



# PRESENTATION

## ABOUT US

- Established in 1996 at Faridabad
- Promoted by Mr. KK Sharma
- Well equipped infrastructure
- Strong research & Development activities
- Following internationally approved quality method
- Well maintained supply chain





## WHY US

- Stringent quality test
- Maximum client satisfaction
- Offers customized packaging solutions
- Cost effective & timeliness
- CAD & CAM designing facility
- Easy payment mode options
- NSIC & SSI Registered

## PRODUCTS

- Effluent Treatment Plant
- Sewage Treatment Plant
- Reverse Osmosis Plant
- Filtration Plants
- Demineralization Plant
- Water Softener
- Sludge Dewatering
- Filter Press
- Centrifuge
- Oil Skimmers
- Air Pollution Control Systems
- Swimming Pools
- Water Amusement Parks

## EFFLUENT TREATMENT PLANT

The Effluent Treatment Plant is designed to treat the effluent coming from different areas of the plant. Effluent Treatment Plants or ETPs are to purify water and remove any toxic and non-toxic materials or chemicals from it. These plants are used for environment protection. An ETP is a plant where the treatment of industrial effluents and wastewater is done. Effluent treatment is basically waste treatment. These plants are used widely in more or less all type process industries to reduce BOD, COD, suspended solids & other contaminants from wastewater. The effluent water treatment plants are installed to reduce the possibility of pollution.



## 1. CLARIFIER



Clarification is the oldest and most widely used operation in the effective treatment of wastewater. The operation consists of removing sediment, turbidity and floating material from raw waste water. The Clear-Ions circular mechanical clarifiers include circular center feed, and circular peripheral flow types., The Clear-Ions circular center feed clarifier operates with effluent entering through a center stilling well with the flow being forced downward. This ensures the proper residence time of the water in the clarifier to allow for the settling of the solids. The water then rises and exits through a wall mounted weir trough that is placed on the inner circumference of the clarifier. A skimmer sweeps over the surface of the clarifier to collect any floatable solids and remove them via the scum trough. A scraper arm assembly passes over the bottom of the clarifier to density and condition the settled solids prior to being draw in off for additional processing.

## SEWAGE TREATMENT PLANT

Sewage Treatment is the process of removing contaminants from wastewater and household sewage, both runoff (effluents), domestic, commercial and institutional. It includes physical, chemical, and biological processes to remove physical, chemical and biological contaminants. Its objective is to produce an environmentally safe fluid waste stream (or treated effluent) and a solid waste (or treated sludge) suitable for disposal or reuse (usually as farm fertilizer). Using advanced technology it is now possible to re-use sewage effluent for drinking water.

**SBR** Sequential batch reactors are industrial processing tanks for the treatment of wastewater. SBR reactors treat waste water such as sewage or output from anaerobic digesters or mechanical biological treatment facilities in batches. Oxygen is bubbled through the waste water to reduce biochemical oxygen demand (BOD) and chemical oxygen demand(COD) to make suitable for discharge into sewers or for use on land. The SBR is an advanced biological aeration type treatment plant designed to produce a very high quality of final effluent.



## SEWAGE TREATMENT PLANT

**SAFF Waste Water** Management -An overview Some Treatment Options Submerged Aerobic Fixed Film The submerged aerobic fixed film process (SAFF) also known as trickling filters comprises of specially designed synthetic media that facilitate attached fixed film growth of the microorganisms. The aerobic environment in the SAFF reactor is achieved by using fine bubble diffused aeration, which also serves to maintain liquid in a completely mixed regime. Biological growth on the media surface of trickling filters converts dissolved organic waste material into by products like carbon dioxide, nitrates, water and biological solids which are later removed by clarification.

