



# **SWARAJ EQUIPMENT PVT LTD**

**PRODUCT  
CATALOGUE**

## WHO WE ARE

We Swaraj Equipment Pvt Ltd have a great pleasure in introducing ourselves as one of the leading Water Treatment Company certified by ISO. We have 3 decades of experience in the field of Water Management be it Waste, Effluent, Sewage, RO to be recycled , directed towards addressing water challenges within India and aiming to geographically expand our global networks.

### **We have delivered 1000 + projects PAN ASIA**

We design and implement innovative water treatment programs, projects and business operation solutions that match the specific needs of our clients.

#### **We provide:**

- ▶ *Complete water management with zero liquid discharge (ZLD) - RO/MEE*
- ▶ *Effluent Treatment Plants*
- ▶ *Sewage Treatment Plants*
- ▶ *Ground Water Treatment Plants*
- ▶ *Demineralization Plants*
- ▶ *Desalination Plants*

Our dedication to exemplary customer service complemented by a steadfast commitment to safety and use of premium quality products defines each facet of our business operations to facilitate economic and sustainable outcomes tailored to suit our broad client base.

Highly qualified with in-depth industry experience, our team of technicians deliver advanced water treatment solutions to a diverse range of industries, including food and beverage, defence, healthcare, HVAC(Heating, ventilation, and air conditioning), mining, municipal, petrochemical and power providers.

#### **We also undertake:**

- ▶ *Revamping of existing treatment plants*
- ▶ *Power saving/upgrading of existing treatment plants*
- ▶ *Operation & Maintenance*
- ▶ *Annual Maintenance Contract*

We are happy to provide you with all queries/requirements related to water treatment and we have a wide range of products/plants of all ranges that are budget friendly with best quality.

#### **All physio-chemical checks will be done**

- ▶ *Feasibility/Treatability studies*
- ▶ *Environmental Impact Assessment (EIA) & EMP studies*
- ▶ *Energy Saving measures using latest Technology in Waste Treatment*
- ▶ *Study of existing plants and provides consultancy for economical operation.*

*We also undertake government projects and tenders and have successfully implemented more than 50 + government projects in the last 5 years.*

## WHY PARTNER WITH US?

### KNOWLEDGE AND EXPERTISE

- ▶ We have more than 30 years of experience in the water treatment industry.
- ▶ We have a wide portfolio of water treatment solutions.
- ▶ We develop systems for all types of applications and industries.

### ONE STOP

- ▶ We provide all water treatment components, consumables and spare parts.
- ▶ We represent more than 100 brands.
- ▶ We provide a wide range of competitive alternative options for pricing, availability and shipment to meet your business' priorities.
- ▶ We can provide global logistic support.

### TECHNICAL SUPPORT

- ▶ We can assist in the selection & sizing of products, and provide advising & assistance with troubleshooting.

### ACCREDITATION

- ▶ We are awarded with ISO certifications.
- ▶ Recognised by the Pollution Control Board

### COMPREHENSIVE WEBSITE

- ▶ Our website provides extensive technical information on water, water treatment, air and air purification

### WORLDWIDE DISTRIBUTION

- ▶ We have completed projects and plants PAN ASIA
- ▶ Our Headquarters is present Chennai and we have branch offices in Kerala, Tamil Nadu and Operate remotely on Andhra Pradesh and Karnataka.
- ▶ We have appropriate partnership agreements with manufacturers and distributors.

### MULTIQUALIFIED TEAM

- ▶ We have a team of expertized engineers in the field of microbiology, environmental science, civil, mechanical, chemical, certified technicians, maintenance works, doorstep service teams, help assistance

