

Grade AA Effluent

After more than a decade of searching, CILAM Dairy finds its ideal aeration system

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by [Cheri Cohen](#)

Reunion Island is a French-controlled territory off the coast of South Africa situated in the Indian Ocean approximately 500 miles east of Madagascar, about 120 miles southeast of Mauritius, the nearest island. Environmental sustainability is a critical issue on this island given land availability, strict European and French regulations, mountain slopes, population density and proximity to rivers and streams. The search for an ideal aeration system took more than a decade, but a solution presented itself with [Aeration Industries' Aire-O2 Triton process aerators](#).

For more than 40 years, CILAM (Compagnie Laitières des Mascareignes) Dairy has been involved in the development and processing of dairy products in Reunion Island, working closely with the cooperatives. The company produces milk, cheese, yogurt, ice cream and a variety of juices. CILAM, located in Saint-Pierre on the island's southern coastline, employs 200 people from the island's total population of 800,000.

The CILAM Dairy utilizes an activated sludge process wastewater treatment facility that serves the dairy's processing plant. Flow into the wastewater treatment plant measures 234,585 gal per day and it is directed through four concrete basins. The average influent biochemical oxygen demand is 3,000 mg/L.



Multiple Retrofits

The original design for the wastewater plant called for mechanical surface splasher aerators to be positioned in each of the basins, but mechanical and process problems nagged the plant.

The wall-mounted aerators allow for easy access.

“The site had continuing noise and odors problems with the previous aeration equipment, which were European mechanical aerators,” said Didier Khaznadjji of Master Group, of Reunion Island. “The location is in a heavy commercial and residential area with houses located immediately behind the plant. Neighbors grew so frustrated that they threw stones at the plant.”

Problems with motor bearings and even aerators flipping over can be a real nuisance. Low dissolved oxygen (DO) and its effect on the process also is a serious issue. In this case, DO levels were only 1 mg/L or even as low as zero at times.

In an effort to solve the DO issues after five years of struggling with the mechanical splashers, a diffused air system was retrofitted into Basins 2, 3 and 4. The compressor and three 50-hp blowers were installed in the second and third basins, along with an agitator in each to assist with the dissolved air situation; but the DO still remained around zero or 1

mg/L. The basins are rather shallow—only 9.2 ft. Mixing was also inadequate in the basins.

More for Less

CILAM Dairy decided to continue its search for an aeration system that could provide a wastewater treatment solution for its particular needs. After reviewing several options, the company decided on [process aerator mixers](#) manufactured by [Aeration Industries](#), a U.S. company located in Chaska, Minn. Six 10-hp [Aire-O2 Triton process aerator/mixers](#) were installed in July 2008. Pleased with the performance, follow-up orders resulted in more process aerator/mixers in February and December of 2009 for a total of 13 10-hp units.

Three of the units are float mounted to adjust for the varying water levels in the first basin. All of the other aeration units are wall mounted in the following three basins.



“The electricity went from \$60,000 down to \$32,000 with the reduction in horsepower used overall, plus turn-down capability,” Khaznadji said. “A total of 120 hp of Triton aerators replaced the previous 150-hp aeration system for a net savings of 30 hp. Even more amazing is that before they had no oxygen or too little oxygen, and now they have too much. They have DO levels now of 5 mg/L.”

Effluent removal rates total 95% to 98%.

Residents appreciate the new aerators.

The neighbors who are nearby on all sides are much happier these days, too. The

Triton aerators are very quiet in operation and, since they inject air below the water’s surface, they do not emit any aerosols or splashing noises. Tourism is the No. 1 attraction for Reunion Island. CILAM Dairy’s commitment to sustainability helps guarantee that the sweet aroma of environmental success will continue and the beauty of the tropics will keep tourists swarming back.



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