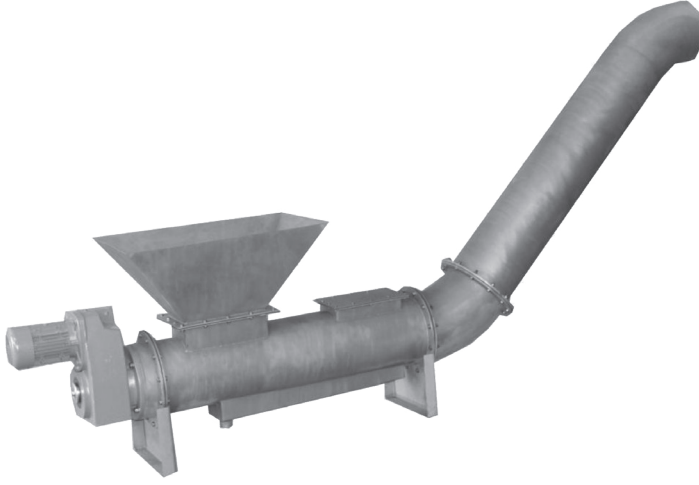
SCRAPER

Rotary Bridge Scraper: To efficiently remove the accumulated dense sludge at the bottom of settling tanks, it's essential to gather all sludge in one centralized location. The rotary bridge scraper is specifically engineered to facilitate this process, making it an indispensable component of sedimentation ponds.

Linear Scraper: In rectangular cross-section tanks, linear scrapers are commonly employed, particularly in pre-treatment plants and reinforced concrete sand and oil trap tanks. These scrapers are designed to effectively remove sludge and debris from the tank, ensuring optimal performance and maintenance of the facility.



COMPACTOR



The debris captured by the coarse and fine screens positioned at the entry points of wastewater treatment facilities is processed using a screen press. The entire structure is constructed from high-quality AISI 304-316 materials.

Solid waste is introduced into the feeding chamber and transported to the outlet via a helix mechanism. Simultaneously, any permeate water retained by the trapped debris is gathered in the drip tray located beneath the structure and subsequently expelled. This system effectively reduces the moisture content of the waste by 60%-80% and decreases the volume of solid waste by 40%-50%.



PENSTOCK

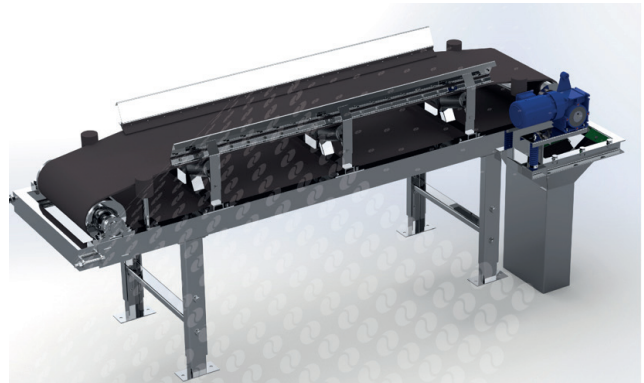
A penstock is a mechanism utilized to control liquid flow within channels or at the inlet or outlet of pools. Its cover can move vertically (up or down) through a geared shaft mounted on a chassis, allowing for manual or preferably motorized fluid flow control. The thicknesses of the frame and cover are meticulously calculated to withstand water pressure, ensuring reliable operation. Penstocks are customizable according to customer specifications, available in duct and wall types ranging from 500x750 to 1500x4000 in size.

Our penstocks are constructed using high-quality stainless steel, specifically AISI 304 and AISI 316 grades, ensuring durability and corrosion resistance. Sealing is achieved through the use of gaskets.

In terms of design, the shaft facilitating cover movement can be manufactured as embedded (non-rising) or rising, depending on customer preference.

CONVEYOR

Manufactured from galvanized ST37 material.
Used for carrying wastes of screening process.



