

Effluent Treatment Plant (ETP)

Description:

The most efficient way to treat industrial wastewater, also known as effluent, is to remove various pollutants and contaminants before it is safely discharged into the environment or reused. As we move towards sustainability and conserving the natural resources of various water bodies, government officials from the environment department have also made ETP a requirement to establish any process plants in the country.

Unlike other methods of water purification where various amounts of hazardous chemicals are used, an ETP plant minimizes the chemical consumption and relies more on nature's own gift, small bacteria's to consume all the biological wastes in the effluent.

An ETP plant also reduces the amount of fresh water consumption, which preserves the groundwater level as well as reuses different effluent. This reduces the overall cost of production and preserves nature, the best of both worlds.

We at Water Technology BD Ltd design, build, and operate advanced ETPs that incorporate cutting-edge technologies and proven processes to deliver efficient, reliable, and environmentally sound wastewater treatment solutions for a wide range of industries. Our commitment is to transform industrial wastewater into a valuable resource, fostering a cleaner and healthier future.

Sedimentation Process

The larger particles and the floating wastes are handled. Now we'll move towards removing the sludges that are more settleable more finer particles, and this contains two different steps: Coagulation, Flocculation, and Clarifier.

Coagulation/Flocculation:

The first step in the sedimentation process would be coagulation and flocculation, which will help to gather all the suspended particles together and create a flock. Based on the sludge quality, we will use the appropriate coagulant and coagulant aid to neutralize the tiny particles, which will destabilize and clump together.

Primary Clarification:

It is a large circular tank where the wastewater moves slowly from the coagulation tank. Our goal is to give proper time to settle the sludge and overflow from the top so that no sludge can escape from the sedimentation tank. The lighter sludges will be skimmed off with the help of a clarifier bridge.

This process also helps to reduce the load from the biological process plant, also significantly reduces the BOD and COD.



1. Biological (ETP)

Description:

The bread and butter of an ETP is that it will use the bacteria from nature to break down the organic solids and dissolve them in the wastewater. The controlled environment in each tank will ensure a sustainable yet controlled growth for the bacteria to keep the BOD and COD in check. The entire process will occur in three different plants: Anoxic tank, MBBR, and ASP.

Moving Bed Biofilm Reactor (MBBR)

Description:

An MBBR tank is the heart and soul of the entire operation, and this is the step where the main magic happens. Also, it is the most efficient and adaptable technology in biological wastewater treatment. Unlike the anoxic tank, MBBR has an aeration system with thousands of small plastic biochips. At Water Technology BD Ltd, we have partnered with MUTAG BioChip™ to elevate the performance of an MBBR tank.

Mutag Biochip™ is distinguished by its unique, wafer-thin design and intricate internal pore structure. This specialized engineering creates an exceptionally high protected active surface area (over 5,500 m²/m³), far surpassing that of conventional carriers. This vast surface area provides an ideal, stable environment for a dense and diverse microbial population to thrive.

We leverage the advanced capabilities of MBBR technology, specifically integrating the superior Mutag Biochip™, to provide our clients with highly efficient, space-saving, and exceptionally reliable biological treatment solutions. This ensures robust performance, lower operational costs, and consistent adherence to the most stringent discharge standards.

Activated Sludge Process (ASP)

Description:

The final step of the biological treatment plant would be the activated sludge process. Unlike, the MBBR tank, where the microorganism stays afloat with the biochip, here the bacteria move freely throughout the tank and make sure the rest of the biological wastes are taken care of. The aeration system continuously supplies free oxygen to the water so that the bacteria can thrive, and this oxygen-rich environment provides the ideal conditions for a diverse community of aerobic bacteria and other microorganisms to thrive. These microorganisms consume the dissolved organic pollutants (BOD, COD) in the wastewater as their food source for energy and growth. As they grow, they clump together to form "flocs" – visible aggregates of biomass.

2. Chemical (ETP)

Description:

Although the biological part of the modern ETP is more widely used in current effluent treatment, based on the effluent type, sometimes using the traditional method is more profitable for the operations. In a chemical ETP, the goal is to treat the effluent using only chemicals.

A chemical ETP usually works in the following industries:

- Industries with high concentrations of heavy metals.
- Chemical, pharmaceuticals, and textile industries with extreme pH levels.
- Industries with high inorganic pollutants
- High suspended solids/turbidity needs more chemical treatment.

At Water Technology BD Ltd, we possess deep expertise in designing, engineering, and implementing Chemical ETPs. We understand the intricate chemistry of diverse industrial wastewaters, enabling us to select the most effective chemical processes and optimize dosing for superior pollutant removal, regulatory compliance, and responsible environmental stewardship.