

CASE STUDY: Midwest Airport Deicing Project



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Application:	Stormwater Equalization
Mixing Efficiency:	< 0.05 HP/1,000 FT ³
Compressors:	Three (3) 125 HP Rotary Screw
Nozzles:	1,229



BioMix nozzles installed at the floor of each tank provide uniform mixing over a wide range of operating water levels.

BioMix™ System Chosen for World’s Largest Compressed Gas Mixing System Installation

In July 2018, a large midwestern international airport began construction on a stormwater deicing infrastructure project. The project included the construction of three stormwater retention basins each requiring a mixing system.

The equalization basins receive runoff from the airport including the deicing agent propylene glycol. The contents of the basins are eventually sent to the municipal wastewater treatment plant for treatment.

Due to the extremely high chemical oxygen demand (COD) exerted by the deicing agent, it is critical that the basins be well-mixed in order to prevent major load disruptions at the wastewater treatment plant.

BioMix Compressed Gas Mixing was selected to provide high efficiency mixing of the three equalization basins with a total combined volume of approximately 100 million gallons — making this the largest compressed gas mixing system in the world!

EnviroMix’s patented BioMix technology enables ideal mixed conditions with minimum energy input.



ENERGY EFFICIENCY

70% energy cost savings versus conventional mechanical mixing



STRAIGHTFORWARD OPERATION

Three compressors (2 duty, 1 standby) replace more than 40 mixers



PROCESS OPTIMIZATION

Bottom-up mixing maintains consistent concentrations of the deicing agent



UNPARALLELED FLEXIBILITY

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



Three compressors do the work of over 40 mixers while being located in a climate-controlled environment for ease of access.



With the floor of each basin taking up the space of approximately three football fields, this site is by far the largest compressed gas mixing system operating in the entire world.

The BioMix system provides the international airport **annual savings of more than \$450,000** versus mechanical mixing.

BioMix Compressed Gas Mixing offered monumental energy cost savings for the international airport. **The system provides annual energy cost savings of more than \$450,000 — equivalent to 70% savings versus conventional mechanical mixing.**

With no in-tank moving or wearing parts and non-clog, maintenance free performance, the system allowed the facility to plan for the purchase of a floating cover system in the future, saving an estimated \$6 million in construction cost versus a fixed cover to accommodate alternative mechanical mixing technology.

An EnviroMix master control panel (MCP) provides centralized control enabling the automatic adjustment of mixing intensity in all three tanks. High pressure air held in free-standing receiver tanks is optimally distributed to each equalization basin in timed, intermittent bursts through valve modules located adjacent to the tank.

BioMix has no low-level limitations – maintaining the ability to provide superior mixing at any liquid depth — which is of utmost importance in stormwater equalization basins to prevent deposition and maintain homogeneity.

Most importantly for the airport, **BioMix's bottom-up mixing maintains consistent concentrations of the deicing agent** protecting against process upsets at the municipal WWTP that ultimately treats the liquid held in the tanks.



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