BIOLOGICAL TREATMENT

SBR PACKAGE TREATMENT UNIT

The Packaged Biological Treatment Unit is a batch treatment plant employing biological processes, meticulously crafted with Sequencing Batch Reactor (SBR) technology to efficiently treat domestic wastewater while minimizing environmental impact.

These tanks, engineered to accommodate wastewater treatment for groups ranging from 50 to 1,000 individuals in a single reactor, are constructed from optional materials such as epoxy-coated carbon steel (St37) or stainless steel (SS304). They are compact units requiring minimal space and operate with low electricity consumption.



MODEL	POPULATION EQUIVALENT (person)	WASTE WATER FLOW (m ³ /day)	BIOSU TANK DIMENSIONS			CONCRETE STRUCTURES	
			width (mm)	length (mm)	height (mm)	PRE SETTLING CHAMBER mm (WxLxH)	EQUALIZATION CHAMBER mm (WxLxH)
BIOSU 50	50	10	1600	3000	2600	2000x800x3000	2000x1500x3000
BIOSU 100	100	20	2000	4000	2600	2500x800x3000	2500x2000x3000
BIOSU 150	150	30	2000	5300	2600	3000x1000x3000	3000x2500x3000
BIOSU 200	200	40	2200	6300	2600	3000x1000x3000	3000x3200x3000
BIOSU 250	250	50	2200	6800	2600	3000x1000x3000	3000x3200x3000
BIOSU 300	300	60	2350	7000	2600	3500x1000x3000	3500x3000x3000
BIOSU 350	350	70	2350	7500	2800	3500x1000x3000	3500x3500x3000
BIOSU 400	400	80	2350	8500	2800	4000x1000x3000	4000x4000x3000
BIOSU 500	500	100	2350	10000	2800	4000x1000x3000	4000x5000x3000
BIOSU 600	600	120	2350	11850	2800	4500x1000x3000	4500x5000x3000
BIOSU 750	750	150	2350	12500	2800	6000x1000x3000	6000x4500x3000
BIOSU 1000	1000	200	2350	13500	2800	6000x1000x3000	6000x6000x3000

BIOSU-SBR tank sizes vary according to the equivalent population.

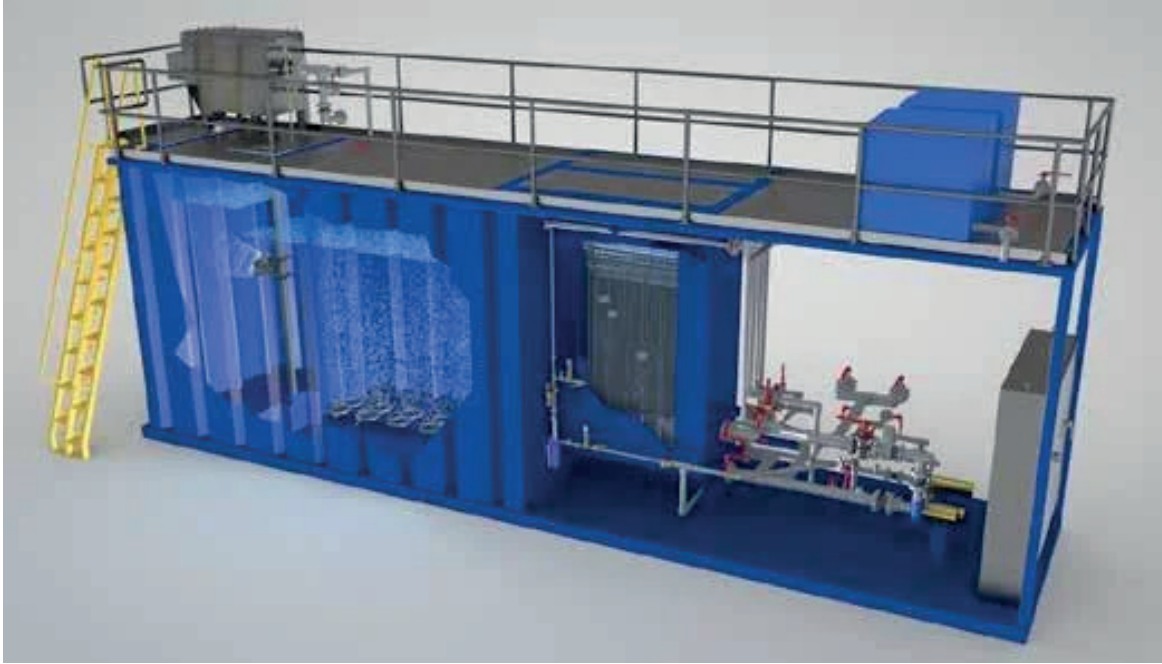
DAILY CAPACITY (Equivalent Population)	
FLOW RATE	200 L/PE.day
BOD ₅ LOAD	60 g/PE.day
BOD ₅ LOAD (After Pre-Treatment)	40 g/PE.day

