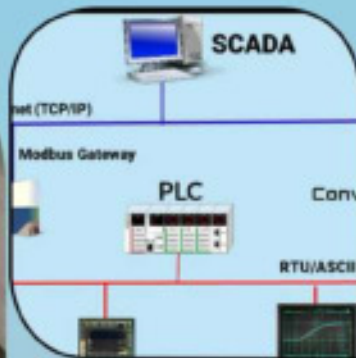




modernstp.com

Municipal Sewage Solutions



Municipal Wastewater Treatment

- Design
- Head Works
- Biological Treatment
- Solid Separation
- Sludge Treatment
- Automation

DESIGN



Municipal Sewage Treatment in India is the need of the hour. All rivers are polluted with untreated sewage from upstream town joining river and becoming drinking water for down stream areas. It is our responsibility to design and obtain proper treatment in municipal sewage treatment plants to ensure that people using the river water for drinking are not effected.

What are the important factors to be considered while designing a municipal WWTP?



Technology:-

We have to use the right technology to meet present and anticipated discharge standards for treated water. Use of obsolete technologies will multiply the retro fit cost at a later date

Operator Friendly:-

Most STP operators are semi literatures. Most advanced technology will fail if not used properly. The technology used should be easy for the operator. Local manpower should be able to operate with little training.

Automation:-

Municipal WWTP should be highly automated to reduce dependance on operator's skill. Total automation with PLCs and supervision with SCADA are one way.

Maintenance:-

All equipment need maintenance sooner or later. Equipment design and installation must ensure ease of maintenance and repair without stopping the process. Municipal WWTP process can't be stopped midway.

MUNICIPAL SEWAGE



Equipment :-

Electro-mechanical equipment must be selected based on life time cost, spare parts availability and ease of maintenance.

Measure, Operate & Control:-

Sufficient equipment must be provided for measuring flows, water quality and various process parameters including power and chemical consumption. Historical data should be maintained to analyse and interpret results.

Lab:-

Design for proper mini-lab to check all vital parameters. Results should be available online in real time.

Plan for contingency:-

Design should be able to manage even in contingencies like heavy rains, power failure etc

Redundancy:-

Design for redundancy. Every working equipment should have a standby.

We at Indus have gone through the grind over the last 20 years and use our experience to provide fail safe designs for your municipal WWTP. We provide the right solution even for the most demanding needs. Our experience has taught us to plan for every contingency.

Better design with high quality equipment results in better performance.



Headworks

Sewage is 99.95% water and remaining 0.05% impurities. These impurities comprise of heavy grit (sand), large floating objects (like plastic & wood) and suspended particles. These impurities have to be removed before water is discharged into lakes and streams. The first step, primary or mechanical treatment removes large suspended, floating solids and heavy grit from raw sewage. These are removed using mechanical screens, manual screens and grit scrappers.



Sluice Gates / Pen Stock

Manual or motorised sluice gates are used in WWTP for controlling flow into a required channel / process tank. Cast Iron and Stainless Steel are popular materials of choice. We manufacture few models of penstock and outsource some from established suppliers.

Mechanical Screen

Manual and mechanical screens are essential in the entry point of every WWTP. Often Mechanical Screen will be working and manual screen will be standby in the bypass channel to handle main equipment failure. We offer high quality multi rake mechanical screens that do not have any submerged bearings. Our screens are designed for on site maintenance without removing the screen from channel. Custom designed manual screens are available in SS-304 and MS.



Grit Scraper

Sewage in India carries lot of heavy soil particles from road surfaces. This grit is highly abrasive and harmful for downstream equipments. Grit particles often carry organic content. It is essential to separate grit and organic particles before grit is removed from sewage. Specially designed grit chambers will provide just the right velocity required to drive away organic particles and allow settling of heavy grit. Poorly designed grit chamber and scraper will increase the load on next stage biological process and reduce the life of pumps.



