



SANITAIRE
a xylem brand

Case study

Sanitaire Diffusers in Eunice, Louisiana

Sanitaire Silver Series Membrane Disc aeration system restore compliance at a fraction of the cost of a new plant

Eunice, located in the Cajun heartlands of Louisiana, has two plants with a 2.5 MGD combined design flow and receive influent from a 20-mile long collection system. With the exception of automated pump controls, the plants are operated manually by a five-person workforce that is also responsible for inspecting the utility's 16 pump stations. Years of neglect left the 1MGD plant in disrepair. Without adequate mixing or sufficient oxygenation, the once innovative plant was no longer in compliance with regulations set forth by the Louisiana Department of Environmental Quality.

Scope

The city needed a quick fix - replace its mixers, repair the aeration system and dispose of the sludge that had accumulated in the oxidation ditch. Although a \$4 million replacement plant was under consideration as a long-term solution, the cash-strapped city opted to address the more immediate mixer issue. Replacing the failed mixers with floating mixers/aerators enhanced with an additional blower with diffusers to boost aeration in the ditch proved ineffective at delivering adequate oxygen or mixing.

"Since completing the retrofit a year ago, the plant can operate with only two of the new mixers and we've reduced our energy costs in half."

Solution

The oxidation ditch was upgraded with a Sanitaire Silver Series Membrane Disc aeration system with 9" fine-bubble diffusers and four, mast-mounted Flygt Model 4430 "banana blade" mixers, with 98 inch diameter propellers. Each grid has 231, fine-bubble diffusers mounted on the floor of the aeration side of the channel loop. One of the three, 100-hp centrifugal blowers delivers a total air rate of



Sanitaire fine-bubble diffusers with removable 9" Membrane Disc Aeration Heads being installed. The two Flygt mixers fitted with banana blades are visible in the background.

END USER: Eunice, LA
CLIENT: Eunice, LA
ORDER DATE: 2013
COMPLETION: 2013

1800 cfm through the 9" diffusers. Sanitaire designed the diffusers as removable for ease of maintenance.

"The results were immediate," said Bob Morris, mayor of Eunice. "Since completing the retrofit a year ago, the plant can operate with only two of the new mixers, and we've reduced our energy costs in half compared to when we had the five floating mixers. Those previous mixers used a ton of energy and still didn't do the job."

The pair of Flygt mixers at each end operate in an alternating sequence, with two being enough thus far to maintain the desired mixing velocity of one foot per second in the ditch. On the aeration side, the Sanitaire diffuser system was designed to achieve a SOR (standard oxygen requirement) of 12,900 lbs. per day. In addition, the plant converted its former anaerobic digester to an aerobic unit.

"Best of all, I have not needed to file a non-compliance report for the past six months. For the first time in years, we meet state regulations."

This \$500,000 investment has proven to be effective in improving effluent water quality and mixing action. Now, the normal plant discharge of 3 mg/L BOD and 1.1 mg/L TSS are well within the permit monthly averages of 10 mg/L/15 mg/L. The ammonia/nitrogen levels are also well within the state permit's average seasonal limits of 8 mgL/week and 4 mgL/month from December to March, and 3.4 mgL/week versus 1.7 mgL/month from March through November. The higher quality effluent also is easier to disinfect with the plant's use of chlorine.

The plant met state permit requirements for the first time in years and there's no longer mention of building a new, \$4-million plant.



Since completion of the retrofit, the plant operates with just two new mixers and has reduced its energy costs by half compared to when they had five floating mixers.

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