TREATED WATER VALUES	
BOD ₅	< 50 mg/l
COD	< 180 mg/l
TSS	< 70
pH	6-9



MBR PACKAGE TREATMENT UNIT

MBR (Membrane Bioreactor) is an advanced wastewater treatment technology that combines conventional activated sludge processes with membrane filtration. It uses semi-permeable membranes to separate solid materials, microorganisms, and contaminants from wastewater, producing high-quality effluent suitable for reuse or discharge. MBR membranes have microscopic pores that allow water molecules to pass through while capturing suspended solids and bacteria, resulting in improved treatment efficiency and reduced footprint compared to traditional methods.



CHEMICAL TREATMENT

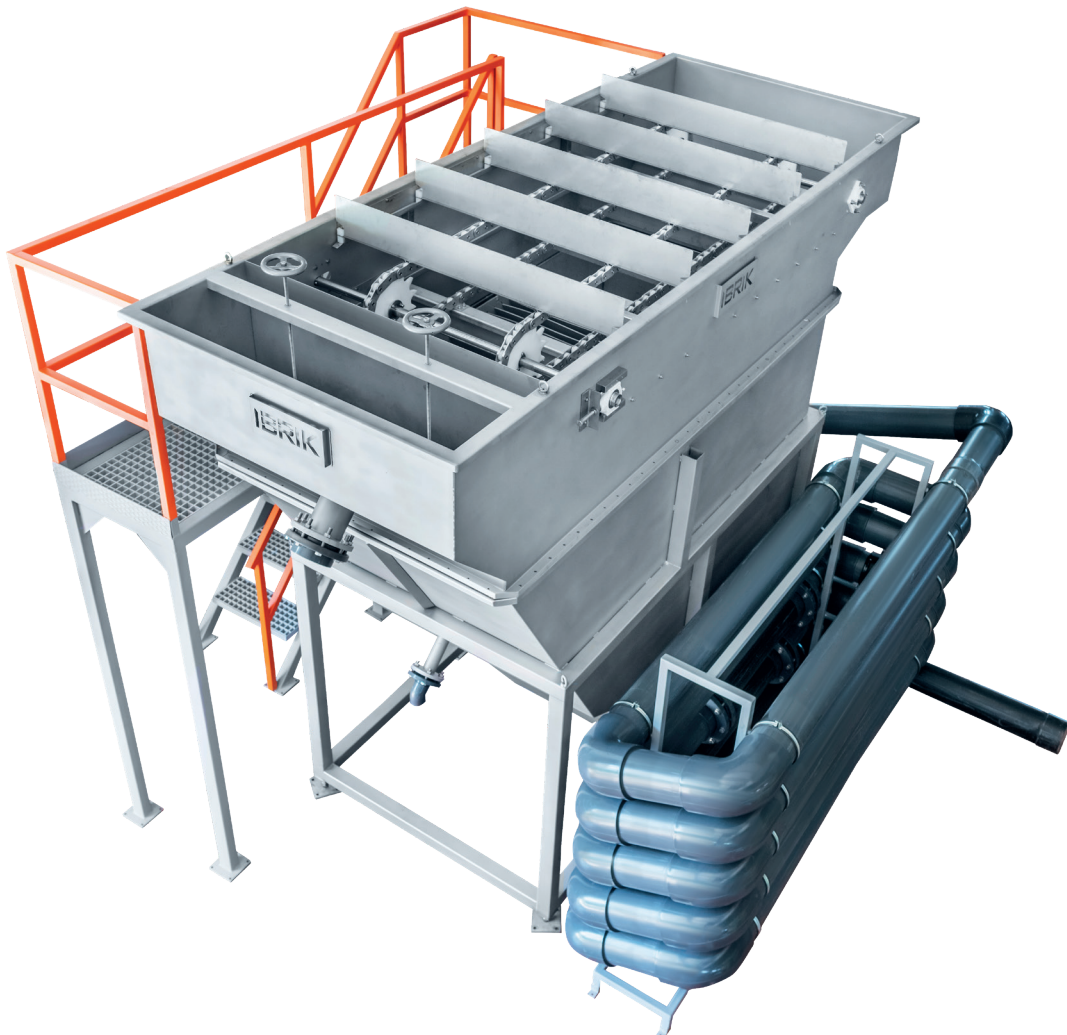
DISSOLVED AIR FLOTATION

The DAF unit is a compact, widely used flotation-based chemical wastewater treatment system. Its small footprint makes it ideal for various industries. It operates automatically and can function without chemicals for separating animal or industrial oily wastewater. Common applications include slaughterhouses, chemical plants, paper mills, textile factories, and more.

The unit comprises a tube-type flocculator, static mixers for chemical mixing, a DAF tank, scraper, honeycomb lamella for increased surface area, adjustable discharge weirs, microbubble pump, and electrical panel with options for frequency conversion.

It also includes pH meters, polydose unit, coagulant dosing unit, and acid/base dosing units for neutralization.

