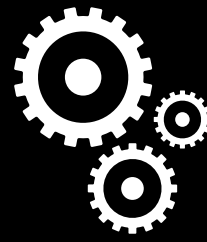


# JBS USA, LLC



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## COMPANY PROFILE

JBS, founded in 1953, is the world's largest meat processing company by sales. Headquartered in São Paulo, Brazil, JBS provides quality meat products to countries all over the world. The JBS facility located in Marshalltown, Iowa, produces, stores, and distributes the Swift Premium® and La Herencia® brands of pork and spends more than \$950 million on livestock purchases annually. With more than 2,200 employees representing several countries across the globe, the Marshalltown facility runs two processing shifts and one cleaning shift during each day, five to six days per week.

## PROJECT BACKGROUND

The JBS Marshalltown plant uses more than 740 million gallons of water annually. In an effort to reduce the amount of water used, a 12-week project was conducted to complete a full water usage analysis, identify water reduction opportunities, and recommend solutions that will reduce the water usage at the JBS Marshalltown plant. The goal of the project was to reduce the annual water usage by ten percent in order to increase utility efficiency and lower operating costs at the plant.

## INCENTIVES TO CHANGE

As a leading protein processor, JBS continuously seeks ways to maximize revenue, but also to emphasize environmental sustainability. JBS obtains 25 to 30 percent of the plant's water from the city, and 70 to 75 percent from underground aquifers. With the amount of water needed, the costs to obtain, treat and discharge this water are significant. A 10 percent reduction in well water usage could save JBS more than \$250,000 annually in associated costs. Identifying and implementing water-saving solutions will help JBS meet their environmental goals, reduce operating costs and increase company profit.

## RESULTS

**Kill Floor Water Turn-Off Program:** Sinks, eye wash stations, 180°F sanitary hot boxes, rotating saws, tray sprayers, and a visceral pan sprayer all use water throughout both processing shifts. During each kill-floor employee break, several of these applications still run water. These applications are also left running during three hours of overnight cleanup, resulting in a total of approximately 300 minutes of excess water usage for

each running application daily. Adding conveniently placed shut-off valves and manually turning off the water to these applications when processing stops could eliminate nearly 4.9 million gallons of water annually.

**Addition of a Wastewater Cooled Condenser:** Every production day, 800,000 to 1,200,000 gallons of well water are used to condense steam created from cooking inedible products, increasing the temperature of the cooling water to 140°F. The plant houses two hot water tanks that can store a total of about 320,000 gallons of



**Closed-loop Cooling Process:** Cold water is used to cool a meat harvester located in the ham boning area of the plant as well as two large bearings located in the rendering area. Each stream of cooling water currently runs through their respective machines as a once-through process. By adding small ammonia cooled chillers near each of the machines and running both of these cooling processes through their chillers, each process can be set up as a closed loop cooling process instead of a once-through system. This process could save 7,185,000 gallons of water that is currently used each year for cooling.

**Hog Barn Spray Repairs:** In order to keep hogs cool throughout the day, sprinkler-like sprays controlled by solenoid valves are turned on for one minute, two to 12 times every hour depending on the time of year. The sprays run at an average of three gallons per minute, and two of the solenoid valves controlling four of the sprays were malfunctioning. The malfunctioning solenoid valves caused the sprays to run 24 hours per day. By repairing the broken solenoid valves, 1,051,000 gallons of water were saved annually.

this water, but once the tanks overflow, the overflow 140° water is sent to the anaerobic lagoon as wastewater. Adding a third shell and tube condenser that runs in parallel with the existing condensers and is cooled by DAF effluent wastewater, could significantly reduce the loading on the two existing condensers. With reduced loads, the existing condensers would only require enough well water to fill the plant's hot water tanks every day, reducing the annual water usage by 119,354,809 gallons. An added benefit of a third condenser is that the temperature of water entering the anaerobic lagoon can be more easily maintained in order to maximize the efficiency of the lagoon without having to heat the wastewater with an additional process.



PROJECT	ANNUAL COST SAVINGS	ANNUAL ENVIRONMENTAL RESULTS	STATUS
KILL FLOOR WATER TURN-OFF PROGRAM	\$19,366	4,880,694 gallons	RECOMMENDED
ADDITION OF A WASTEWATER COOLED CONDENSER	\$421,129	119,300,000 gallons	RECOMMENDED
CLOSED-LOOP COOLING PROCESS	\$25,925	7,185,000 gallons	RECOMMENDED
HOG BARN SPRAY REPAIRS	\$3,710	1,051,000 gallons	IMPLEMENTED