## WHOM WE SERVE?

### REFINERIES



### PETROLEUM & CHEMICAL



### MINING & METAL



### MUNICIPAL



### FOOD & BEVERAGE



### PULP & PAPER



### POWER



### OIL & GAS



## WATER TREATMENT PLANT

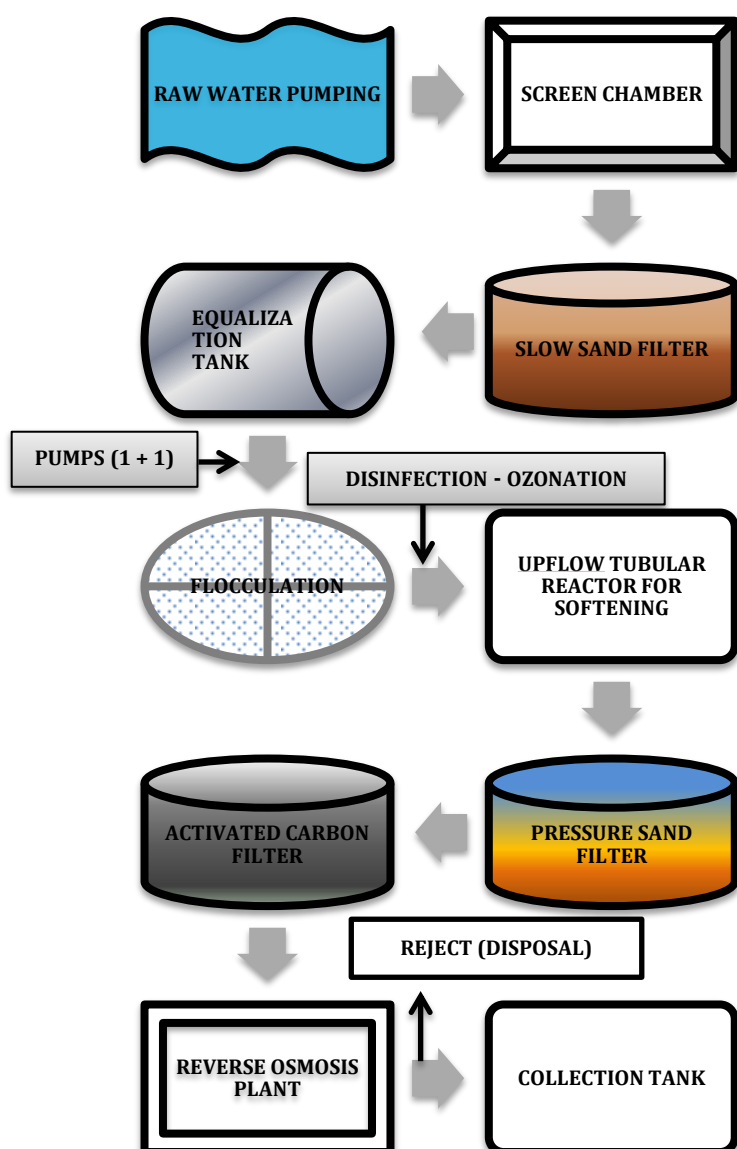
Due to the high cost of drinking water and the fact that water is not always available, more and more industries and municipalities use treated surface water. Surface water typically contains a high suspended solids content, bacteria, algae, organic matter, creating bad taste and odour. In some areas, like river estuaries, surface water can be brackish, reaching up to 8000 mg/L of salts.

Two processes are commonly used to treat surface water:

- Conventional treatment including clarification (coagulation/flocculation, sedimentation or dissolved air flotation), activated carbon, sand filtration and disinfection.
- Advanced treatment based on ultrafiltration technology.

### Water Treatment Processes

Special attention is brought to disinfection since surface waters contain a wide range of coliforms (*E.Coli*), viruses and protozoa. The use of chlorine should be used with care since it reacts with natural organic matter to form disinfection by-products like trihalomethanes.

