

Increase Oxidation Capacity of Wastewater Treatment Plant

Decrease the Contamination Effects of Water Pollutants

Importance of Chemical Oxygen Demand (COD)

Chemical Oxygen Demand (COD) measures the oxygen demand of biodegradable pollutants plus the oxygen demand of non-biodegradable oxidizable pollutants. Measurements are commonly taken based on samples of wastewater. COD is an indication of the relative oxygen depletion effect of wastewater and shows the pollution effect. The lower the COD level, the less polluted the water is.

The Wastewater Treatment Process

The treatment of waste water generally involves three stages: primary, secondary and tertiary. Firstly, the solids are separated from the wastewater stream. Secondly, dissolved biological matter is gradually converted into a solid mass by using indigenous, water-borne microorganisms. Finally, the biological solids are neutralized, then disposed of or re-used, and the treated water may be disinfected by Chlorine or Ultraviolet.

In the aerotank, secondary treatment process, such as activated sludge is used to create a natural environment where microorganisms, such as bacteria and protozoa, turn the organic material and nutrients in waste water as their food.



Waste Water Treatment Plant Facility at a leading F&B plant in Asia

In the final clarifiers, the microorganisms that grow in the aerotank will fall to the bottom. In the activated sludge process, most of them are recycled back to the aerotank where they continue to remove organics and nutrients from waste water.

Benefits of DPA System in Wastewater Management

DPA System can help to increase the oxidation capacity of wastewater plant and reduce the contamination effects. In September 2007, SIF Technologies implemented the DPA system in the wastewater treatment facility of a leading consumer manufacturing company located in the Southeast Asia region.



Effluent water from the aero tank is transferred into a ½ ton treatment container

Effluent water drawn from the aerotank of the waste water treatment plant was tested for parameters such as COD, TDS, TDO, O₂ Saturation, pH as well as ORP prior to any treatment. A ½ ton water storage container was used to contain the effluent water. The effluent water was then treated by a chemical free DPA system via a circulation process. The positive effects observed included:

1. More Negative Oxidation/Reduction Potential

Oxidation / reduction potential (ORP) is the tendency of a chemical species to acquire electrons and thereby be reduced. A more negative reduction potential will have a tendency to lose electrons to the new species and thereby be oxidized. It was observed that the ORP value has become more negative than pre-treatment state. This aids the biological oxidation process as well as creates better conditions for converting ammonia to nitrite and nitrate.

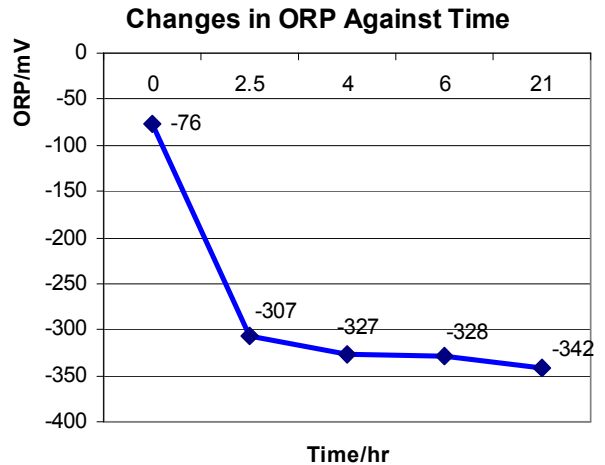


Figure 1: More negative ORP indicates that the biological oxidation process is better.

2. Significant Fall in Chemical Oxygen Demand

The initial level of Chemical Oxygen Demand (COD) was at a high of 376 mg/l. After treating the wastewater with DPA system, COD was reduced to measurable levels of 108 mg/l. This indicated that the pollution level of wastewater has also been reduced greatly, even without the use of chemicals.

Note: Statistics and facts cited in this insert are supported by testimonials and documentation from actual programmes that were implemented. Individual results are subjected to variation depending on other factors, such as temperature, pH and other entities present.