**MBBR / FAB Treatment** of effluents with micro organisms developed as biofilms on biochips in a aeration tank, so as to reduce the pollutant load (COD/BOD) in a Secondary Treatment process is called as Moving Bed Biofilm Technology. Due to Providing Large surface area via biochip the micro organisms will not easily come out from the system and they develop biofilms on the carrier element/biochip to easily degrade the organic material and to reduce the pollutants (COD/BOD) load. The biofilm carrier elements are being kept suspended in the water by air from the diffusers in the aerobic reactors, and by means of a Mixer in the reactors. The fluidized aerobic bioreactor (FAB) is based on the concept of suspended growth as well as attached growth processes. The media has a specific gravity less than that of water. Hydraulic currents set by aeration facilitate fluidization of the media.

## REVERSE OSMOSIS PLANT

**Reverse Osmosis (RO)** is a membrane-technology filtration method that removes many types of large molecules and ions from solutions by applying pressure to the solution when it is on one side of a selective membrane. In the normal osmosis process, the solvent naturally moves from an area of low solute concentration (High Water Potential), through a membrane, to an area of high solute concentration (Low Water Potential). The movement of a pure solvent to equalize solute concentrations on each side of a membrane generates osmotic pressure. Applying an external pressure to reverse the natural flow of pure solvent, thus, is reverse osmosis.



## THE MEMBRANE

The semi permeable membrane for reverse osmosis applications consists of a polymeric material, which is several thousand Angstroms thick, thin film. There are two major groups of polymeric materials, which can be used to produce satisfactory reverse osmosis membranes: cellulose acetate (CA) and polyamide (PA). It has the smallest pore structure with pore diameter ranging from 0.5 to 1.5 nm.

## APPLICATION OF REVERSE OSMOSIS

- Demineralization of water having higher dissolved solids
- Recycling and Reuse of Wastewater
- Prior to DM plant where dissolved solids are on higher side
- Ultrapure water Production for electronic industry
- Potable water for domestic and industrial usage



## FILTRATION PLANT

**Filtration** The process of filtration involves the flow of water through a granular bed, of sand or another suitable media, at a low speed. The media retains most solid matter while permitting the water to pass. This type of slow filtration over a granular bed is generally known as slow sand filtration. It is the oldest method of filtration but still widely used in municipal water treatment plants & for industrial application as well.

Since Filtration process is the most important part for pretreatment. CIEPL offer combination of filters which ensures optimum design & effective removal of total suspended solids, turbidity, odor, color & iron present in the water.

**Pressure Sand Filter** Typically used for removal of suspended solids & undissolved impurities like dust particles & heavy metals etc. doing so it reduces turbidity. Sand filtration is used for cooling water, treatment of Wastewater and filtration of surface water.

**Iron Removal Filter** Many water supplies contain quantities of iron & manganese which may be detrimental to number of domestic and industrial use if not removed. Iron & manganese removal is very important pretreatment step in Ion Exchange & R.O. treatment.



**Multi Grade Filter** Multigrade filter works on principle of retention and removal of physical impurity in a graded manner through Voids of the filtering media.

**Dual Media Filter** As the name suggests this filter consists of two media's of filtration namely sand and anthracite. Sand is used for removing suspended particles and anthracite removes color and odor impurities present in water. These filters can be provided with definite configuration as per the requirement of client and Filtration upto 10-20 microns can be achieved.

## FILTRATION PLANT

**ULTRA FILTRATION** (UF) is a variety of membrane filtration in which hydrostatic pressure forces a liquid against a semipermeable membrane. Suspended solids and solutes of high molecular weight are retained, while water and low molecular weight solutes pass through the membrane. This separation process is used in industry and research for purifying and concentrating macromolecular ( $10^3$  -  $10^6$  Da) solutions, especially protein solutions. Ultrafiltration is not fundamentally different from microfiltration, nanofiltration or gas separation, except in terms of the size of the molecules it retains. Ultrafiltration is applied in cross-flow or dead-end mode and separation in ultrafiltration undergoes concentration polarization.