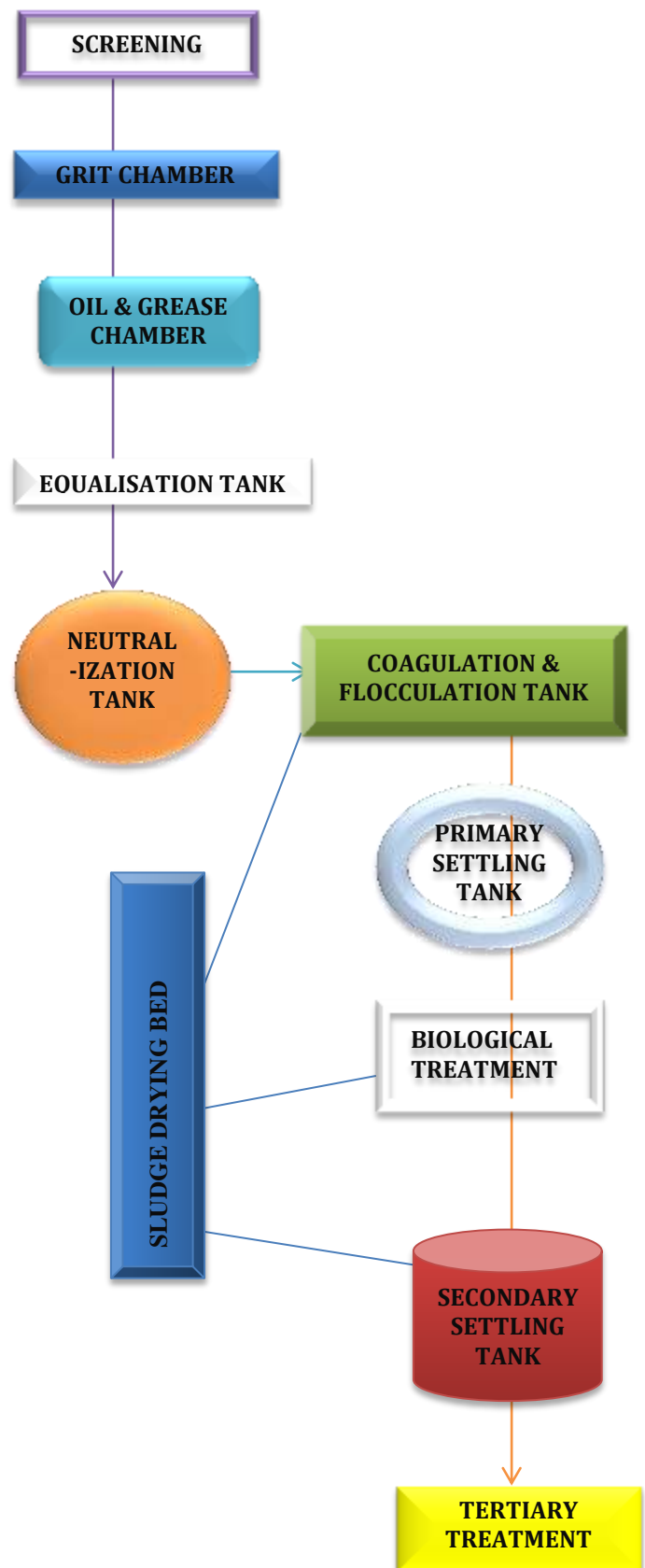


## EFFLUENT TREATMENT PLANT

Effluent treatment consists of a combination of physical, chemical, and biological processes and operations to remove solids, organic matter and, sometimes, nutrients from wastewater. Due to varying nature of the industrial wastes, many of the installations have designed their treatment units with due consideration to the raw waste characteristics and the effluent characteristics as established by Pollution Control Boards.

Depending upon the mode of discharge or toxicity of some waste and the nature of the constituents present in it, the treatment may consist of any one or more of the following processes.

- FLOW EQUALIZATION**  
Flow Equalization is used to minimize the variability of water and wastewater flow rates and composition
- CHEMICAL NEUTRALIZATION**  
Chemical Neutralization is the adjustment of pH to achieve the desired treatment objective.
- PHYSICAL TREATMENT**  
Physical methods of Effluent treatment accomplish removal of substances by use of naturally occurring forces, such as gravity, electrical attraction, and van der Waal forces, as well as by use of physical barriers.
- CHEMICAL TREATMENT**  
Chemical treatment of wastewater focuses primarily on the separation of colloidal particles. This is achieved through the addition of chemicals (called coagulants and flocculants).
- BIOLOGICAL TREATMENT**  
We use of bacteria and other microorganisms to remove contaminants by assimilating them.
- TERTIARY TREATMENT**  
Tertiary treatment is the advanced treatment process, following secondary treatment of waste water that produces water with high quality



List of Major Industries in India are as follows:

- Textile Dyeing Industries
- Brewery & Winery Industries
- Service Station
- Laundry Industries
- Automobile Industries
- Pharmaceutical Industries
- Sugar Industries
- Paper and Pulp Industries
- Electroplating Industries



## SEWAGE TREATMENT PLANT

Sewage treatment is the process of removing contaminants from municipal wastewater, containing mainly household sewage plus some industrial wastewater. Physical, chemical, and biological processes are used to remove contaminants and produce treated wastewater that is safe enough for release into the environment. A by-product of sewage treatment is a semi-solid waste or slurry, called sewage sludge. The sludge has to undergo further treatment before being suitable for disposal or application to land.

