

MARKET SEGMENTS



- Textile Processing
- Pharmaceutical
- Paper
- Slaughter House
- Chemical Industries
- Dairy & Food Processing
- Mining Industry
- Leather Industry
- Oil & Gas
- Distilleries
- Domestic Waste Water
- Carwash, Hospital & Laundry
- Heavy Metals
- Fish Processing

BIOLOGICAL PROCESS

The Activated – Sludge process is a biological method of waste water treatment that is performed by a variable and mixed community of microorganisms in an aerobic aquatic environment. These microorganisms derive energy from carbonaceous organic matter in aerated wastewater for the production of new cells in a process known as synthesis, while simultaneously releasing energy through the conversion of this organic matter into compounds that contain lower energy, such as carbon dioxide and water, in a process called respiration. This consortium of microorganisms, the biological component of the process, is known collectively as activated sludge. The MLVSS is maintained as 2500 – 3000 mg/L. The overall goal of the activated – sludge process is to remove substances that have a demand for oxygen from the system. This is accomplished by the metabolic reactions (synthesis – respiration and nitrification) of the microorganisms, the separation and settling of activated sludge solids to create an acceptable quality of secondary wastewater effluent, and the collection and recycling of microorganisms back into the system or removal of excess microorganisms from the system. This is achieved by the efficient design of the Secondary clarifier and Sludge Re- Circulation System.

Here are the different types of biological process:

- ◆ Activated Sludge Biological Process (ASP)
- ◆ Moving Bed Bio Reactors (MBBR)
- ◆ Sequencing Batch Reactors (SBR)
- ◆ Anaerobic Biological Process



MEMBRANE BIO REACTORS

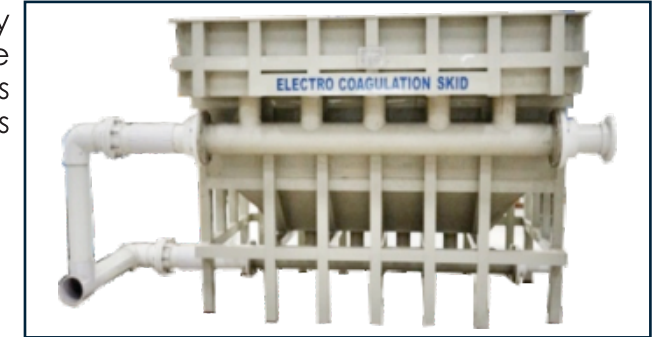
MBRs were designed with the separation device located external to the reactor and relied on high trans-membrane pressure (TMP) to maintain filtration. With the membrane directly immersed in the bioreactor, submerged MBR systems are usually preferred to side stream configuration, especially for domestic wastewater treatment. The submerged configuration relies on coarse bubble aeration to produce mixing and limit fouling. The energy demand of the submerged system can be up to 2 orders of magnitude lower than that of the side stream systems and submerged systems operate at a lower flux, demanding more membrane area. In submerged configurations, aeration is considered as one of the major parameters in process performance both hydraulic and biological. Aeration maintains solids in suspension, scours the membrane surface and provides oxygen to the biomass, leading to a better biodegradability and cell synthesis.



ELECTRO COAGULATION SYSTEM (PATENTED)

Electro-coagulation is a unique and latest technology successfully implemented in developed and developing countries. The advantages of Confident electro- coagulation system are follows Electro – coagulation produces several distinct electrochemical results independently. These observed reactions may be explained as:

- ◆ No addition of Chemicals, Lime or Ferric
- ◆ Very Low Operating Cost
- ◆ Less requirement of Space and Civil Construction
- ◆ Very less solid waste (Sludge) generation
- ◆ Colour removal up to 95% and BOD & COD removal upto 70%
- ◆ Simple and easy to operate and maintain

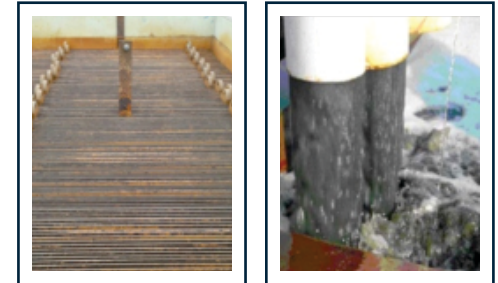


Electro-coagulation is the process of destabilizing suspended, emulsified or dissolved contaminants in an aqueous medium by inducing an electrical current in to the medium.

