

Wastewater Treatment in Eunice, LA

Retrofit Restores Compliance And Cuts Energy Costs

In Eunice, Louisiana, a five-man workforce manually operates two wastewater plants with a 2.5 million gallon per day (MGD) combined design flow. With no Supervisory Control and Data Acquisition system in place, the crew's daily duties also include inspecting 16 pump stations.

Project or Scope

Shortly after taking office, Mayor Bob Morris realized there was a problem. The newer of the town's two plants was crippled, due to years of neglect. He learned it had been out of compliance for years and soon found a list of nearly 30 problems that Acadian Engineers, a local consulting engineering firm, had presented to the previous mayor. One of the issues was the intrachannel clarifier in the plant's oxidation ditch. Initially a good system, neglect and abuse had led to clogged diffusers, which was further aggravated by the failure of the original mixers.

“Putrid wastewater in the ditch was visible evidence the floating mixers could not deliver enough oxygen or mixing.”

When two of the original four hydraulic mixers failed, allowing improperly treated sewage to reach Bayou Mallet, the city council declared a financial emergency. They discussed building a new \$4 million replacement plant, but settled on replacing the four mixers with five floating mixers/aerators enhanced with an additional blower with diffusers to boost aeration in the ditch. None of these measures solved the problems.



END USER: Eunice, LA Wastewater Plant
CLIENT: Acadian Engineers
COMPLETION: 2009

Solution

Acting as its own general contractor in procuring and managing the channel retrofit, the city embarked on a three-week project to correct the problems and restore the oxidation ditch to reliable operation. Acadian Engineers served as the city's engineer for the project and worked closely with Gulf States Engineering, the authorized representative for Flygt and Sanitaire Xylem brands in the region.

The team upgraded the ditch with a Sanitaire Silver Series Membrane Disc aeration system, with 9-inch fine-bubble diffusers and four mast-mounted Flygt Model 4430 "banana blade" mixers with 98-inch-diameter propellers. Two mixers are mounted 23' upstream and 23' downstream of the five 25'x15' grids of Sanitaire diffusers. 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 1,800 cfm through the diffusers, which are installed as removable grids.

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 1' per second in the ditch. On the aeration side, the Sanitaire diffuser system was designed to achieve a standard oxygen requirement of 12,900 pounds per day.

"We've cut our energy costs in half compared to when we had the five floating mixers."

Result

According to Mayor Morris, the town's oxidation ditch problems are behind them. By successfully operating with only two mixers, energy costs have been reduced by 50%. Best of all, the plant has met state permit requirements consistently since the upgrade was completed.

Now, the normal plant discharge of 3 mg/L biochemical oxygen demand and 1.1 mg/L total suspended solids are well within the permit monthly averages of 10 mg/L and 15 mg/L. The ammonia/nitrogen levels are also well within the state permit's average seasonal limits of 8 mg/L per week and 4 mg/L per month from December to March and 3.4 mg/L per week versus 1.7 mg/L per month from March through November. The higher quality effluent also is easier to disinfect with the plant's use of chlorine.

Eunice has invested approximately \$500,000 in the retrofit, and both Mayor Morris and the city council are pleased with the results. In fact, no one ever mentions the new \$4 million replacement plant anymore.



Mayor Bob Morris, who has worked side-by-side with his plant workforce, shows off two Flygt mixers.



Before: The plant's five floating mixers/aerators could not deliver enough oxygen or mixing.



After: Since completion of the retrofit, the plant operates with just two new mixers and has visibly better results.

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