## **ACTIVATED CARBON FILTER**

Activated carbon is useful in water treatment because it acts as an adsorbent, and can effectively remove particles and organics from water. Carbon filters are most effective at removing chlorine, sediment, and volatile organic compounds (VOCs) from water.

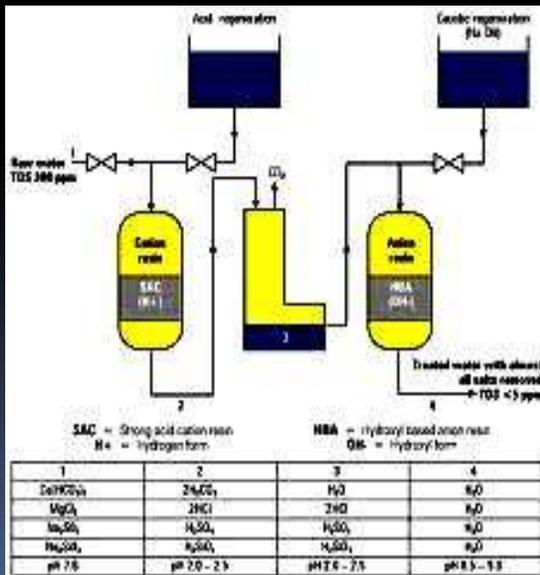
These organics are of great concern in water treatment because they react with many disinfectants, especially chlorine, and cause the formation of disinfection-by-products



## DEMINERALIZATION

**Demineralization** is the process by virtue of which the ions present in water are removed using Ion Exchange Processes. It is achieved using Ion exchange resins. Resin is an inert, insoluble polymer which has exchangeable ions. The resins that exchange cations are cation exchange resins and those that exchange anions are the anion exchange resins.

The cation exchange resins are used in the sodium (Na+) and hydrogen (H+) forms and the anion exchange resins are used in the hydroxide (OH-) or free base form.



### TYPE OF RESINS

Depending on the type of functional group attached the family of cation exchange resins consists of :

- Strong acid cation (SAC) and
- Weak acid cation (WAC) resins

**Likewise the anion exchange resins comprise :**

- Strong base anion (SBA),
- Weak base anion (WBA) and
- Mixed base anion resin.

### Reaction

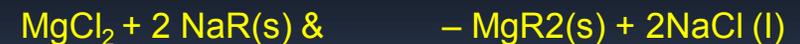
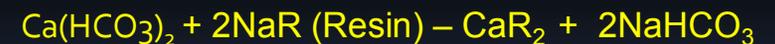
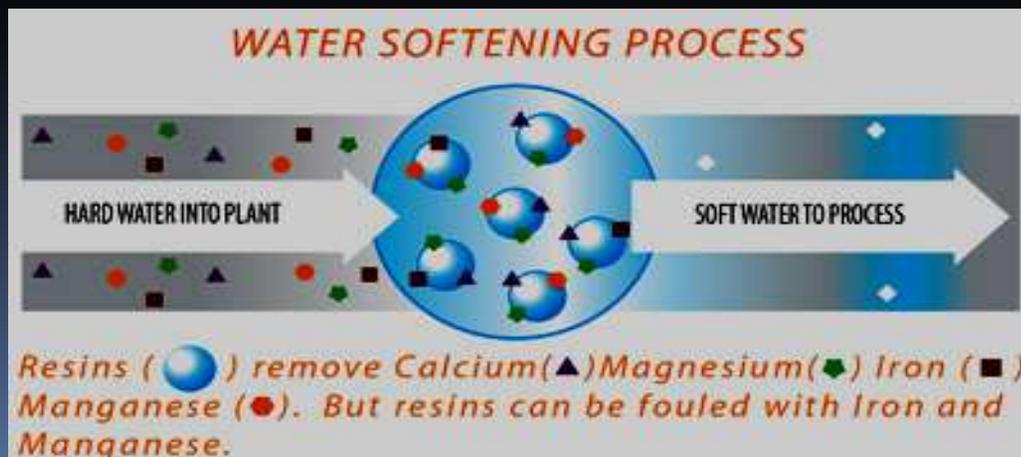


Demineralization vessels with both type of resins is called Mixed Bed (MB). It is used as a polishing unit after Anionic resin and the same is also used after RO to produce DI (De-ionized) Water.