The electrical current provides the electromotive force to drive the chemical reactions. When reactions are driven or forced, the elements or compounds will approach the most stable state. Generally, this state of stability produces a solid that is either less colloidal and less emulsified (or soluble) than the compound at equilibrium values. As this occurs, the contaminants form hydrophobic entities that precipitate and can easily be removed by a number of secondary separation techniques.

Electro-Coagulation produces several distinct electrochemical results independently. These observed Reactions may be explained as

- ◆ **SEEDING** : resulting from the anode reduction of metal ions that become new centers for larger, stable, insoluble complexes that precipitate as complex metal oxides
- ◆ **EMULSION BREAKING** : resulting from the oxygen and hydrogen ions that bond into the water receptor sites of oil molecules creating a water insoluble complex separating water from pesticides and herbicides
- ◆ **BLEACHING** : by the oxygen ions produced in the reaction chamber oxidizes dyes, cyanides, bacteria virus and biohazards
- ◆ **ELECTRON FLOODING** : of the water eliminates the polar effect of the water complex, allowing colloidal materials to precipitate and the increase of electrons creates an osmotic pressure that ruptures bacteria, cysts and viruses.
- ◆ **OXIDATION REDUCTION** : reactions are forced to their natural end point within the EC chamber which speeds up the natural process of nature that occurs in wet chemistry
- ◆ **EC INDUCED pH** swings towards neutral



CONFIDENT offers fully automated Electro – coagulation based ETP, equipped with most modern automation system. The plant is absolutely easy and simple to operate

DISSOLVED AIR FLOATATION SYSTEM (DAF)

Dissolved Air Flotation is a liquid/solid separation process in which microscopic air bubbles (10-100µ) become attached to solid particles suspended in liquid, causing the solid particles to float. In a DAF system air is dissolved into liquid under pressure. The dissolved air remains in solution until the pressure is released to atmospheric pressure, causing the air to come out of solution in the form of microscopic air bubbles. The bubbles are mixed intimately with the wastewater and become attached to the solids in the waste stream causing the air solids agglomerate to float to the liquid surface where a solids (float) blanket is formed. Surface skimmers then remove the float blanket.



PRESSURE SAND FILTER

A typical pressure sand filter consists of a pressure vessel - this could be either vertical or horizontal-fitted with a set of frontal pipe work and valves, graded sand supported by layers of graded under bed consisting of pebbles and silex, a top distributor to distribute the incoming water uniformly throughout the cross section of the filter, and an under drain system to collect filtered water. Filtration is commonly the mechanical or physical operation which is used for the separation of solids from fluids (liquids or gases) by interposing a medium through which only the fluid can pass. The fluid that passes through is called a filtrate



IRON REMOVAL FILTER

The usual filter medium is sand but other materials - anthracite, garnet, manganese dioxide, are used for special applications. Water enters the top of the vessel and flows downwards through the bed of media and leaves through a collector system at the bottom. Contaminants are removed through straining and/or adsorption depending on the chosen media. shows a schematic of a typical granular media pressure filter. Water is passed through the filter until either the head loss across it rises to a preset value, or contaminant breakthrough is detected. It is then taken out of service and cleaned by backwashing with clean water. The backwash water enters the bottom of the filter vessel and flows upwards through the media bed, which starts to fluidize that are the media grains begin to separate from each other and to float freely. The fluidization of the media releases the retained contaminants, a process which may be assisted by bubbling air through the bed (air scouring) which causes the sand grains to rub against each other dislodging the retained contaminants from the surface.



OZONE TECHNOLOGY

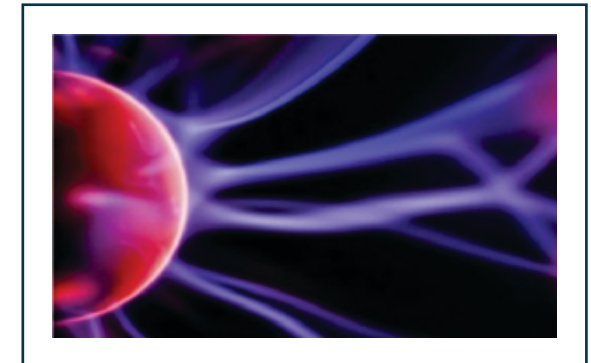
Ozone (O₃) is formed by the combination of three oxygen atoms. An unstable gas with a strong and irritating odor (which explains its name), ozone is corrosive, a strong oxidant and very toxic. For all of these reasons it is absolutely unsuitable to sustain life. Ozone is generally produced by generating high-power electrical discharges in air or in oxygen. Naturally found in the upper layers of the atmosphere, where it is formed by a photo-chemical reaction, ozone serves as a shield which protects our plants from the sun's ultraviolet radiation.