**Sewage treatment plants mandatory for**

- ✿ Apartments with more 20 Flats
- ✿ Hospitals above 30 Beds
- ✿ Commercial Office, Malls, Auditorium, Wedding Centre.
- ✿ Hotels above 20 Rooms
- ✿ Educational Institutions like School & Colleges

A sewage water treatment plant comprehensively treats the wastewater in four stages:

**Preliminary Stage:** Ever wondered where all the solid waste materials in the sewage water like shampoo wrappers, rags, plastic bottles and materials and other coarse objects end up? Don't worry all the outliers in

the sewage water are safely filtered in this preliminary stage and are sent away to the GHMC landfills.

**Primary Stage:** Also called as sedimentation this stage further separates the solid waste from the liquid water of the sewage water. As all the organic and inorganic solids that dodged the preliminary stage settle down, the liquid waste is skimmed to the next stage with skimmers.

**Secondary Stage:** As the water is sent to aeration tanks where the aerators mix the oxygen with the water to help microorganisms breakdown the biodegradable materials present in the water. This stage focuses on the removal of suspended biological matter and other organic materials.

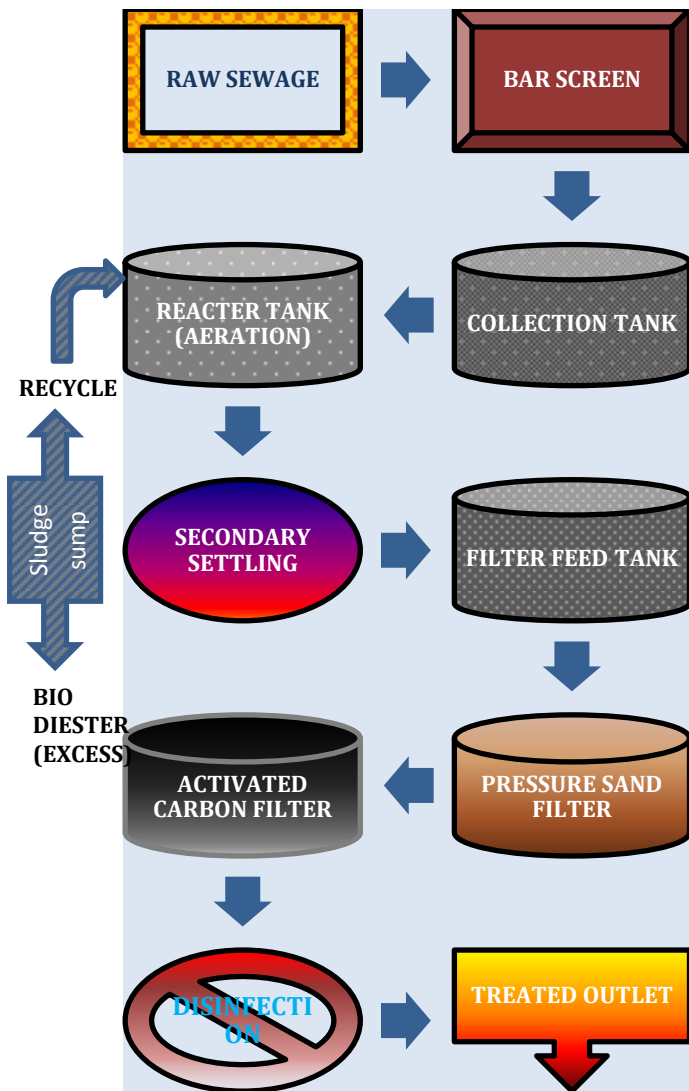
**Tertiary Stage:** While all the biological materials, both solid and liquid are completely removed in the first above stages, the tertiary stage removes all the inorganic materials and pathogens using chemical and UV light treatments. The water released now can be used for all the non-potable uses like flushing, irrigation, washing cars, gardening or even construction, and removed sludge can be utilized as fertilizer for plants.

As the sewage water is perfectly processed to make it fit for non-potable usage, thousands of litres of water every day is saved taking the burden off the water boreholes. The life period of water resources can be extended significantly leading to a comfortable, safe and sustainable living in the longer run.

