



BIO – Biological Treatment

Description:

Biological Treatment is the cheapest way to treat wastewater streams with high organic loads. Here, Bugs are In Operation (BIO), degrading dissolved organic compounds. Therefore, enough oxygen, nitrogen, phosphorus, and trace compounds are required.

At a first glance, this seems an easy task. However, right process combination, right pretreatment, right aeration system and right sludge separation (clarification) must be chosen.

Common design is denitrification followed by aerated nitrification with at least 100% backflow to denitrification and final clarification with sludge recirculation to denitrification. Finally, this must be adopted according to water characteristics and discharge limits. Prior to treatment, organic and inorganic particles as well as grease and oil must be removed. Aeration systems range between extremely efficient, but sensitive and extremely tough, but less efficient. Sludge separation can be either done by clarifiers or membrane systems.

Aerobic systems can achieve tough discharge limits, while producing high amounts of sludge. Anaerobic systems are well suited as pre-treatment for concentrated streams and transform dissolved organic compounds into valuable biogas but are rather sensitive.

Advantages:

- ▶ Reliable treatment system for wastewater applications.
- ▶ High removal efficiency for both COD and nitrogen.
- ▶ More than 10 references for BHU.



Nitrification unit using dish aerators.

Technical data:

- ▶ Volume flows between 20 and 500 m³/h for each system.
- ▶ F/M ratio 0.2 to 0.5 kg COD/(kg DM/d).
- ▶ Sludge production: 0.2 kg Sludge/kg COD elim.
- ▶ Removal of BOD by up to 99%.