State-of-art research laboratory in our main facility is actively into various application of ozone technology, product innovation, design development and extensive testing. Our Research and Development team works extensively on ozone based technologies and comes up with leading edge products and solutions. We have a vast experience in Plasma Science, High Voltage Engineering, Thermal Transfer Efficiencies, Mechanical CAD, PLC SW and Automation, Networking and Remote Monitoring



BENEFITS OF OZONE

- ◆ Ozone is 51% more powerful on bacterial cell walls than chlorine.
- ◆ Ozone kills bacteria 3100 times faster than chlorine.
- ◆ Ozone is the most powerful broad spectrum microbiological control agent available.
- ◆ Ozone eliminates the use of hot water and conventional sanitizer.
- ◆ Ozone virtually eliminates all chemical usage.
- ◆ Ozone is chemical-free, it produces No toxic by – products.
- ◆ Ozone has full FDA-approval for direct-food contact application.
- ◆ Ozone is clean and environment-friendly; its only by-product is oxygen.
- ◆ Ozone is extremely effective as a disinfectant at relatively low concentrations.
- ◆ Ozone is generated on site eliminating the r\transporting, storing and handling of hazardous materials.
- ◆ Ozone is very inexpensive to produce and has an unlimited supply.
- ◆ Ozone is much safer for employees than any conventional chemicals.
- ◆ Ozone extends the shelf life of food products.
- ◆ Ozone permits recycling of wastewater.
- ◆ Ozone reduces Biological Oxygen Demand (80D)

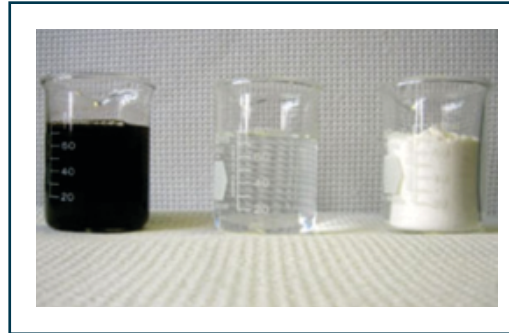


ZERO LIQUID DISCHARGE PROCESS

Zero liquid discharge (ZLD) is a water treatment process in which all wastewater is purified and recycled; therefore, leaving zero discharge at the end of the treatment cycle.

ZLD is a process that is beneficial to industrial and municipal organizations as well as the environment because it saves money and no effluent, or discharge, is left over, ZLD systems employ the most advanced wastewater treatment technologies to purify and recycle virtually all of the wastewater produced. Also zero liquid discharge technologies help plants meet discharge and water reuse requirements, enabling businesses to:

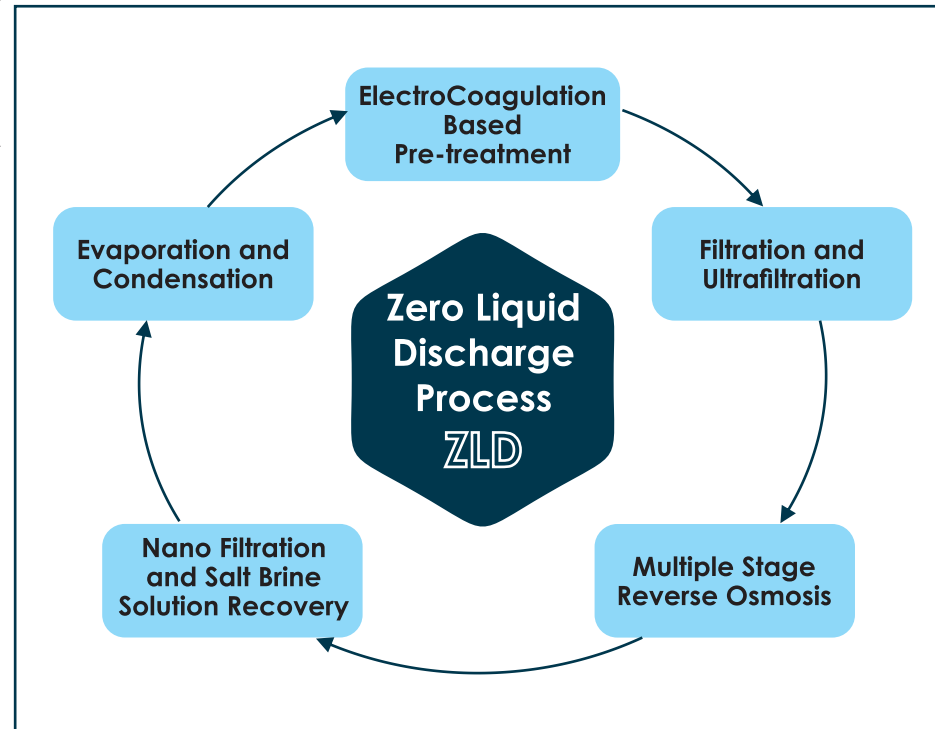
- ◆ Meet stringent discharge regulations.
- ◆ Treat and recover valuable products from waste streams.
- ◆ Better manage produced water.
- ◆ Waste water strong recovery separation by evaporation or boiling of water part of waste water not reusable, crystallizers and condensate recovery. ZLD plants produce solid waste.