**Advantages of a sewage treatment plant**

- ✿ Reliable and unlikely to encounter problems with only regular maintenance
- ✿ Can be installed even on challenging or compact sites
- ✿ Cost-effective over time, with only installation, power and maintenance are the required things to pay





## TYPES

- Activated Sludge Process (ASP):** ASP is the biological process by which non-settling substances occurring in dissolved and colloidal forms are converted into settling sludge which is removed from the liquid using aeration and a biological floc composed of bacteria and protozoa.
- Moving Bed Bio-Film Reactor: MBBR-** Moving Bed Bio film Reactor process utilizes floating plastic carriers (media) within the aeration tank to increase the amount of microorganisms available to treat the wastewater. The media provides increased surface area for the biological microorganisms to attach to and grow in the aeration tanks because of which require less space than

activated sludge systems. This process was invented in the late 1980

- Sequential Batch Reactor (SBR):** SBR-Sequencing Batch Reactor is a fill-and-draw activated sludge system for wastewater treatment. In this system, wastewater is added to a single "batch" reactor, treated to remove undesirable components, and then discharged.

- Membrane Bioreactor (MBR):** MBR-Membrane Bio Reactor is the combination of a membrane process like microfiltration or ultrafiltration with a biological wastewater treatment process, the activated sludge process. Saves Space

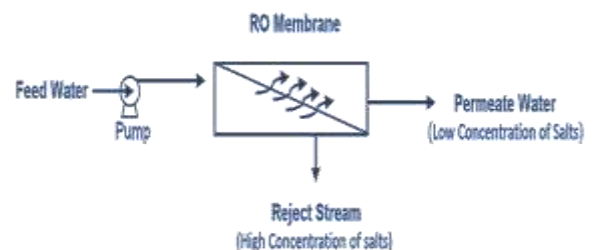
## REVERSE OSMOSIS

Reverse Osmosis, commonly referred as RO, is a process where water is demineralised by flowing under pressure through a semi-permeable membrane. Osmosis is a naturally occurring phenomenon in which a weaker saline solution will tend to migrate to a strong saline solution.

A semi-permeable membrane is placed between 2 compartments. Semi-permeable means that the membrane is permeable to some species and not permeable to others. In this case, the membrane is permeable to water molecules but not permeable to dissolved ions and other contaminants.

In order to reach the equilibrium the water will pass from the pure water compartment to the salt-containing compartment, to dilute the salt solution. The equilibrium point of this water column height in terms of water pressure against the membrane is called *osmotic pressure*.

### WORKING PRINCIPLE:



### Simple reverse osmosis

As the feed water enters the RO membrane under pressure (enough to overcome osmotic pressure), the water molecules pass through a semi-permeable membrane and the salts and other contaminants are not allowed to pass and are discharged through the concentrate stream, which goes to drain or can be fed back (totally or partially) into the feed water stream to be recycled through the RO system to save water or to solve hydraulic issues in the system.

### PURPOSE OF RO

Any contaminant that has a greater molecular weight and ionic charge is most likely rejected by a properly running RO system.

RO membranes do not remove gases like CO<sub>2</sub> or O<sub>2</sub>. These gases are not highly ionized (charged) while they're in solution and have a very low molecular weight



### Applications of RO

- ✿ Municipal drinking water
- ✿ Food and beverage industry
- ✿ Agricultural irrigation
- ✿ Industrial ultrapure water
- ✿ Industrial process water
- ✿ Waste water reuse
- ✿ Power industry (boiler feed water, cooling towers)
- ✿ Municipal/industrial water reuse
- ✿ Households

### Multiple Effect Evaporators

All evaporators are comprised of two sections: a heating section (called a steam chest) and a vapor/liquid separation section. These sections can be located within a single vessel (body), or the heating section may be external to the vessel that houses the vapor/liquid separation section. In a multiple-effect evaporator, vapor from one

body heats a second body at a lower boiling temperature. The first effect is heated directly with steam, and the additional bodies are ordered based on descending boiling temperature (or pressure).





