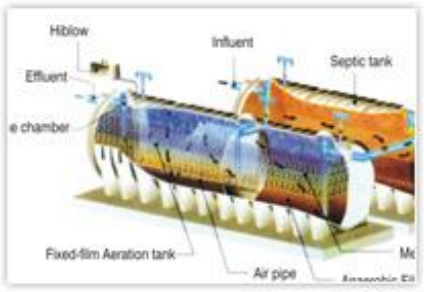
Shubham Inc.

Sewage Treatment Plant



Conventional Sewage Treatment Plant

Conventional sewage treatment involves three stages, called primary, secondary and tertiary treatment.
First, the solids are separated from the wastewater stream. Then dissolved biological matter is progressively converted into a solid mass by using indigenous, water-borne micro-organisms. Finally, the biological solids are neutralized then disposed of or re-used, and the treated water may be disinfected chemically or physically (for example by lagoons and microfiltration).

The final effluent can be discharged into a stream, river, bay, lagoon or wetland, or it can be used for the irrigation of a golf course, green way or park. If it is sufficiently clean, it can also be used for groundwater recharge or agricultural purposes

Pre-treatment

Pre-treatment removes the materials that can be easily collected from the raw wastewater and disposed of. The typical materials that are removed during pre treatment include fats, oils, and greases (also referred to as FOG), sand, gravels and rocks (also referred to as grit), larger settleable solids and floating materials (such as rags and flushed feminine hygiene products).

Pre treatment also typically includes a sand or grit channel or chamber where the velocity of the incoming wastewater is carefully controlled to allow sand grit and stones to settle, while keeping the majority of the suspended organic material in the water column. Sand, grit, and stones need to be removed early in the process to avoid damage to pumps and other equipment in the remaining treatment stages.

Preliminary treatment processes include coarse screening, medium screening, shredding of solids, flow measuring, pumping, grit removal, and pre-aeration. Chlorination of raw wastewater sometimes is used for odor control and to improve settling characteristics of the solids.

Primary treatment Sedimentation

In the primary sedimentation stage, sewage flows through large tanks, commonly called "primary clarifiers" or "primary sedimentation tanks". The tanks are large enough that sludge can settle and floating material such as grease and oils can rise to the surface and be skimmed off. The main purpose of the primary sedimentation stage is to produce both a generally homogeneous liquid capable of being treated biologically and a sludge that can be separately treated or processed. Primary settling tanks are usually equipped with mechanically driven scrapers that continually drive the collected sludge towards a hopper in the base of the tank from where it can be pumped to further sludge treatment stages.

Secondary treatment

Secondary treatment is designed to substantially degrade the biological content of the sewage such as are derived from human waste, food waste, soaps and detergent. The majority of municipal plants treat the settled sewage liquor using aerobic biological processes. For this to be effective, the biota require both oxygen and a substrate on which to live. There are a number of ways in which this is done. In all these methods, the bacteria and protozoa consume biodegradable soluble organic contaminants (e.g. sugars, fats, organic short-chain carbon molecules, etc.) and bind much of the less soluble fractions into floc. Secondary treatment system commonly employs an Aeration Tank wherein microorganism culture completely degrades organic as well as inorganic impurities in the presence of either Surface Aerators or Diffused Aeration system.

Secondary sedimentation

The final step in the secondary treatment stage is to settle out the biological floc or filter material and produce sewage water containing very low levels of organic material and suspended matter.

Tertiary treatment

The purpose of tertiary treatment is to provide a final treatment stage to raise the effluent quality before it is discharged to the receiving environment (sea, river, lake, ground, etc.). More than one tertiary treatment process may be used at any treatment plant. If disinfection is practiced, it is always the final process. It is also called "effluent polishing".

