



evoqua
WATER TECHNOLOGIES



ADI[®] HYBRID REACTOR

COMBINING TWO PROVEN WASTEWATER TREATMENT TECHNOLOGIES

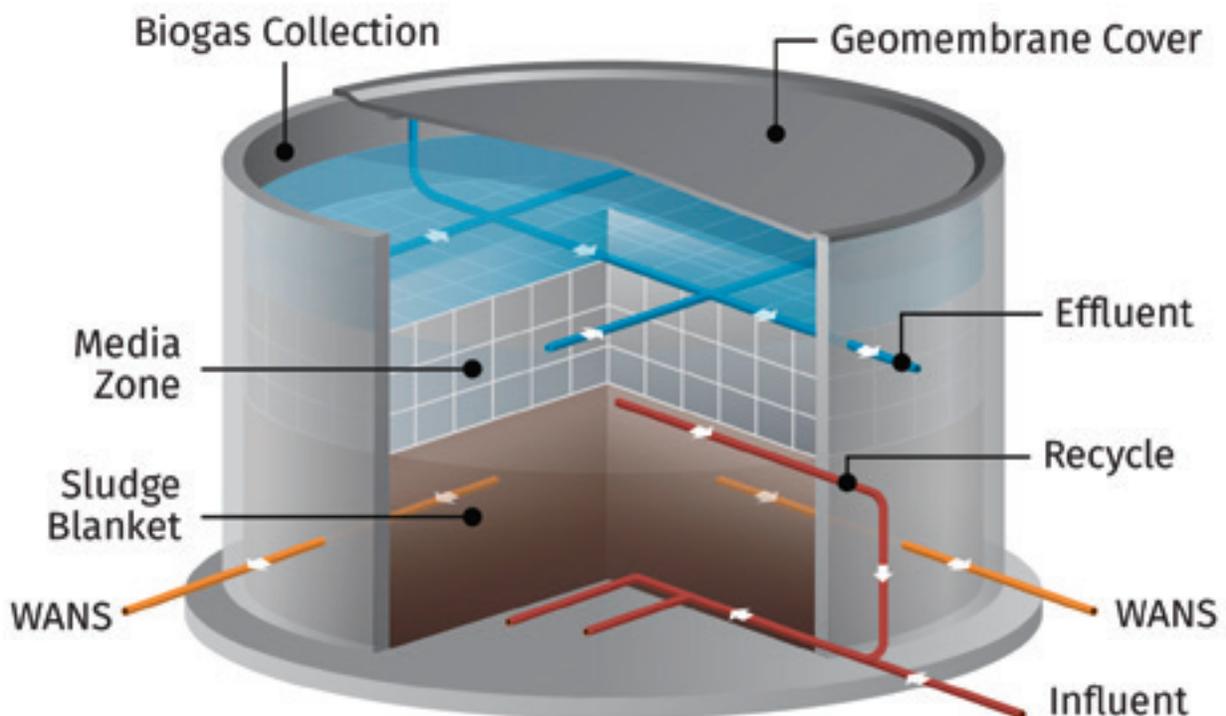
THE TECHNOLOGY

The ADI® hybrid reactor is a high-rate anaerobic system that combines two processes: upflow anaerobic sludge bed (UASB) and upflow fixed-film (UFF). The reactor retains the benefits of each technology. The lower part of the reactor acts as a UASB, where a bed of anaerobic biomass digests the degradable wastewater organics. The upper portion of the reactor contains a cross-flow type media that provides an extensive surface area for the fixed-film bios to grow. The media also intercepts sludge bed and raw influent solids and returns the solids to the sludge bed via lamella-plate type clarification.

In cases requiring very high removals, a two-stage reactor can be installed to achieve a higher quality effluent. This two-stage system consists of two equal-sized reactors that operate in series and periodically alternate lead and lag designations. This cyclic operation is effective at treating wastewater streams with high concentrations of soluble organics and low concentrations of solids.

KEY INDUSTRIAL MARKETS

- Food & Beverage
- Brewery
- Distillery
- Biofuels
- Pulp & Paper
- Chemical & Pharmaceutical





THE BENEFITS OF BOTH UASB AND UFF TECHNOLOGIES

The ADI® hybrid reactor is sized to work at medium volumetric load conditions and offers industrial processors many benefits.

COST SAVINGS

- Save on energy costs:
 - Low energy consumption design; anaerobic treatment is significantly less energy-intensive than aerobic systems
 - Recover energy from biogas to reduce plant's fossil fuel usage
- Eliminate wastewater surcharges
- Reduce chemical costs for pH and alkalinity control

PROCESS ADVANTAGES

- Large biomass inventory and long solids retention time
 - Excellent process stability during peak loadings
- Ability to handle toxic substances, shock loadings, and influent suspended solids
- Cross-flow media with large surface area for solids retention
 - Promotes biomass growth
 - Allows for high loading rates

ENVIRONMENTAL BENEFITS

- Continuously meet discharge requirements
- Convert organic waste to recoverable green energy (heat and power)
- Nutrient-rich waste sludge suitable for land application as liquid fertilizer
- Improve local and global water security

OPERATION & MAINTENANCE

- Granular sludge can be replaced with flocculent sludge to seed reactor at start-up
- Low maintenance requirements
 - Minimal operator attention
 - Few moving parts
- Flexible sludge wasting program
- Data trending for process control



PROJECT DELIVERY

ADI Systems customizes each wastewater treatment system to meet the unique needs of the application. Design/build project delivery offers a number of benefits, including a single point of contact and responsibility, and consistency in design and construction quality throughout the entire project. Technology-only packages are also available.

ADI[®] Systems
an EVOQUA brand

+1 (800) 561-2831 (toll-free)

+1 (506) 452-7307

www.evoqua.com

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