

Meeting Compliance With Process Aerators

Equipment improves process, saves energy in nation's oldest city

By Cheri Cohen

St Augustine, Fla., founded by Europeans in 1565, is the nation's oldest city. The city is a perfect blend of aging gracefully while staying at the forefront of environmental protection. When this pristine community started experiencing problems with its wastewater treatment system, they found a solution using [Aeration Industries' Aire-O₂ Triton](#) process aerators and mixers.

The original municipal wastewater treatment plant was built in the 1950's and upgraded in 1986. The community boasts great weather, beaches and a myriad of attractions for locals and nearly 2 million tourists. Keeping the city's wastewater treatment facility in top-notch condition to meet the needs of this fast-paced community is a challenge it met.

The treatment plant consists of two oxidation ditches in a parallel flow system. The current design flow is 5 million gal per day (gpd) of which approximately 95% is domestic sewage. Current average influent concentrations are 190 mg/L BOD, 180 mg/L TSS, and 34 mg/L NH₃-N.

Aging Disk Aeration System

Each of the oxidation ditches employs a 3-ring process channel system and was equipped with 50 hp rotating disks for aeration and mixing in each channel. Over the years, frequent mechanical difficulties started plaguing the aging disks.

"Mechanical problems on the disks have been a problem for quite a long time, especially shaft and bearing problems," said George Lomax, plant manager. In 2007, the treatment plant started having difficulties meeting its ammonia discharge levels. The facility has very strict discharge permit limits, discharging into the Matanzas Intercostals Waterway. The failing disk aeration system needed an immediate boost to get the treatment plant back into compliance.



Maintenance is easy for the operator.

In Compliance With Process Control

Two 10-hp [Aire-O₂ Triton aerators/mixers](#) were installed in August 2007, one in each ditch, to supplement the disk aerators. The addition of the [Triton](#) units brought the plant back into compliance. Discharge levels for NH₃-N fell from 14 mg/l to 2.5 mg/l within a few days. Other effluent values reduced as well with BOD averaging 3.3 mg/l and TSS averaging 2.9 mg/l.



The Tritons brought the plant into compliance.

Satisfied with the new equipment, the plant staff decided to add more Triton process aerators to the wastewater treatment plant the following year. Two 30-hp units were added in September and another set in November 2008.

“I’m really into process control,” Lomax said. “What I really like about the Aire-O₂ Triton aerators is that you can separate the aeration and the mixing. That helps me really control the process better.”

Operating & Energy Savings

Lomax is enjoying the energy savings the process aerators provide. He has replaced 50 hp disk aerators with 30 hp process aerator/mixers. “That’s almost half the horsepower,” Lomax said. The Triton’s strong mixing ensures uniform dissolved oxygenation throughout the oxidation ditch and also keeps the mixed liquor suspended solids in full suspension.

The six [Triton aerators](#) now affords the facility the “turn-down capability” of multiple units to match influent loads or flows by shutting down units to realize more energy savings.

Community Friendly

The St. Augustine wastewater treatment plant is located close to the community. Being a “good neighbor” is important. Chief Operator Steve Mier likes the aerator’s subsurface injection better than the rotating disks for air quality reasons.

“The Tritons don’t splash or throw any wastewater into the air. The water stays in the tank,” he said, especially on windy days. “Working around the disks on windy days can get kind of nasty with the wastewater splashing,” he added. The Tritons are very quiet, too.”

The St. Augustine facility will continue to upgrade its treatment plant, including the Triton aerators. The goal reflects this oldest city’s tradition of maintaining a fit and sustainable treatment facility on the leading edge of environmental technology. After all, it was here in St. Augustine that Ponce De Leon found his Fountain of Youth centuries ago.



AIRE-O₂®

Aeration Industries International Inc.

4100 Peavey Rd.

Chaska, MN 55318-2353

P: 952.448.6789

F: 952.448.7293

cheric@aireo2.com

www.aireo2.com

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3030 W. Salt Creek Lane, Suite 201

Arlington Heights, Illinois 60005-5025 USA