INPROHEAT INDUSTRIES LTD.

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SubCom® Case Study:

JBS USA - Industrial Boiler Project

Location: Greeley, Colorado

Year Completed: 2015

Deliverables: Brine Evaporator and Salt Recovery

Project Overview

JBS USA is a processor and supplier of animal protein and leather in USA, Canada, Mexico and Australia. JBS operates a beef processing facility in Greeley, CO. Parent company JBS SA of Brazil, is the world's largest producer of beef.

The Challenge

Cow hides from the processing plant are cured in saturated brine to preserve them for shipping to tanneries. During the curing process, water from the cow hides dilutes the saturated brine, leading to excess volume of liquid in the curing facility. In order to maintain the solution balance, excess brine must be bled from the curing circuit. Treating the excess brine in the plant's water treatment facility does not remove the chloride from the water, and discharging it into the waterway has negative effects on the aquatic life. The objective of the Salt Save Plant is to recover the salt from the excess brine for reuse, thereby avoiding its disposal into the river.

The Solution

JBS approached Inproheat about applying SubCom® evaporation technology to their excess brine problem. Leveraging off the experience in treating produced water from natural gas wells, Inproheat designed and supplied a SubCom® evaporation system and design for the auxiliary salt recovery process.

The evaporator is designed to treat up to 20,000 gallons per day of brine from the hide curing plant. The excess brine is stored in tanks within the Salt Save building. The brine picks up organic content such as proteins, fats, and hair from the cow hides which would cause formation of foam and third phase compounds in the evaporation process. Because of this, JBS installed a DAF (dissolved air flotation) system to pre-treat the brine to remove a majority of the organic content.

The evaporator comprises a conical fibreglass tank, submerged combustion chamber, low emissions natural gas burner, combustion air blower, NFPA compliant fuel train, process control PLC with HMI, flame safeguard PLC, and process instrumentation. Cleaned brine is fed to the evaporator at a controlled rate. As the evaporation process proceeds, salt precipitates to form a slurry within the evaporation tank. A continuous stream of slurry is drawn from the bottom of the tank and pumped to a salt separation device adjacent to the evaporator. The salt settles in the separator vessel and is dragged out by an auger and deposited into tote bins for return and re-use in the hide curing plant. The separated solution is returned to the evaporator.

Through the evaporation of the water, the excess volume of brine from the cowhide curing process is eliminated and the salt that was formerly discharged to the river is now recycled to the hide curing process.

REQUEST INFORMATION:

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