

Bioaugmentation for Activated Sludge Units

Biological treatment systems utilizing activated sludge have been used to remove carbonaceous (organic) waste for many decades. BiOWiSH™ bioaugmentation technology works within existing treatment systems, and requires no significant capital or equipment expense to address and solve real problems.

What is BiOWiSH™ Aqua?

BiOWiSH™ is a proprietary composite biocatalyst that enhances a broad range of hydrolytic, oxidative and reductive biochemical reactions. BiOWiSH™ contains a novel consortia of metabolically cooperative micro-organisms, with endogenous and exogenous enzymes and small-molecule metabolic co-factors. BiOWiSH™ products are composed of all natural materials and are non-genetically modified.

Benefits

- Improve treatment outcomes in overloaded plants
- Meet increased regulatory demands & stricter discharge limits
- Reduce sludge disposal, chemical, and energy costs
- Avoid capital expenditure

How safe is BiOWiSH™?

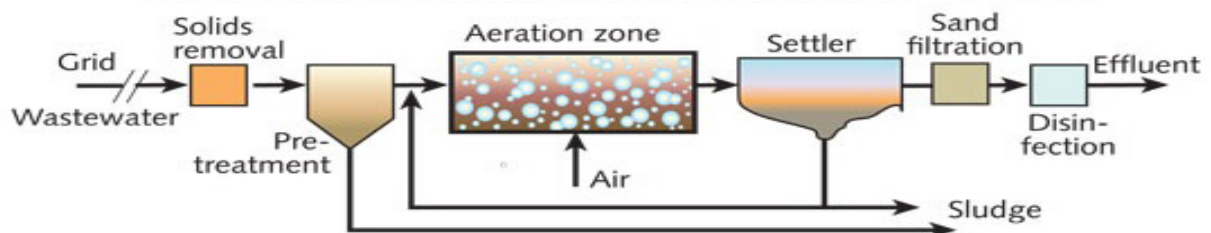
BiOWiSH™ products have no detrimental effects on the environment, humans, plants or animals. The core technology behind these products is also used in human ingestible supplements, animal feed additives and crop-enhancement products also produced by BiOWiSH Technologies. Environmental toxicology studies have shown no adverse effects from the use of BiOWiSH™ products. Aquatic toxicity testing has shown that BiOWiSH™ is non-toxic at recommended dosage levels.

Does BiOWiSH™ build up in the environment or discharge locations?

No. Unlike some other water quality conditioning agents BiOWiSH™ will not build up over time. BiOWiSH™ is 100% biodegradable which prevents any long-term build up.

Dosing Recommendations

The following recommendations are based on a standard activated sludge unit:



For different system setups please contact wastewater@biowishtech.com.

Dose	BiOWiSH™	Target Concentration	Notes
Continuous dosing	1 to 5 kg per 10,000 m ³ /day of treated effluent	0.1 – 0.5 ppm	Up to 14 days of product can be prepared and the active solution can be drip dosed into the system's inlet.
First week only	3 to 15 kg per 10,000 m ³ /day of treated effluent	0.3 – 1.5 ppm	Initial week is dosed at 3× target concentration to promote biological growth into unit's recirculated activated sludge.

Dosing Point

Dosing needs to be done upstream of the aerated reactor chamber. Ideal dosing location is upstream of primary settlers and downstream of any pH compensation (or chemical dosing of any kind).

General Application Instructions

Dissolve the BiOWiSH™ powder concentrate in clean water at a minimum ratio of 10 L/kg. Using a metering pump, dose the desired flow continuously into the unit's inflow.

Unit operation and trial monitoring:

Depending on the objective behind the bioaugmentation program, different monitoring strategies may be put in place. However it is suggested you monitor the following parameters for inflow and effluent:

Treated flow, COD, BOD, TSS, TKN, NH₃-N, Nitrites, Nitrates, TN, TP, FOG, pH, temperature

The following operational data will also be key:

Reactor MLSS, Reactor DO, SVI, RAS/WAS, Aerators consumption (energy), Total dry sludge per day

Focusing on effluent loading:

A material balance will allow monitoring of COD and BOD % degradation as well as equivalent mass of carbon degraded per day (kg of COD/day and kg of BOD/day). A unit maintaining MLSS values of 2000 – 4000 mg/L and reactor DO > 1.5 mg/L should start to see increased degradation capacity within the first month.

Focusing on operational cost:

Unit operation should remain unaltered for the first two weeks of dosing. On week three reactor MLSS should be reduced by 10% every two weeks and reactor dissolved oxygen should be kept 1.5 mg/L < DO < 2.5 mg/L.

Using a material balance, keep track of the following:

kW/h spent per kg of BOD/day degraded.

Dry tons of sludge per kg of BOD/day degraded.

Plot the above usage on a weekly basis.

For additional support and data analysis please contact:

Contacts

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Biological help for the human race



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