Constructed from AISI 304-316 and ST37 epoxy-coated materials, it uses pipe-type flocculators to connect wastewater. Chemical dosages are mixed in the flocculator before entering the DAF unit for coagulation, neutralization, and flocculation. Microbubble-pump-treated effluent combines with wastewater, rising as microbubble bubbles on the DAF surface. TSS, oil, and flocs are scraped off by a scraper, while honeycomb lamellas increase surface load.



PP PROCESS & DOSAGE UNITS

Made from solid PP (polypropylene), this tank can optionally feature a transparent level indicator or magnetic level sensor. Additionally, non-clogging electric dosing pumps with adjustable flow rates via frequency converters can be incorporated if desired. Optional safety tanks can be added to prevent chemical escape in case of external or internal tank failures. The tank also includes water and air filling valves for added convenience.

These tanks are used in chemical treatment for processes such as co-

agulation and flocculation, neutralization of pH or oxidation and reduction of heavy metals.

They are also used as storage and preparation units for chemical dosing systems which we also manufacture in our facilities.

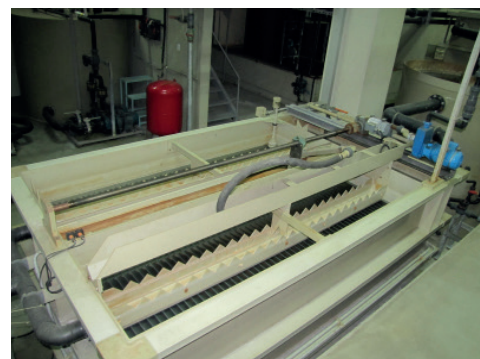


LAMELLAR SETTLING TANKS

The lamellar settling tank is designed to facilitate the settling of sludge in wastewater following chemical reactions. Water is directed into the tank and flows towards the lamella via weirs. Within the tank, sludge accumulates in the bottom cone and can be subsequently directed to either a filter press or sludge storage tanks for further processing.