With all increasing demand on natural water resources and unabated pollution posed by industrial discharges into the environment, it become necessary to implement zero discharge system in industrial waste water treatment plants. In a waste water treatment facility, zero discharge theoretically means no discharge of any kind of pollutants into the environment

Since the concept of zero discharge system is to ensure essentially no discharge of pollutants into the environment, recovery of water gains primary importance. It achieves two purpose

- ◆ By reusing process water, utilization of natural water resources is minimized;
- ◆ Re-use of recovered water enhances the capacity of the industry to efficiently utilize available water as well as control its quality to the required level.



ULTRA FILTRATION

Ultra Filtration system is an effective pre-treatment for Reverse Osmosis Re-Cycling plant and Nano Filtration plant. Ultra Filtration comprises of Hydrophilic PVC Hollow fiber Membranes. The pore size is 0.01 to 0.1 Micron.

BENEFITS OF ULTRA FILTRATION SYSTEM

- ◆ Turbidity less than 0.10NTU
- ◆ Consistent output water Quality.
- ◆ Bacteria removal up to 99.99%
- ◆ Increases the life of Nano and RO membranes
- ◆ Chlorine tolerance up to 200 mg/L
- ◆ SDI less than 2
- ◆ pH range from 3 to 12.
- ◆ Easily back washable.
- ◆ Low operating cost



REVERSE OSMOSIS SYSTEM

Treated effluent from the Ultra filtration will be fed to RO I feed tank. From RO I feed tank the treated effluent come to the series of micron filters then fed to reverse osmosis membranes stage I by applying by high pressure by HP pump meantime pH correction chlorine removal from anti-oxidant and anti-scalant dosing done automatically. Overall 75% of water recovers from RO stage I. All the RO system will have fully automated like service, ORP control, pH control, low pressure & high pressure dripping, automatic flushing, differential pressure monitoring, automatic cleaning, flushing etc. The product from the RO all stages permeate will feed to degasification tower for removal of carbon-dioxide and odor. After degasification the product water fed to process house for recycling.

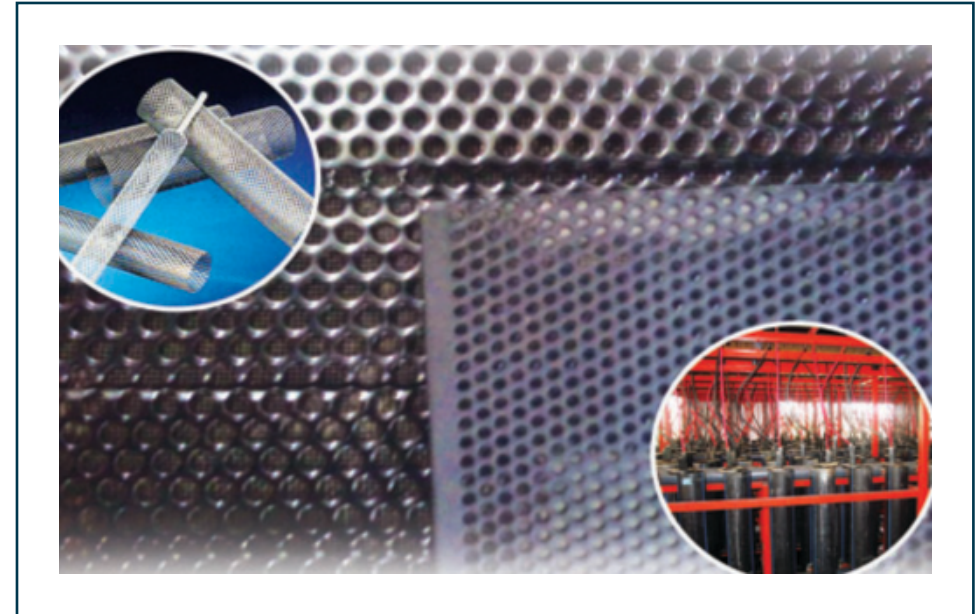
Confident offers you the Solutions from the Effluent treatment plants to Re-Cycling plants. The products, systems and techniques offered suits every application. Call us for the best solutions in waste water treatment