## WATER SOFTENER

**Water softening** by ion exchange is the process in which Calcium and Magnesium are replaced with sodium and thus hard water turns into soft water. Calcium and Magnesium salts are called hardness in water and when it is replaced with sodium, hardness of water is reduced. Softening can reduce hardness but the TDS will not be reduced. As there is an exchange of cations with a preference for the sodium ion, a cation exchange resin in the sodium form is used in the process. The conventional resin employed for the softening process is the strong acid cation (SAC) resin the sodium form.

All the hardness, both temporary and permanent, present in water is removed. The hardness is easily reduced to commercial zero, a term previously referred to as one



## SLUDGE DEWATERING

Sludge Dewatering is the process of removing water from sludge. The percent of solids and moisture in relation to each other after dewatering, is dependent on the nature of the sludge and the exact nature of removal.

## FILTER PRESS

Filter Press also called Plate-and Frame Filter. Filter presses separate the solids from the liquids in sludge dewatering process so that the useful part can be processed, packaged or delivered to the next step.

Filter presses generally work in a "batch" manner. The plates are clamped together, then a pump starts feeding the slurry into the filter press to complete a filtering cycle and produce a batch of solid filtered material, called the filter cake. The stack of plates is opened, solid is removed, and the stack of plates is re-clamped and the filtering cycle is repeated.



## CENTRIFUGE

Basically, centrifuges separate solids from the liquid through sedimentation and centrifugal force. In a typical unit sludge is fed through a stationary feed tube along the centerline of the bowl through a hub of the screw conveyor. The screw conveyor is mounted inside the rotating conical bowl. It rotates at a slightly lower speed than the bowl. Sludge leaves the end of the feed tube, is accelerated, passes through the ports in the conveyor shaft, and is distributed to the periphery of the bowl. Solids settle through the liquid pool, are compacted by centrifugal force against the walls of the bowl, and are conveyed by the screw conveyor to the drying or beach area of the bowl. The beach area is an inclined section of the bowl where further dewatering occurs before the solids are discharged. Separated liquid is discharged continuously over adjustable weirs at the opposite end of the bowl.



## OIL SKIMMERS

Oil sorbent rope and belt are the result of decades of development, field-testing and refinement. With 20 years of experience in the industrial oil skimmer business. Simple but highly efficient floating oil skimmer technology still works to protect our environment.

The greatest benefit has been for industries of all types- petrochemical, metal finishing and machining, food processing, transportation and many more. No matter what the industry, wherever the separation of oil and hydrocarbons from water is a problem, clear-ion has a simple, efficient and cost saving oil recovery solution. Today, CIEPL remains committed to developing more efficient oil spill recovery applications of evolving oil separator technologies. CIEPL creating solutions to oil recovery problem, Where our success is measured by the satisfaction of our customers.

CIEPL oil Separator Technologies can.. Keep your oil Sumps and Waste Oil Tanks clean. Improve Waste Water Treatment /Oil Treatment Efficiency. Reclaim Waste Oil form storage Tank. Our Industrial Oil Skimmers handle sumps, tanks, clarifiers, ponds, lagoons and waste water treatment plants.



## AIR POLLUTION CONTROL SYSTEMS

### BAG FILTERS



A **dust collector** is a system used to enhance the quality of air released from industrial and commercial processes by collecting **dust** and other impurities from air or gas. Designed to handle high-volume dust loads, a dust collector system consists of a blower, dust filter, a filter-cleaning system, and a dust receptacle or dust removal system. It is distinguished from **air cleaners**, which use disposable filters to remove dust.