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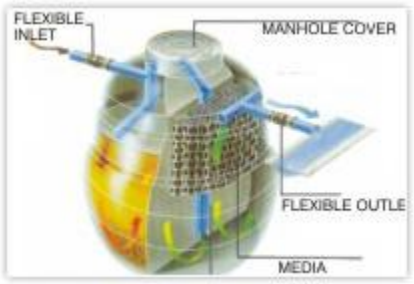
Packaged Sewage Treatment Plant

There are areas within the cities, towns and villages that are impossible to cover under centralized wastewater treatment system, to offer perfect solution for the same, Shubham steps in this field. Shubham package type wastewater treatment system is compact, effective and economical for wastewater treatment in decentralized manner. PWTS-AM series is ideal for individual bungalows, low rise apartments, restaurants, offices, small factories, etc. NBF series is ideal for malls, hospitals, office building, institutions, townships/colonies, high rise buildings etc.

Operation Principle



1. Solid Separation Zone: This is the primary treatment process that separates solid and scum from wastewater.
2. Aeration Zone: Clear water flows into this stage. Oxygen supplied by air blowers is required for the digestion of bacteria culture thriving in and around the plastic media inside the aeration zone, thus reducing the amount of contaminants while generating more contacts with the bacteria culture on the surface area of media. The quality of water becomes better.
3. Sedimentation Zone: The next step of treatment involves the sedimentation where organic wastes are settled in the sedimentation zone. The settled waste in the bottom of the tank can then be pumped back to the solid separation as a return sludge to ensure that quality of effluent passes the required standard. Chlorine is sometimes introduced before discharging the effluent into public mains.

Advantages

1. 100% Eco friendly
2. Rust Proof
3. Leak Proof
4. Durable Light Weight
5. Easy to Install
6. Massive reduction of BOD

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Sewage Treatment Plant

Waters that are used for drinking, manufacturing, farming, and other purposes by residences (toilets, baths, showers, kitchens, sinks), institutions, hospitals, commercial and industrial establishments are degraded in quality as a result of the introduction of contaminating constituents. Organic wastes, suspended solids, bacteria, nitrates, and phosphates are pollutants that commonly must be removed.

To make wastewater acceptable for reuse or for returning to the environment, the concentration of contaminants must be reduced to a non-harmful level, usually a standard prescribed by the Environmental Protection Agency.

Sewage can be treated close to where it is created (in septic tanks, bio-filters or aerobic treatment systems), or collected and transported via a network of pipes and pump stations to a municipal treatment plant.

Sewage treatment, or domestic wastewater treatment, is the process of removing contaminants from wastewater and household sewage, both runoff (effluents) and domestic. The task of designing and constructing facilities for treating wastewaters falls to environmental engineers. They employ a variety of engineered and natural systems to get the job done, using physical, chemical, biological, and sludge treatment methods. Its objective is to produce a waste stream (or treated effluent) and a solid waste or sludge suitable for discharge or reuse back into the environment. This material is often inadvertently contaminated with many toxic organic and inorganic compounds.

The features of wastewater treatment systems are determined by (1) the nature of the municipal and industrial wastes that are conveyed to them by sewers, and (2) the amount of treatment required to preserve and/or improve the quality of the receiving bodies of water. Discharges from treatment plants usually are disposed by dilution in rivers, lakes, or estuaries. They also may be used for certain types of irrigation (such as golf courses), transported to lagoons where they are evaporated, or discharged through submarine (underwater) outfalls into the ocean. However, outflows from treatment works must meet effluent standards set by the Environmental Protection Agency to avoid polluting the bodies of water that receive them.

Sewage Treatment Plant is basically characterized as below system based on usage of Oxygen / Air in Secondary Treatment Stage (Biological Decomposition of organic matter).

Aerobic STP

Here Oxygen/Air is continuously supplied to the Biological (Aeration) Reactor either by direct Surface Aeration system using Impellers propelled by Pumps or Submerged Diffused Aeration system using Air Root Blowers for Air supply through diffusers. Aerobic condition leads to complete oxidation of Organic Matter to Carbon Dioxide, Water, Nitrogen etc. thus eliminating Odor problem caused due to incomplete oxidation. Also Air supply aids in uniform and efficient mixing inside the tank.

Anaerobic STP

Here sewage is partially decomposed in closed Biological Reactor in absence of Air which leads to reduction of Organic Matter into Methane, Hydrogen Sulfide, Carbon Dioxide etc. It is widely used to treat wastewater sludge and organic waste because it provides volume and mass reduction of the input material to a large extent.