- ◆ 98% of the Feed water is recovered in the RO system.
- ◆ The system is installed with Automation for Pressure, pH, ORP and Flushing and monitoring the Flow, pH and TDS in Feed, Permeate and Reject.
- ◆ On Line Dosing of Anti-Scalant, Anti Oxidant and Acid.
- ◆ De-Gasifier Tower is used to remove the Alkalinity and Bi-Carbonates in the Permeate Water before Re-Use.
- ◆ Permeate water TDS is less than 100 mg/L, Hardness Nil, pH 6-6.5.
- ◆ Renewable Water source to save the environment.



ELECTRO IONIZATION FOR SALT RECOVERY

During the reactive dyeing of cotton, salts such as sodium chloride (NaCl) are placed in a dye bath to aid the exhaustion of various dyes onto the fabric while bases are added to raise the pH from around neutral to pH 11 to achieve fixation. Afterwards, the used dye bath solution, called dye bath, is discharged with almost all the salts and bases added as well as unfixed dyes. Consequently, many raw materials are lost in the waste stream ending up in the environment as pollutants. When the other Polluting Components are treated with different treatment techniques mentioned in this brochure, the salt remains same in the Effluent resulting in high TDS. The NaCl salt solution can be recovered for Re-use in Dyeing by using nano filtration membrane system.



BENEFITS OF NANO FILTRATION SYSTEM

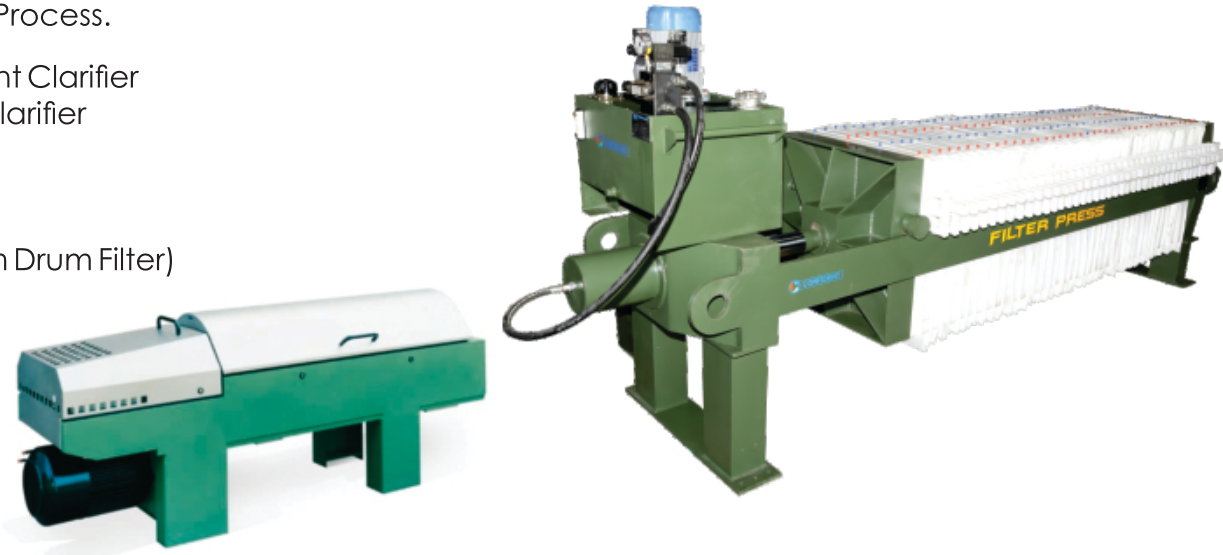
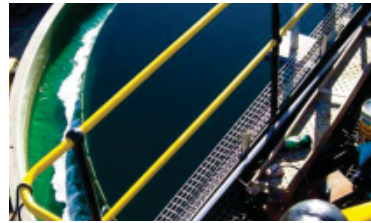
- ◆ 98% pure NaCl solution is obtained from the wastewater.
- ◆ Hardness less than 10 mg/L. Compliance of TDS value of less than 2100 mg/L is achieved as per Pollution control norms
- ◆ Faster Repeatability of Dyeing process due to consistent salt solution.
- ◆ Enhanced repeatability of Dyeing process due to consistent salt solution



