

CASE STUDY: Center Street WWTP Mount Pleasant, South Carolina



Application:	Flow Equalization and Anoxic Mixing
Design Flow (ADF):	3.7 MGD
Mixing Efficiency:	$\approx 0.13 \text{ HP}/1000 \text{ FT}^3$
Compressors:	One (1) 15 HP Rotary Screw
Mixing Nozzles:	140
Design Engineer:	Black & Veatch

Mount Pleasant WWTP Gains Enhanced Treatment Capacity & GPR funding with BioMix™ system

Mount Pleasant Waterworks (MPW) owns and operates two wastewater treatment plants (WWTPs): Center Street and Rifle Range Road. In 2014, the Center Street WWTP was comprehensively upgraded to provide improved treatment and increased capacity.

BioMix Compressed Gas Mixing was an integral part of the plant upgrade, replacing inefficient positive displacement blowers and coarse bubble aerated mixing in the flow equalization basin. BioMix was also installed to provide mixing in two BNR anoxic selector basins which were converted from primary clarifiers.

Due to the energy efficiency of the technology, the work related to the design and installation of BioMix qualified for Green Project Reserve (GPR) funding, a lower interest rate than traditional funding. Black & Veatch submitted a GPR Business Case to South Carolina's Department of Health and Environmental Control that provided a cost/benefit analysis indicating the expected "green" benefits associated with the upgrade including BioMix. **The case indicated a 70% decrease in the power demand versus alternative mixing technology and highlighted the operational benefits of a mixing technology that requires no in-tank maintenance.**



Nozzle headers are custom designed to avoid tank obstructions.



ENERGY EFFICIENCY

**70% decrease in
power demand**
versus traditional
mixing technology



STRAIGHTFORWARD OPERATION

No in-tank moving
or wearing parts

Non-clog,
maintenance free
performance



PROCESS OPTIMIZATION

Operator-adjustable
firing parameters

Promotion of optimal
conditions for BNR
processes



UNPARALLELED FLEXIBILITY

No low-level
limitations – ability to
mix at any depth

Compatible with any
tank geometry or
configuration



*Concentric rings of nozzle headers:
Nozzles follow the slope of the tank
floor.*



*Short duration, sequential bursts of compressed air uniformly
mix the tank contents.*

“We’ve seen the benefits at Center Street, that’s why we employed BioMix at Rifle Range... the efficiency is a big deal for us.”

Greg Hill, Operations Manager, MPW

Efficiency means little if the system fails to perform its intended function. The projected energy efficiency was proven during field performance testing, and BioMix demonstrated a competitive advantage over conventional diffused air or mechanical mixers by providing uniform mixing throughout the basin.

The BioMix system provided less than 1% coefficient of variation of solids concentration throughout the tanks.

BioMix Compressed Gas Mixing technology offers the following advantages:

- Bottom-up mixing in any size tanks
- Uniformly distributed mixing energy
- Improved mixing versus alternatives
- Lowest energy consumption mixing technology
- Minimized and localized maintenance requirements

Due to the years of efficient and low maintenance operations at Center Street, Operations Manager Greg Hill selected BioMix to be installed at MPW’s other facility, Rifle Range Road, when that plant was upgraded in 2020. He stated, “We’ve seen the benefits at Center Street, that’s why we employed BioMix at Rifle Range. It’s very easy to maintain and the efficiency is a big deal for us.”



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