GE
Water & Process Technologies

Case Study

Canola Processor Uses RO System to Save 965,000 Gallons (3,900 m^3) of Water

Challenge

Canbra Foods Ltd. is one of the largest and oldest Canadian-based canola oil producers. As Canbra's manufacturing process demands the use of a large amount of steam, the plant requires a large amount of city makeup water.

In order to maintain the purity of the incoming water, the company used a basic softening system with the use of sodium zeolite softeners. The softening system, however, was not nearly as efficient as Canbra would have liked. There were other problems as well. The amount of water required by the system was excessive. What's more, it also used a tremendous volume of salt; which not only created a huge expense but also had a significant impact on the environment. And finally, fuel consumption in the boiler house was a concern to Canbra, since the burning fuel is a contributor of greenhouse gases to the atmosphere. Consequently, while the softener system was somewhat useful, Canbra was convinced that a different system would be more effective and decided to look for alternatives.

The question was, which alternative would be best? Canbra could have obtained a fairly high quality of water using weak acid cation system but in the end those systems would have cost twice as much as the original softening method. In addition, it would have required the company to bring sulfuric acid on site. It would have also required the construction of degasifying towers, a significant expense and an engineering challenge.

Canbra needed to have ultrapure water because without it, they would experience corrosion problems in their return systems. In the end, this would not only harm the system but would negatively impact the overall manufacturing process.

Solution

Canbra had initially formulated a plan to proceed with a weak acid cation system. However, after conducting some in-depth research, Canbra personnel determined that reverse osmosis (RO) might be a potential solution.

Subsequently, GE Water & Process Technologies provided Canbra with a Reverse Osmosis system. The system is used to supply high purity makeup water to the boilers.

Results

From June 2004, when the system was first installed, until June 2005, Canbra will have saved 965,000 gallons (3,900 m^3) of water. Part of this water savings is due to the decreased demand for softener regeneration, a process that uses 3,500 gallons (13 m^3) of water each time. In addition, through using only a ton of salt every day and half, about 230 tons of salt were saved. Finally, the RO system has helped the company reduce fuel consumption in the boiler house by 15%, which avoids the emission of over 3,000 tons of greenhouse gases in the atmosphere every year.

Canbra has achieved significant cost savings by reducing the amount of water treatment chemicals added to the boiler for water treatment by 80%.

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