

Richardson Foods Ltd. food manufacturing facility

Application: Treatment of highly variable wastewater from food production

Capacity: 40,000 gpd (151 m³/d)

Location: St. Mary's, Ontario, Canada

Commissioned: November 2000



challenge

Richardson Foods Ltd., a division of Heinz Canada, manufactures condiments for the food service industry. The plant makes over 200 products, including drink syrups, sundae toppings, sauces, mayonnaise, and salad dressings. The food manufacturing process produces highly variable wastewater with BOD ranging from 1,500 to 4,000 mg/L, and COD ranging from 3,500 to 6,000 mg/L.

Richardson Foods needed to upgrade its 20-year old batch process that was unable to consistently handle the variable raw water characteristics. The system was very labor-intensive, overloaded, had difficulties with biosolids settling, and surrounding odor problems.

solution

In 1999, the plant's manufacturing facility moved to a larger nearby location, which provided Richardson Foods the perfect opportunity to upgrade the current system. They began evaluating different technologies that could effectively treat various flow and wastewater strength, without compromising discharge criteria. After an in-depth selection process, Richardson Foods selected patented ZeeWeed* membrane technology from SUEZ.

The ZeeWeed membrane bioreactor (MBR) system has the proven ability to treat highly variable wastewater. The system is completely automated, and eliminates the large volume of chemicals, and odors that were present in the old system.

This particular ZeeWeed MBR system is factory assembled, and has a modular design. This dramatically minimized the start-up time, as the new production facility was already in operation.

process overview

Facility wastewater is first discharged through an equalization tank, and then passes through a dissolved air flotation system to remove oil found in the feed. The water then flows to the aerobic reactor and finally to the ZeeWeed membrane tank. The mixed liquor is recycled back to the bioreactor at a high rate, to ensure the two tanks remain at the same concentration.

The ZeeWeed cassettes are immersed directly into the membrane tanks, and a gentle suction of -1 to -8 psi (-6.9 to -55 kPa) is applied.

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Permeate from this system is discharge to the local sanitary sewer system, and meets or exceeds the required limits. The treated effluent is of such good quality that Richardson Foods can blend wasted sludge back into the permeate, and still remain under the limits set out by the local treatment facility. This dramatically reduces the costs associated with sludge disposal.

The system is configured as one train, with two half-filled cassettes, to handle the average daily flow of 40,000 US gpd (151 m³/d) (which varies between 18,000 (68 m³/d) to 55,000 US gpd (208 m³/d)). The cassettes can be filled in the future if the plant capacity increases.

process flow diagram

