

LOW MAINTENANCE · MAXIMUM RELIABILITY

# BioMix-AD Anaerobic Digester Mixing System



**MAXIMIZE BIOGAS  
PRODUCTION &  
PROCESS EFFICIENCY**

CONTACT [SALES@ENVIRO-MIX.COM](mailto:SALES@ENVIRO-MIX.COM)  
TO DISCUSS HOW BIOMIX-AD CAN OPTIMIZE  
YOUR APPROACH TO ANAEROBIC DIGESTER MIXING.







**BIOMIX-AD ANAEROBIC DIGESTER MIXING SYSTEMS** provide uniform mixing of anaerobic digester tank contents by firing programmed, short-duration bursts of compressed biogas through patented, engineered nozzles located near the tank floor. The mixing parameters may be adjusted to optimize mixing and power utilization, either through operator input or automated process feedback.

**BioMix-AD enables facilities to meet sludge disposal regulations and reduce energy costs, while reducing their carbon footprint and recovering biogas as a renewable energy source.**



### STRAIGHTFORWARD OPERATION

All in-tank components of a BioMix-AD system are maintenance free, non-clogging, and self-cleaning. Systems require minimal maintenance of components that are outside of the tank (compressors, receivers, and valve modules) in controlled environments. Electrical requirements are limited to the power needed to operate the biogas compressor and the valve modules. Bottom-up mixing minimizes solids deposition and scum formation.

1

A **centralized compressor** draws biogas from the digester headspace and charges the receiver tank, which supplies compressed biogas to the valve module.

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2

The **valve module** controls the firing parameters of pressure, frequency, duration, and sequence, delivering biogas bursts through engineered nozzles located at the tank floor.

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**Flexible design** accommodates varying sludge feed locations, feed duration, outlet locations and sludge viscosities.

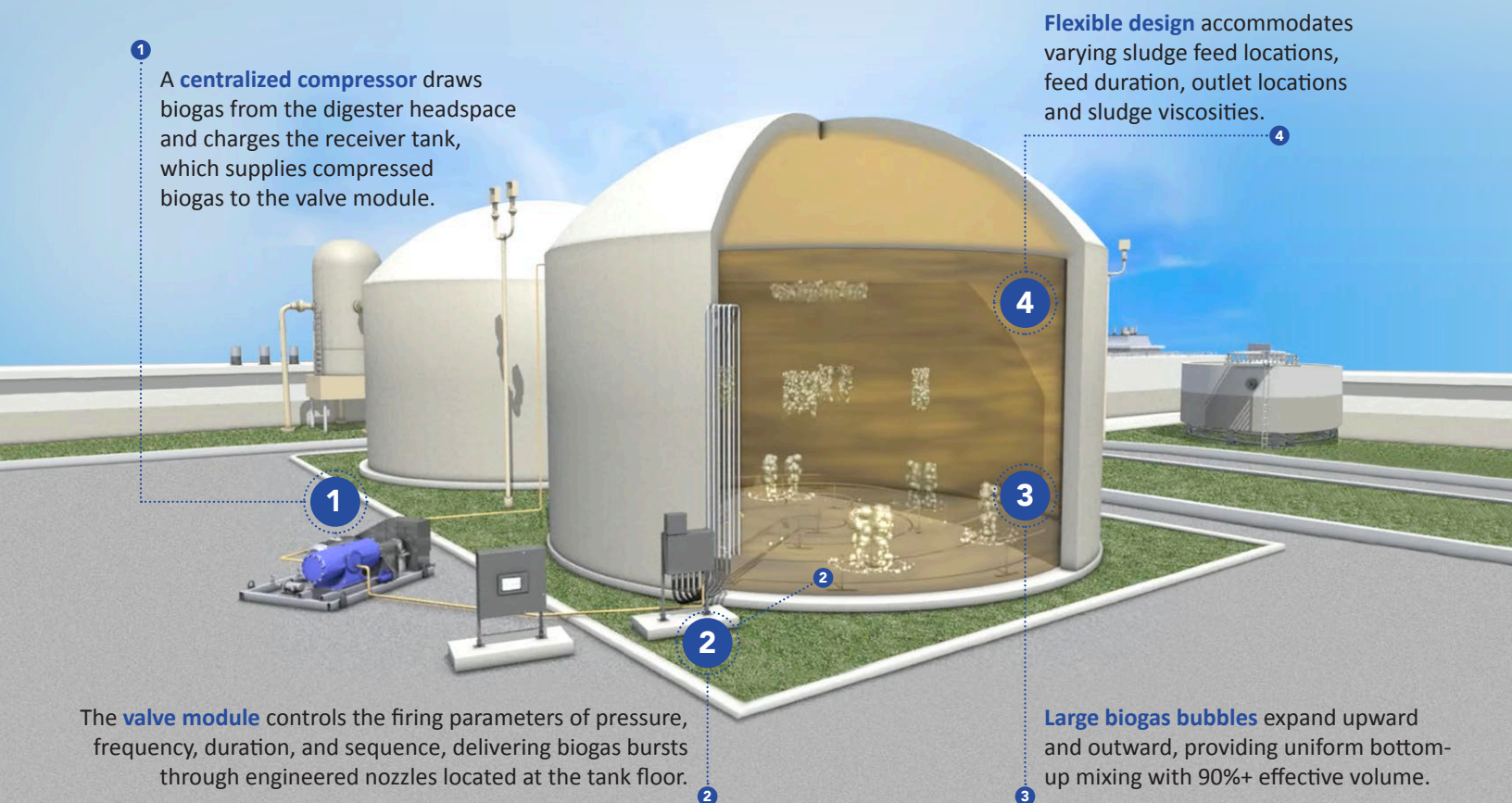
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4

