

BioMix™ Success Story — Anoxic Mixing

Mauldin Road WWTP, 70 MGD, Renewable Water Resources (SC)

Project Details

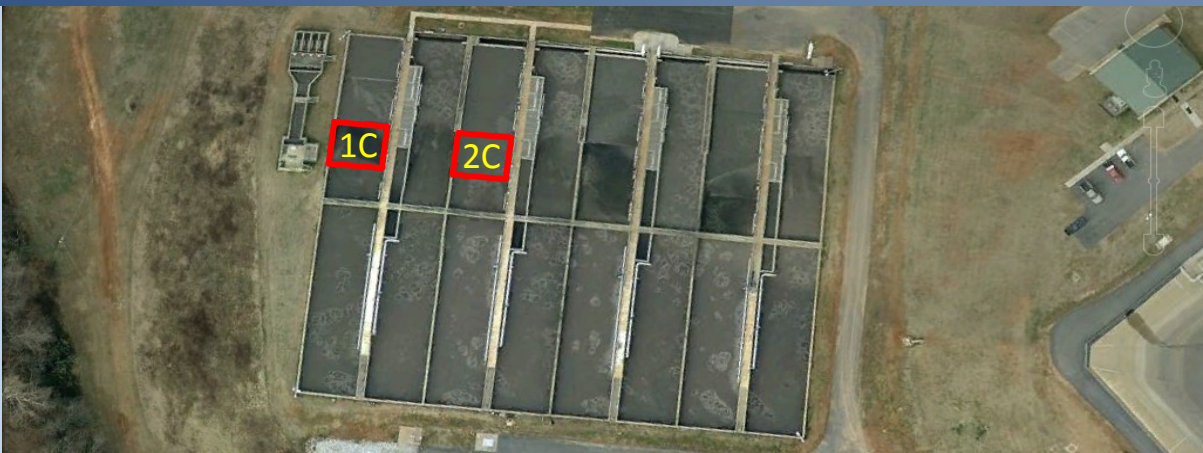
- Modified A²/O anoxic reactor mixing
- BioMix system fires short bursts of compressed air through engineered nozzles affixed to tank floor
- Gas volumes (or “large bubbles”) transfer insignificant amount of oxygen into wastewater
- Similar denitrification at fraction of installed power (± 70% less)



Mauldin Road WWTP Installation

About EnviroMix

Headquartered in Charleston, SC, EnviroMix is a privately held corporation, which designs and manufactures treatment systems to lower energy and maintenance costs while helping facilities meet nutrient removal limits. Utilizing patented and proprietary technology, the Company provides both equipment and process control solutions to enhance plant performance in the water and wastewater markets. For additional information please visit www.enviro-mix.com.



Increased power rate costs combined with higher than anticipated annual maintenance costs have created budgetary concerns at wastewater facilities across the United States. Renewable Water Resources (ReWa) has experienced these issues directly for years, particularly related to submersible mechanical mixers at the 70 MGD Mauldin Road WWTP in Greenville, South Carolina.

ReWa compared the BioMix compressed gas mixing system from EnviroMix against existing mechanical mixing at the Mauldin Road WWTP from May through July 2011. BioMix, using an oversized, five horsepower (hp) compressor, was installed in Train BR2-1, Anoxic Cell 1C, of the facility’s modified A²/O process. BioMix was compared directly against parallel Train BR2-2, Anoxic Cell 2C, which uses a 15 hp submersible mechanical mixer.

Demonstrated Results

Operation of the BioMix installation at the Mauldin Road WWTP in Greenville SC provides energy-efficient anoxic reactor mixing with effective denitrification. ReWa personnel also project reduced maintenance costs as BioMix has no submerged mechanical or electrical components, unlike the existing mechanical mixers.

During the testing period, twenty-seven samples were collected by operations personnel at the Mauldin Road WWTP. Samples were analyzed for nitrate (NO₃-N), dissolved oxygen (DO), oxidation reduction potential (ORP), and orthophosphate (PO₄-P). The variance in the data between trains for Anoxic Cells C was deemed insignificant by ReWa. The table below presents the average values of the respective analysis for each mixing technology:

	BioMix (1C)	Mechanical Mixer (2C)
NO ₃ -N (mg/L)	2.19	2.39
DO (mg/L)	0.27	0.26
ORP (mV)	-18.58	-18.68
PO ₄ -P (mg/L)	11.14	10.29

Average Values from Data Collected,
05/17/11—07/08/11

This data validates again the use of BioMix in anoxic biological treatment zones, extending the applicability of compressed gas mixing from previously-studied anaerobic and aerated environments.