SLUDGE MANAGEMENT

The Sludge management consists of different distinct functions such as Solid Liquid separation, Sludge Thickening, Sludge De- watering and Sludge disposal. The following Equipments manufactured by Confident play significant role in Sludge Management Process.

- ◆ High Rate Solid Content Clarifier
- ◆ Lamella Tube Settler Clarifier
- ◆ Sludge Thickener
- ◆ Filter Press
- ◆ Decanter
- ◆ RVDF (Rotary Vaccum Drum Filter)



PVA Recovery

Polyvinyl alcohol is a water- soluble synthetic polymer. It is used in papermaking, textiles and variety of coatings. It is white and odorless. It is supplied a beads or as solutions in waste. PVA is used as an emulsion polymerization aid, as protective colloid, to make polyvinyl acetate dispersions. PVA recovery system helps to recover 90% of the PVA out of the waste liquor which in turn saves 50% of the cost. PVA is used as yarn size formulation to achieve required yarn performance properties during weaving. Using 100%, PVA formulations for certain fabrics significantly increases COD or BOD levels compared to starch and also presents opportunities for reclaiming and reusing size. The COD in waste PVA is very high and reached approx 40,000ppm. By recovering the PVA, COD in the waste water is reduced by around 80%, the remaining, which can easily be treated by an ETP Plant. The recovered PVA is then sent to a pressure sand filter where it forms a cake, which is then dissolved in acid to keep PVA in liquid form.



MULTIPLE EFFECT EVAPORATOR

Multiple effect evaporators are used to optimize the energy consumption. When a single evaporator it is single effect evaporation is used it is single effect evaporation system and when more than one evaporator is used it is called multiple effect evaporators. A combination of falling film and forced circulation evaporators can be used for multiple effect system. Multiple effect evaporators are used in food, milk, fruit juices, pharmaceuticals, chemicals, fertilizers etc. Confident Engineering deals with highly energy efficient multiple effect evaporator systems. It can handle very high evaporation rates and good steam economy.

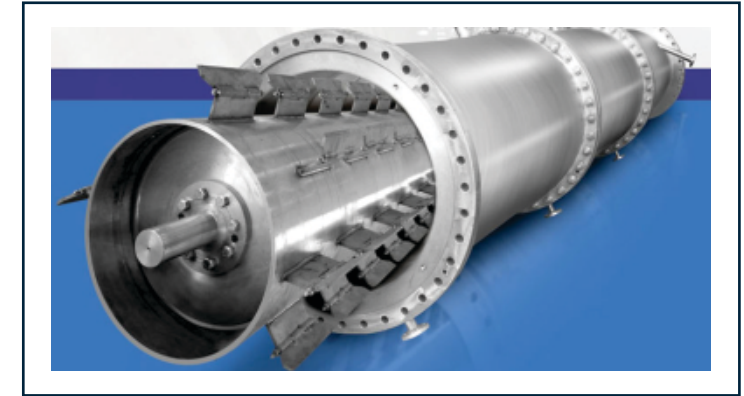


AGITATED THIN FILM WITH SLUDGE DRIER (ATFD)

An Agitated Thin Film Drier (ATFD), consists of a jacketed shell precision machined from inside and a rotor having blades that maintain a close clearance from the shell.

A feed distributor at entry point distributes the liquid in a thin film on the heated wall.

The high speed rotor further spreads and intensely agitates the film as it flows down. The generated vapors flow counter currently and get cleaned by an integrally mounted entrainment separator.



FEATURES

- ◆ Residence time of a few seconds with a narrow spread is an important feature for heat sensitive products
- ◆ Evaporation is achieved in a single pass, avoiding product re-circulation and possible degradation
- ◆ Scale formation on the heat transfer surface is reduced due to the intense agitation of the liquid film
- ◆ Excellent turn down capability
- ◆ Low product holdup, ideal for hazardous applications
- ◆ Operating pressure as low as 1 mbar and operating temperature up to 4000°C
- ◆ Special designs for clean room applications