Screw Classifier

Grit scrapped from Grit Chamber bottom is accumulated and is taken out for disposal with a screw conveyor. We offer custom made screw classifiers to suit site conditions with central shaft and organic wash pump. Standard MoC is SS-304. Our classifiers come with proper lids to keep dirt out of site and prevent flies.



Biological Treatment

The second step is called secondary or biological treatment. Organic substances present in sewage are food for bacteria. In Biological process high concentrations of naturally occurring bacteria are grown giving external oxygen in treatment tanks. These bacteria, along with protozoa and other microbes, form activated sludge. When the activated sludge bacteria "eat" small organic carbon molecules, the wastewater is free from impurities and thus cleansed. Biological treatment entails growing the right type of bacteria. We indirectly control the bacteria growth by controlling oxygen / Air flow into process tanks.

Indus Ecowater offers a wide range of industry-leading biological processes like MBBR & SBR. Our designs are the most energy efficient requiring low maintenance at lower capital cost.

SBR Process

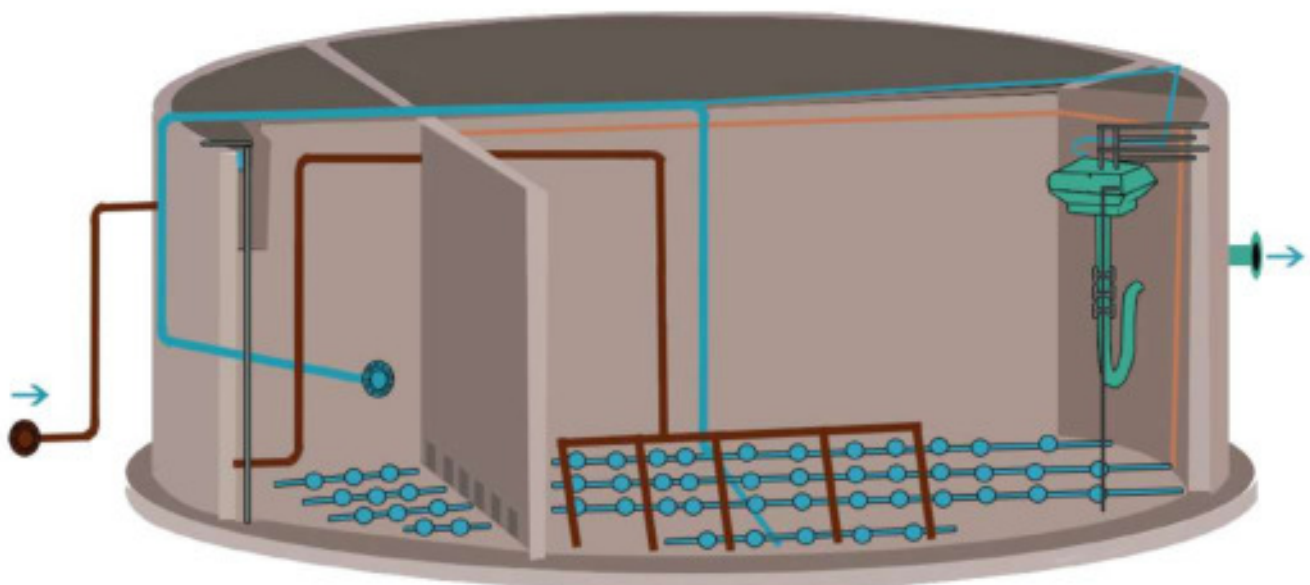


Sequencing Batch Reactor (SBR) is most popular choice world over for municipal wastewater treatment. SBR process incorporates biological process and secondary clarification. SBR process gives consistent water quality even with variations in sewage volumes. Civil process tanks required for SBR are smaller as compared with MBBR. Also biological process can be further modified for incorporating aerated filling, anoxic and aerobic processes in a single SBR tank.

We offer most advanced SBR process with robust and maintenance free diffused aeration system. Our designs incorporate higher oxygen transfer to reduce power consumption. Our Smart automation can modify various process parameters to get desired Biological Nutrient Reduction. More stringent standards for Ammonia, Nitrogen and Phosphate are being implemented by CPCB. SBR is capable of giving treated water confirming to revised discharge standards.