## WHAT WE DO?

### RESEARCH & DEVELOPMENT

- ▶ Specialty applications
- ▶ Lab trials
- ▶ Pilot trials
- ▶ Plant optimization
- ▶ Troubleshooting

### WATER TREATMENT SYSTEMS ENGINEERING TEAM

- ▶ Design Engineering
- ▶ Automation Manufacturing
- ▶ Installation
- ▶ Commissioning
- ▶ Training

### TECHNICAL SERVICES SPECIALIZED TECHNICAL TEAM

- ▶ Maintenance contracts
- ▶ Troubleshooting
- ▶ Chemical cleaning
- ▶ Replacement of consumables & spares
- ▶ Periodic monitoring

### WATER TREATMENT PRODUCTS TECHNICAL SALES TEAM

- ▶ Equipment
- ▶ Spare parts
- ▶ Consumables
- ▶ Standard systems
- ▶ Technical Support
- ▶ Global Logistic Support



## PRODUCT OVERVIEW

- ≡ Pumps
- ≡ Filters & Filter Housing
- ≡ Ion Exchange Resins
- ≡ Pressure Vessels & Tanks
- ≡ Disinfection
- ≡ Multimedia Adsorbents
- ≡ Ultrafiltration Modules
- ≡ Chemicals
- ≡ Membranes
- ≡ Valves & Coupling

## PUMPS



Swaraj can offer a broad range of pumps for any type of flow and application: *surface water, groundwater, seawater, tap water and wastewater.*

Whether you are looking to treat seawater or to produce ultrapure water, our technical sales team can assist you in the selection and sizing of pumps and advise you with a highly reliable pump solution that meets your system feed requirements.

### PRODUCT TYPES

- Low pressure pumps
- High pressure pumps
- Dosing/Chemical pumps
- Feed pumps

## FILTERS & FILTER HOUSINGS



Swaraj can provide any replacement for cartridge and bag filters for a variety of industries such as *Oil & Gas, Food & Beverage, Pharmaceutical and more.*

We provide the full range of filtration products and we can also provide you complete filtration systems for pure water purification methods. To meet the restocking needs of our customers we can offer competitive supply agreements and if an express delivery is required, our team can offer an express shipment service at a convenient rate.

### PRODUCT TYPES

- Cartridge filters
- Filter bags
- Self-cleaning filters
- Strainers
- Filter housings

## MULTIMEDIA & ADSORBENTS



Swaraj has a diverse portfolio of filter media and adsorbents for your multimedia filters (MMF), ranging from *anthracite, sand, gravel, activated carbon to special media for remineralisation such as calcite or specialty adsorbents, (for example arsenic removal).*

Consult our technical sales team if you need assistance to select the most efficient media for your filtration system.

### PRODUCT TYPES

- Activated Carbon
- Arsenic Adsorbent
- Garnet
- Sand & Gravel
- Anthracite Calcite

## ULTRAFILTRATION MODULES



Ultrafiltration technology is used for the *separation of suspended solids, colloids, bacteria and viruses.* It is used as pre-treatment for several processes such as reverse osmosis, ion exchange.

It is particularly suited for surface water applications and challenging water in terms of suspended solids concentration.

The UF technology is used in MBR modules and in both wastewater treatment and membrane filtration.

### PRODUCT TYPES

- Ultrafiltration membranes

## MEMBRANES



SWARAJ can provide you Reverse Osmosis (RO) and Nano-filtration (NF) elements, from 1.8" to 8" diameter, for any type of water source (*brackish water, sea water, tap water*) and for a variety of industrial applications, *municipal desalination, water re-use and residential drinking water devices.*

Our technical sales team can provide you the required technical support to identify the best membrane solution for each application.

### PRODUCT TYPES

- High/Low Brackish Water
- Seawater
- Nano-filtration
- Fouling Resistant
- Low & Eco Low Energy
- Flat Sheets

## CHEMICALS



Swaraj offers a large range of applications, from pre-treatment to post-treatment processes. We can design chemical dosing systems and advise the right product for any water application.

Our engineering team is able to support and provide your business with the adequate equipment and advise you on the right product, based on more than 30 years of experience we have in the chemical field.

### PRODUCT TYPES

- Generic Chemicals
- Anti-scalants
- Membrane Cleaners
- Biocide

### PRESSURE VESSELS & TANKS



Vessels are used to provide environmental protection for water treatment components, such as reverse osmosis and nanofiltration membranes in RO systems.

We provide complete assistance from our technical sales team for the replacement of pressure vessels, selection of ports and membrane module connectors.

We can also help you tailor a vessel that meets your water treatment needs.

### PRODUCT TYPES

- Pressure vessels
- Tanks

### ION EXCHANGE RESINS



Ion exchange is used in water treatment for a variety of water treatment applications, including demineralization, ultrapure water and nuclear applications.