### HEPA FILTERS

High-Efficiency **Particulate Air** or **HEPA** is a type of **air filter**. Filters meeting the HEPA standard have many applications, including use in medical facilities, automobiles, aircraft, and homes. HEPA filters are composed of a mat of randomly arranged fibres. The fibres are typically composed of **fiberglass** and possess diameters between 0.5 and 2.0 micrometers. HEPA filters are designed to target much smaller pollutants and particles.



## AIR POLLUTION CONTROL SYSTEMS

### WET SCRUBBER

The term **wet scrubber** describes a variety of devices that remove pollutants from a furnace flue gas or from other gas streams. In a wet scrubber, the polluted gas stream is brought into contact with the scrubbing

liquid, by spraying it with the liquid, by forcing it through a pool of liquid, or by some other contact method, so as to remove the pollutants.

The design of wet scrubbers or any air pollution control device depends on the industrial process conditions and the nature of the air pollutants involved. Inlet gas characteristics and dust properties (if particles are present) are of primary importance. Scrubbers can be designed to collect particulate matter and/or gaseous pollutants.



### CYCLONE DUST COLLECTOR

**Cyclonic separation** is a method of removing particulates from an air, gas or liquid stream, without the use of filters, through vortex separation. Rotational effects and gravity are used to separate mixtures of solids and fluids. The method can also be used to separate fine droplets of liquid from a gaseous stream.

## SWIMMING POOLS

A swimming pool, swimming bath, wading pool, paddling pool, or simply a pool, is a container filled with water intended for swimming or water-based recreation. There are many standard sizes, the largest of which is the Olympic-size swimming pool. A pool can be built either above or in the ground, and from materials such as concrete (also known as gunite), metal, plastic or fiberglass.

Pools that may be used by many people or by the general public are called public, while pools used exclusively by a few people or in a home are called private. Many health clubs, fitness centers and private clubs have public pools used mostly for exercise. Many hotels have pools available for their guests. Hot tubs and spas are pools with hot water, used for relaxation or therapy, and are common in homes, hotels, clubs and massage parlors.

We are one of the leaders in supplying the Swimming Pool Filtration Plants and accessories. We also take up turnkey projects for Swimming pool especially require micro organisms control and disinfections in order to prevent health hazards. Our systems are designed to disinfect the water without any side effects.



## WATER AMUSEMENT PARKS

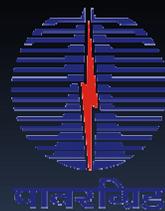


A **water park** is an **amusement park** that features water play areas, such as **water slides**, **splash pads**, spraygrounds (water playgrounds), **lazy rivers**, or other recreational **bathing**, **swimming**, and **barefooting** environments. Water parks in more current states of development may also be equipped with some type of artificial **surfing** or **bodyboarding** environment such as a **wave pool** or **Flow Rider**.

Waterparks have grown in popularity since their introduction in the late 1940s and early 1950s. The United States has the largest and most concentrated waterpark market, with over a thousand waterparks and dozens of new parks opening each year. Therefore, the amusement and leisure time industry is becoming more concentrated as winter sports are becoming commonplace themes in summertime water rides.

Water play areas are similar to waterparks and include **urban beaches**, **splash pads**, and smaller collections of waterslides in many hotels and public pools.

## OUR SINCERE THANKS TO



## CLEAR-ION EXPERTS PVT. LTD.

**Plot No. 28, Sector-24, Faridabad-121005**

**Phone No. 0129-2231499, 2231500, 4023029**

**Mob. No. 9811323029, 8447884530**

**Email- [clearions28@gmail.com](mailto:clearions28@gmail.com),**

**[clearions24@gmail.com](mailto:clearions24@gmail.com)**

**[www.clear-ion.com](http://www.clear-ion.com)**

**[www.clear-ion.net](http://www.clear-ion.net)**

