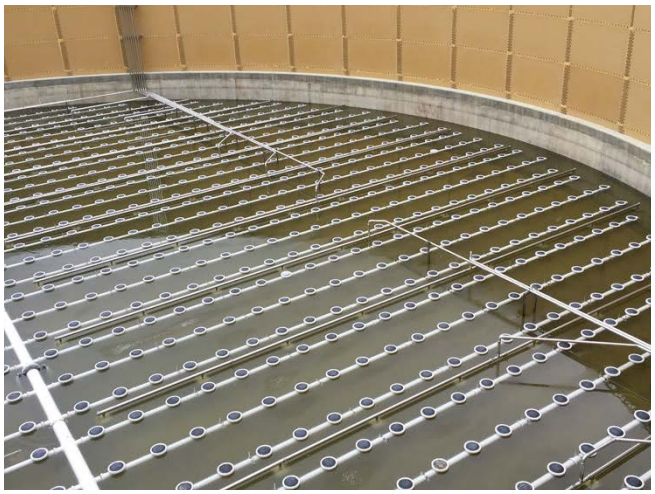
CASE STUDY:

Clairton, Pennsylvania Wastewater Treatment Facility

ENVIROMIX

www.enviro-mix.com

Application:	Aerobic Sludge Digestion
Design Flow (ADF):	6.0 MGD
Mixing Efficiency:	0.13 HP/1000 ft^3
Compressors:	One (1) 50 HP Rotary Screw
Blowers:	Two (2) 300 HP VFD
Design Engineer:	KLH Engineers



Decoupled aeration from mixing facilitates independent control over mixing and oxygen delivery

BioCycle-D™ Aerobic Digestion Process Selected for Clairton WWTP Upgrade

In 2016, the Clairton Municipal Authority upgraded the city's wastewater treatment plant, installing new headworks and increasing digestion capacity to facilitate Class B biosolids.

After numerous treatment solutions were evaluated, **EnviroMix's BioCycle-D Optimized Aerobic Digestion Process was selected as the best technology for the aerobic digesters because of the significant energy savings and improved sludge digestion**.

A conventional aerobic sludge digestion process uses diffused aeration for both mixing and process oxygen demands, and it often results in over-aeration, which can cause uncontrolled nitrification, depletion of alkalinity, and increased energy consumption. BioCycle-D is an energy-efficient aerobic sludge digestion process which decouples aeration from mixing and incorporates process feedback through instrumentation to control and maintain the optimum digestion environment.

The Clairton plant experiences energy cost savings of more than $150,000 per year with BioCycle-D versus a conventional aerobic digester aeration system.

ENERGY EFFICIENCY

50% power savings versus traditional diffused air or jet aeration mixing systems

STRAIGHTFORWARD OPERATION

Automatically adjusts blower air rate based on loading conditions

Minimal, localized maintenance

PROCESS OPTIMIZATION

Precise process control improves volatile solids destruction and sludge dewaterability

UNPARALLELED FLEXIBILITY

Bottom-up, uniform mixing supplements aeration

Suitable for a wide variety of applications

BioMix nozzles in the cone bottom provide bottom-up mixing beneath the aeration grid eliminating dead zones

Compressor is housed in an environmental enclosure to eliminate the need to construct a building

EnviroMix control modules allow for adjustable mixing intensity to match system demands

Decoupling of aeration from mixing reduced the power requirements for digestion by more than 50% versus using diffused aeration alone.

As part of the Clairton upgrade project, BioCycle-D Optimized Aerobic Digestion Process was installed in two (2) existing 35-foot diameter aerobic digesters with hopper bottoms. Additionally, BioCycle-D was installed in a new 120-foot diameter aerobic digester that was constructed to provide the volume required to achieve Class B biosolids.

BioCycle-D is designed by right-sizing the diffused aeration system to satisfy process oxygen demand and applying energy efficient mixing through the use of the BioMix™ Compressed Gas Mixing System.

The conventional approach to aerobic digestion design utilizes the aeration system to provide the oxygen to the microorganisms as needed for the digestion process and the mixing energy needed to keep the basin contents mixed at all times. In most cases, and especially for treatment works that have extended aeration secondary processes, the air required to mix is greater than the air required to satisfy the oxygen demand, resulting in wasted energy. When the aeration system is designed solely based on the oxygen requirements and the mixing system is designed solely based on the mixing requirements, efficiency and operational flexibility are both maximized.

BioCycle-D maximizes sludge destruction, minimizes energy consumption, maintains stable pH levels, and provides process control by decoupling aeration from mixing along with automated operation through instrumentation feedback.

Contact sales@enviro-mix.com today to discuss the ways EnviroMix can optimize your mixing solutions.