



FBR Bioflotation

SIGMA BIODAF – FBR system (flotation biological reactor), uses flotation to separate activated sludge from water and achieve very high biomass concentrations in the reaction medium, up to 9000 mg/L MLSS

In an FBR system the process works as follows:

Wastewater is pumped to an aeration reactor where the biological treatment takes place (this biological process consists of the elimination of organic matter and nutrients contained in the wastewater through the action of microorganisms in the presence of oxygen), then, the separation of biomass is carried out by flocculation and secondary clarification by DAF flotation (dissolved air flotation). In this process, biomass flocs are formed and will be separated by flotation with air micro-bubbles in a SIGMA BIODAF unit. These special equipment allows to achieve sludge with a dry solids content 3 or 4 times higher than any conventional system.

In the SIGMA BIODAF flotation equipment, perfectly clarified water is obtained that can be discharged meeting the discharge requirements, the sludge will be partly recirculated to the biological reactor to maintain a stable biomass concentration and partly extracted as a purge. The addition of polyelectrolyte to the clarification system allows the generation of easily separable biomass flocs in addition to providing a high concentration of biomass inside the reactor and therefore a higher yield than in other biological systems of suspended biomass. This particularity is very interesting for highly biodegradable industrial wastewater treatment processes, that generally generate a spongy sludge with

low settleability (bulking effect), which makes it difficult to separate it in typical decanters or clarifiers.

To ensure and optimize the separation process, it is necessary to dose a polyelectrolyte with a flocculating effect in a SIGMADAF PFL flocculation system. Optionally, a coagulant can be added to reduce values such as turbidity and precipitate phosphorus.

Advantages of the SIGMA BIODAF system and FBR technology:

- High system reliability against typical sludge with bad settleability (bulking).
- Very high concentrations of biomass in biological reactors (up to 9000 mg/L).
- Reduced volume of the biological reactors.
- The BIODAF - FBR system acts as a sludge thickener, for what sludge treatment facilities will be smaller than in a conventional system.
- Ability to integrate post-treatments in the unit (turbidity reduction, phosphorus removal, etc.).
- Perfect solution for plants that need to increase its size.



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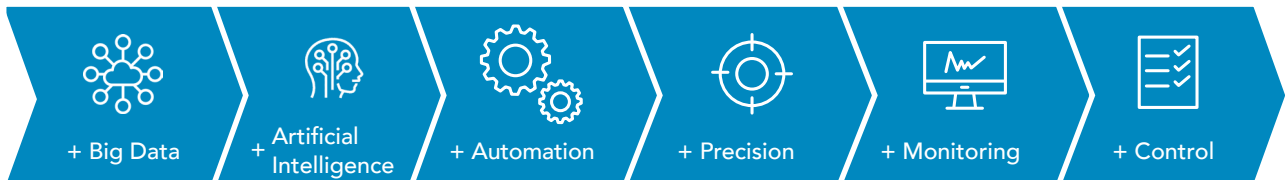
BIODAF

Flowrate capacity from 50 to 10000 m³/day. Biomass concentration in the reactor from 2000 to 9000 mg/L MLSS



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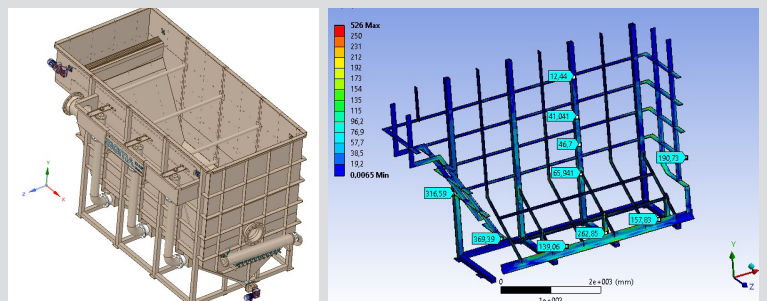
- Operational and energy efficiency
- Full optimization of resources: energy, water, chemicals, sludge, etc.
- Very low operation requirements: fully automatic
- Only preventive and corrective maintenance is required
- Durability



Industry 4.0

Class-leading efficiency: Our DAF equipment is more efficient thanks to the complete integration of the design and construction process; we have sought to provide our equipment with sections that favor structural rigidity without adding unnecessary elements to the set. This aspect has been achieved through:

- Laser cuts of all pieces of equipment.
- Joining the parts through a process and carefully established order, defined by 3D models.
- Modularity.
- Best quality of our materials and finished assembling.



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