Swaraj can provide you not only competitive alternatives for pricing and availability but also all the necessary technical support to identify the best product for any application.

### PRODUCT TYPES

- Weak / Strong Anion Resins
- Weak / Strong Cation Resins
- Mixed Bed Resins
- Chelating Resins

## DISINFECTION



Water disinfection means the removal, deactivation or killing of pathogenic microorganisms. Chemical free disinfection for all water applications, chemical dosing or advanced oxidation/disinfection solutions are available among Swaraj product portfolio.

You may consult our website to access our full scope of supply and find all the relevant technical specifications of each product.

### PRODUCT TYPES

- Ultra violet / ultra-pure systems
- UV lamps
- Ozone generators
- Clo2 systems

## MEASUREMENT DEVICES



As water treatment technologies evolve, robust and adaptable systems are needed and Swaraj can offer multiple alternatives for measurement devices.

Our technical team can guide you in the selection of the best equipment for each application and you can also consult our website and use the available

## PRODUCT TYPES

- Measurement devices
- Alarm devices
- Testing kits

## COUPLINGS & VALVES



Swaraj can provide a broad range of couplings, valves and fittings that are designed to make the installation and connection of your Reverse Osmosis and Ultrafiltration systems fast and easy.

- Couplings
- Valves
- Fittings

## SOLUTIONS

### REVAMPING OF EXISTING TREATMENT PLANTS

We provide complete support in optimum utilization of existing plants. We offer detailed revamping and augmentation options. We offer following services for Revamping and Augmentation of Plants:

- Complete on site study of existing treatment plants by our qualified engineers
- Thorough analysis for low performance & low efficiency of systems
- On Site study and tracks of capacity augmentations
- Detailed reports, demonstrations on operational failures
- Detailed reports on proper size of equipment needed to run the plants

- ▶ Calibration of all electro mechanical equipment
- ▶ Validation for investments to revamps or augments the plants

### **POWER SAVING/UPGRADING OF EXISTING TREATMENT PLANTS**

We provide complete care and upgradation in of existing plants. We offer detailed updating ideas and cost effective techniques that benefit the client in the following:

- ▶ Higher capacity
- ▶ Better water or effluent quality
- ▶ Better and more reliable equipment
- ▶ Lower operational costs.

### **OPERATION & MAINTENANCE**

We offer Operation and Maintenance of water, sewage and effluent treatment. We offer complete solutions to our clients and help them concentrate on their key business activities.

#### **O &M Contracts**

- ▶ Supply of Manpower
- ▶ Supply of Spare for key equipment
- ▶ Supply of Chemicals for Plants
- ▶ Periodic Lab Analysis reports
- ▶ Training for handling the plant

#### **Our Advantages**

- ▶ 24 × 7 support
- ▶ Strong technical support from the field of mechanical, electrical and instrumentation
- ▶ Zero tolerance on leaks, wastage of water, chemicals
- ▶ Proper documentation of works and daily performance of units
- ▶ Timely alerts for replacements
- ▶ Strict adherence to Standard Operational Procedures

- ▶ Mandatory use of all Safety Equipment
- ▶ Instant diagnosis and realignment of process deviations.

### **ANNUAL MAINTENANCE CONTRACT**

We provide Annual Maintenance Contract Services for all kinds of treatment plant based on the following:

- ▶ Operation & Maintenance of treatment facilities for STP, ETP and WTP by Deputing manpower with relevant experience
- ▶ Visit of the Technician/ Expert to ascertain the regular operation and maintenance of the STP, ETP and WTP once in a month.
- ▶ Operators shall carry dosing of required chemicals as per the optimum requirement for our guidelines & instructions.
- ▶ Responsibility to bring in to notice / inform to Facility management department about any damage / repairs to plant equipment / parts.
- ▶ Maintain the operating log books / Daily, monthly reports of the plant facility
- ▶ Routine inspection of the plant
- ▶ Preparation & follow the preventive maintenance schedules of Equipment & electrical panel.
- ▶ Preparation of Safety checks of the plant & adherence / fulfilment to the compliance if any
- ▶ Information about Electricity, utility & any specially chemicals & consumables required to run the plant will be supplied by party.
- ▶ Safe custody & security of plant equipments & chemicals at the site assigned by the party.
- ▶ Maintaining well protected workplace safe.

## **CONTACT INFO**

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