



Biofilm Carriers

Features & Benefits

- Treats Flows From 0.001 to 10 MGD
- Integrated Fixed Film Activated Sludge (IFAS) Process
- Small Footprint / Compact Designs
- Cost Effective Retrofits and Upgrades
- Modular Pre-constructed Systems
- Durable UV Resistant HDPE Biofilm Carriers
- Enhanced Nutrient Removal (ENR)
- Cold Climate Nitrification / Denitrification
- Works With Fine or Coarse Bubble Aeration
- Reduces Solids Loading on Clarification
- Expandable for Phased Development
- Fully Automated Systems
- Remote Monitoring Control Options

AQUAFAS™ Wastewater Treatment Systems

The AquaFAS Advantage

AquaFAS is a proven integrated fixed-film activated sludge (IFAS) process in which submerged, free-moving HDPE biofilm carriers are used in conjunction with conventional activated sludge to improve treatment performance and increase volumetric productivity. In an AquaFAS system, higher concentrations of biomass are maintained and in turn allow nitrification and denitrification without resorting to long hydraulic retention times, large footprints and elevated mixed liquor suspended solids (MLSS) concentrations.

A History of Performance

Biofilm carrier technology has been used for decades to affordably upgrade the hydraulic capacity and nutrient reduction capability of municipal treatment plants.

AquaFAS is effective because the carrier cells provide a large protected (internal) surface area for biofilm growth. As the reactor is aerated, the neutrally buoyant carriers move freely throughout the water column ensuring oxygen transfer and contact between the biofilm and organic/inorganic matter (pollutants). This enables the biofilm residing on the media to absorb and oxidize these pollutants greatly enhancing the conventional activated sludge process.

Making a Good Process Better

AquaFAS operates like an activated sludge process but with many improvements:

- Smaller footprint (roughly 1/4 the reactor footprint of Extended Air)
- Resistance to toxic and shock loading
- Enhanced nitrification performance

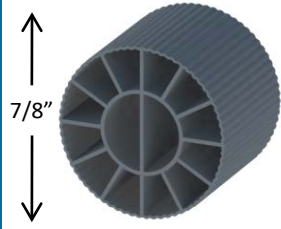
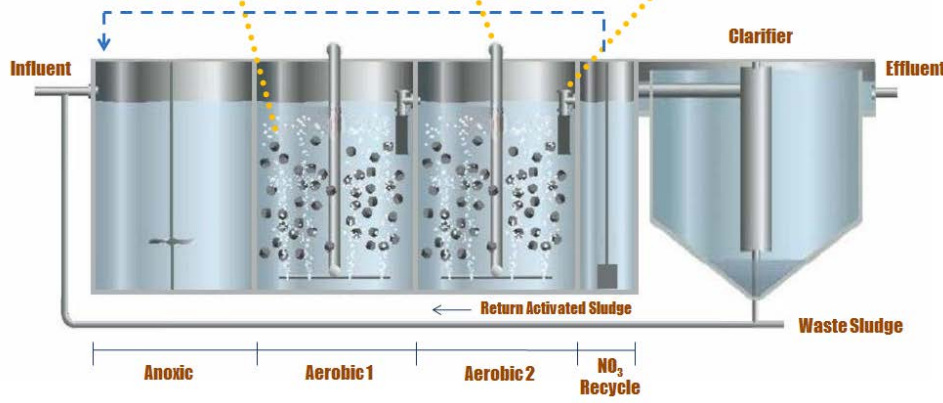
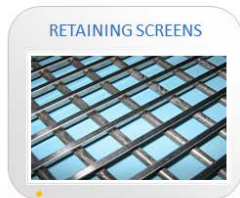
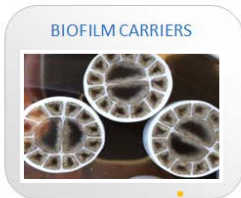
- Better oxygen transfer efficiency
- Ability to adapt and expand at a low cost

Cost Effective Designs

AquaFAS is a low cost solution for both new build facilities and existing plants that require performance or capacity upgrades. We offer prefabricated solutions in steel, fiberglass or concrete vessels that are easy and cost effective to install. Additionally, AquaFAS can be designed to fit within the basins of an existing plant, minimizing capital and construction costs as well as downtime.

Ideal Applications Include

Activated sludge retrofits - nitrification & denitrification - sites with limited space

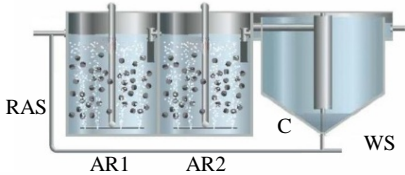


AquaCELL Biofilm Carriers are constructed of UV resistant HDPE plastic giving them durability and a long life span regardless of the application. Their neutral buoyancy is critical to effective mixing within a reactor and ultimately provides an increase in treatment efficiency. Each carrier has a large internal protected surface area for biological growth. The apertures are engineered to allow for adequate scouring velocities and sloughing before biological plugging occurs.

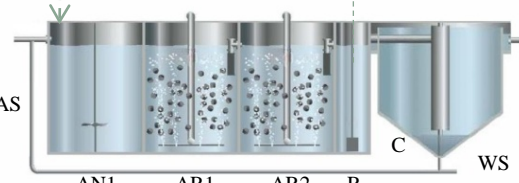
AquaFAS Design Configurations

Legend:

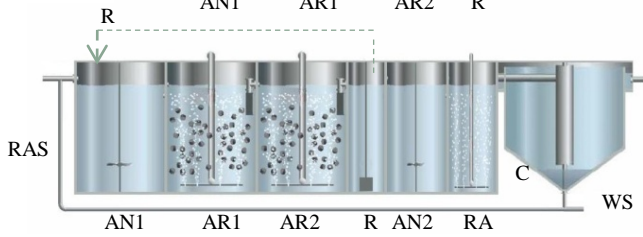
- RAS = Return Activated Sludge
- WS = Waste Sludge
- AN1 + AN2 = Anoxic
- AR1 + AR2 = Aerobic
- R = Recycle
- RA = Re-Aeration
- C = Clarifier



AquaFAS (AER)
 < 10 mg/l BOD
 < 10 mg/l TSS
 < 0.5 mg/l NH₃-N



AquaFAS (MLE)
 < 10 mg/l BOD
 < 10 mg/l TSS
 < 0.5 mg/l NH₃-N
 < 10 mg/l TN



AquaFAS (ENR)
 < 10 mg/l BOD
 < 10 mg/l TSS
 < 0.5 mg/l NH₃-N
 < 3 mg/l TN



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