Advantages:

- ✓ Small Foot Print
- ✓ Small process tanks saving capex
- ✓ BOD Less than 10
- ✓ BNR possible
- ✓ Blowers function on DO inputs
- ✓ Low Power Consumption
- ✓ No daily maintenance
- ✓ Smart PLC Automation with SCADA



Air Blowers / Aeration Systems

Air blowers consume tremendous amounts of energy. They work 24 X 7 X 365. Efficient blowers reduce power bill. Our Rotary Air Blowers come from top two blower manufacturers in India. These blower parts are manufactured on CNC machines for high quality and consistency. They offer low noise, low vibration and need lesser power. Also spare parts will be available off the shelf when required.

We use acoustic enclosures on all our air blowers to reduce noise levels in STP area.



Solid Separation

Floating Decanter



Our Floating Decanters are specially built for larger capacities. They are simple yet highly engineered. They are reliable and robust with very few working parts. Our unique design allows for taking out the decanter for service when required without emptying process tank; ensuring trouble and maintenance free operation for years to come.

Novel design that enables the upper and lower limit of the decanter simply with adjustable limit chain and limit stop units helps modifications on the site itself which can't be done in other decanters. Our decanters use process air from air blowers on site and do not require any additional air compressor.

Custom designed to offer required flow rate. Our SBR decanters are available in flow rates from 1 MLD to 8 MLD each.

Disinfection

Chlorination

Biologically treated wastewater will contain some live bacteria which may be pathogenic. This must be destroyed before releasing treated water into environment. Chlorine gas addition is the most established and widely used dis-infection process in the world both for drinking water as well as wastewater.

Our disinfection system will be based on 'Vacuum Chlorination.' Standard features include dosage control, chlorine leak detection, automatic alarm in the event of a leak. We provide safety equipment for operator that includes Self contained Air Breathing Apparatus, foot operated body shower, PVC safety suit, Face Mask and Goggles. Cylinder handling equipment and residual chlorine monitoring equipment are part of our standard equipments.



Sludge Treatment



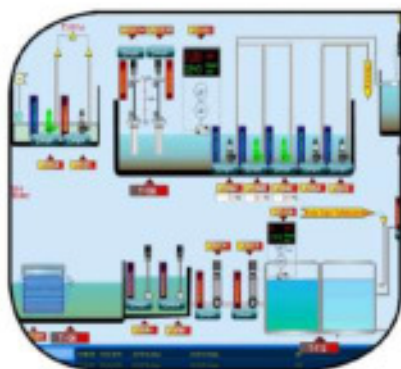
Sludge Treatment

Sludge comprises of 1% to 2% solids and remaining 98-99% is water. Separating these two is big task. We recommend a two stage sludge dewatering system. In the first step 'Sludge Thickening' solids concentration is increased from 1% to 7% and volume is reduced to 15% using Rotary Drum Thickeners. In the second step Decanter Centrifuge is used to increase solids from 7% to 50%. Polymers are added in both process.

Our Sludge Treatment equipment is designed to reduce the operating cost and maintenance cost

Automation

Smart Scada



Supervisory Control and Data Acquisition (SCADA) systems we use in our municipal STPs are used for monitoring, gathering, and analyzing real-time data from pumps, valves, level controllers, instruments such as pH, DO, Level, Chlorine and Flow. Our Smart SCADA is designed to monitor and control 100% of all STP operations remotely over internet. Smart SCADA operates the STP on pre-defined process and any error is reported to operator and supervisor for information and rectification. Any program modifications can be done without being present on site.

In near future it will be necessary to share the treatment data with various regulatory agencies like PCB. Smart SCADA is ready for the same from day one. We use PLCs from established brands like Mitsubishi, Allen Bradley and Delta etc with licensed SCADA software.

We work with STP contractors to execute Design, Department approval, equipment supply, install and commission Municipal Sewage Treatment Plants from 1 MLD to 50 MLD as per tender conditions.

Send your enquiry today to municipal@modernstp.com



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