Crafted from durable materials like solid PP or Carbon Steel, lamellar settling tanks are primarily utilized for pre-precipitation purposes. They feature essential components such as a hidden base cone, sludge outlet piping, optional sludge pump with a level sensor, input deflector, and V-type weir. The lamella parts can be manufactured from PP or PVC.

These tanks are tailored to suit specific treatment objectives and process conditions, with variants including primary settling tanks and lamellar settling tanks available in circular or rectangular configurations.



POLYELECTROLYTE DOSING UNIT

Polyelectrolyte aids in wastewater treatment, enhancing flocculation and solid/liquid separation. Dry polyelectrolyte is transferred from the dosing chamber to the first treatment chamber via a screw connected to a frequency converter. In the dissolution section, it's mixed rapidly to initiate dissolution. The resulting solution enters the maturing pond for further processing. Slow-speed reducers help achieve the desired consistency. A pump doses the solution into the third treatment chamber. Tanks are made of PP, and piping is AISI 304/316 PVC material.



ADVANCED TREATMENT SAND FILTER

1. Carbon Filters:

Carbon filters use activated carbon to adsorb impurities and contaminants from water, improving taste and removing odors, chlorine, and organic compounds.

2. Sand Filters:

Sand filters trap suspended solids and impurities as water flows through a bed of sand, commonly used for removing larger particles in applications like swimming pools and irrigation systems.

3. Zeolite Filters:

Zeolite filters utilize zeolite's porous structure to effectively remove heavy metals, ammonia, and other contaminants from water, commonly used in water softening and wastewater treatment.

Each filter type offers unique benefits for specific water treatment needs. The vessels are made of carbon steel and are controlled by electric actuators for ease of operation.



REVERSE OSMOSIS

Reverse osmosis (RO) is a water purification process that uses a semi-permeable membrane to remove ions, molecules, and larger particles from water. In a reverse osmosis system, water is forced under pressure through the membrane, which allows water molecules to pass through while blocking contaminants such as salts, minerals, bacteria, and viruses. This process effectively produces clean, purified water by separating it from impurities. Reverse osmosis is widely used for producing drinking water, desalination of sea water, wastewater treatment reusing, and various industrial processes where high-purity water is required. It is known for its efficiency in removing

a wide range of contaminants, making it one of the most effective methods of water purification available.



ULTRAFILTRATION

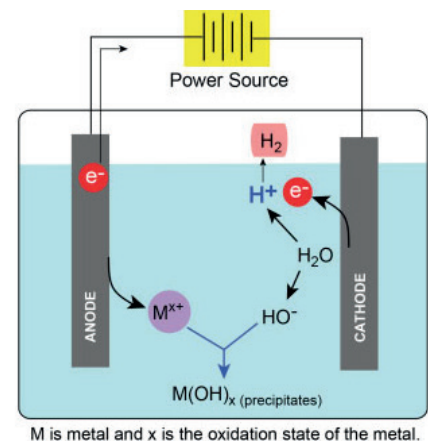


An ultrafiltration unit is a specialized filtration system designed to purify water by removing suspended solids, bacteria, viruses, and other microorganisms. It utilizes semi-permeable membranes with very fine pores, typically ranging from 0.01 to 0.1 micrometers in size, to separate contaminants from the water. These membranes allow water molecules to pass through while blocking larger particles and microorganisms. Ultrafiltration is commonly used in various industries, including water treatment, food and beverage processing, pharmaceuticals, and wastewater treatment, to produce high-quality and safe water for different applications.



ELECTRO-COAGULATION UNIT

The electrocoagulation process can effectively remove heavy metals, suspended and colloidal solids, oil emulsions, oil and grease, complex organics, and microorganisms from wastewater. Aluminum and iron electrodes are commonly employed in electrocoagulation processes. This method enables high efficiency in treating wastewater with diverse characteristics. Regardless of the cause of pollution, whether it's organic load, heavy metals, oil and grease, dyestuffs, sulfates, or electrical conductivity, the electrocoagulation process demonstrates success in removing these various impurities. The tanks can be crafted from carbon steel or polypropylene, while the electrodes are fabricated from either aluminum or iron.