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**Large biogas bubbles** expand upward and outward, providing uniform bottom-up mixing with 90%+ effective volume.

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## PROCESS OPTIMIZATION

Traditionally, anaerobic digesters operate within 2% to 2.5% sludge concentration, with fluid characteristics similar to water. However, trends towards thickened feed sludges have led to problematic digester mixing, resulting in short circuiting, solids deposition and foaming. As dry solids increase, the sludge becomes more viscous, behaving as a non-Newtonian shear-thinning fluid.

Firing large digester gas bubbles freely through nozzles distributed across the tank floor, **BioMix-AD delivers high, localized mixing energy in numerous locations** to overcome non-Newtonian sludge characteristics, enable shorter blend times, and produce 90%+ active volumes.

A sliding vane compressor provides reliable gas delivery to a receiver tank, feeding gas valve modules controlled by the PLC-based master control panel. Once the BioMix-AD system is “charged” and firing parameters maintained, **the system operates as a loop**, consuming no additional gas.

**BioMix-AD provides greater volatile solids destruction, increased biogas production, and uniform digester temperature.**

## WHERE IT APPLIES

A BioMix-AD Anaerobic Digester Mixing System is ideally suited for anaerobic digesters treating domestic and industrial waste sludge. The system works with a variety of processes, including:

- Mesophilic High-Rate Digestion
- Acid Phase Hydrolysis
- Enzymatic Hydrolysis
- Thermal Hydrolysis
- Pasteurization
- Thermophilic Digestion

## ENVIRONMENTAL STEWARDSHIP

Anaerobic digestion is a rapidly growing technology used to minimize carbon footprint. As a carbon-neutral energy source, renewable natural gas (RNG) from anaerobic digestion is a critical component of any socially responsible energy portfolio. BioMix-AD offers a durable and reliable mixing solution while eliminating the waste of an inefficient mixing process. The technology **maximizes RNG production at the lowest energy input**, allowing its users to realize carbon negative anaerobic digestion.







## ENERGY EFFICIENCY

BioMix-AD incorporates a distributed energy model that has been proven to be more efficient than traditional point source mixing technologies. Compressed gas mixing delivers significant power savings compared to unconfined gas mixing, pump-based mixing systems, or mechanical mixers due to uniformly distributing mixing energy across the basin floor rather than directing it outward from a localized point. Thus, **BioMix-AD provides 50% or greater reduction in power usage compared to conventional mixing technology.**



## UNPARALLELED FLEXIBILITY

BioMix-AD offers treatment facilities operational flexibility by providing:

- Bottom-up mixing in digesters of any depth or geometry
- Adjustment of mixing intensity based on process and operating parameters
- Nozzle headers that conform to the slope of the tank floor, eliminating “dead spots”
- The ability to uniformly mix sludge at concentrations up to 8% solids



MIXING  
GUARANTEE



THIRD-PARTY  
VERIFICATION



PATENTED  
TECHNOLOGY

EnviroMix, Inc. focuses on delivering solutions that reduce energy costs and enhance process performance in the water and wastewater industry. We design and manufacture performance-proven technologies that improve water quality and reduce energy consumption in critical areas of the treatment process. Utilizing patented and proprietary technology, we provide equipment and process control solutions to enhance plant performance for both the municipal and industrial markets.



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