SLUDGE TREATMENT FILTER PRESS

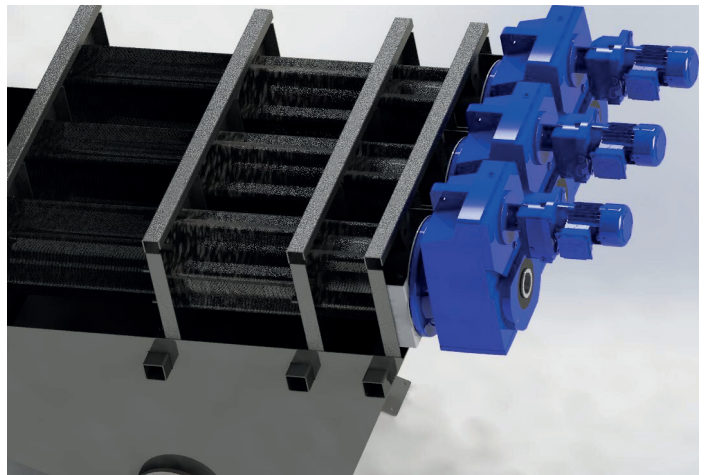
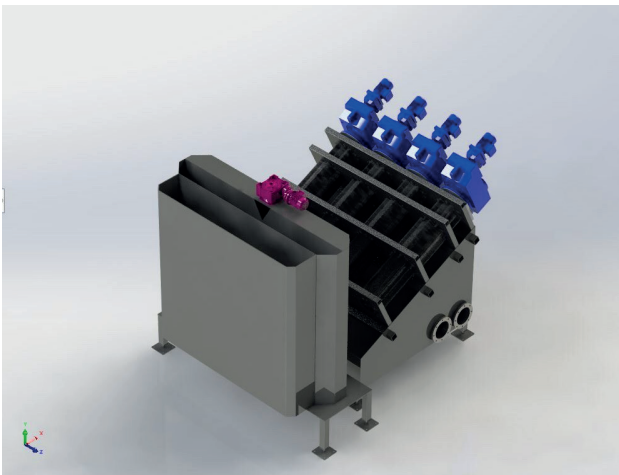
Filter presses are highly effective solid-liquid separation systems used across various sectors, including wastewater treatment plants. Muddy water is dewatered under high pressure through plates. Advantages include the best price/performance ratio and low-budget sludge dewatering. They maximize filtration with high pressure, yielding a high amount of solid waste in a low volume cake. Designed with a convenient hydraulic system and fast filtration

using specially selected filter cloth. Available in closed or open discharge, manual, semi-automatic, and fully automatic types to suit different processes. Filter cloth selection is crucial for optimal filtration. PP material is used for water inlets and outlets, ensuring resistance to deformation. We can produce 63 x 63, 80x80, and 100x100 plated units to accommodate various particle sizes and achieve optimal filtration efficiency in sludge treatment.



SCREW PRESS

A screw press for sludge treatment is a machine that removes water from sludge by applying mechanical pressure. It uses a rotating screw to squeeze the sludge against a screen, separating the liquid from the solids. This process reduces the moisture content of the sludge, making it easier to handle and dispose of.



GAS TREATMENT

WET SCRUBBER

Gas washing systems effectively remove odors and acid vapors across sectors. Utilizing diverse chemical reactions, they ensure precise and efficient removal of multiple gas compounds. Sized according to project needs, standard types are available with bodies made from PP, HDPE, or PVC, suitable for treatment plants, coating industries, and similar facilities.



BIOFILTER

The bioscrubber system combines a water adsorption column for wastewater treatment with a biological wastewater treatment plant.

This system serves as a pre-treatment for air pollutants in air deodorization within wastewater treatment plants, utilizing treated water for absorption purposes. Our company specializes in producing scrubber systems made from Polypropylene (PP) material, tailored to meet current requirements and conditions.



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