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COMPANY PROFILE

As the second largest food company in the world, JBS USA operates 63 processing facilities and 31 prepared food facilities dedicated to producing, packaging and delivering premium meat and poultry products to consumers around the globe. The JBS USA Pork facility in Ottumwa, Iowa, processes more than 19,000 hogs per production day, employs more than 2,200 team members representing as many as 36 countries, and runs two production shifts as well as a sanitation shift for five to six days a week.

PROJECT BACKGROUND

The JBS USA Ottumwa facility uses a large volume of water for cooling operations in the rendering facility. This process produces heated (140°F) water that can be used in other production operations. However, the facility produces much more of this heated water than can be used throughout the plant, and the excess must be discharged. JBS USA management would like to reduce the overall water consumption of the plant by 15 gallons per unit harvested, and is targeting the rendering facility's production of 140°F water in an effort to achieve this goal.

INCENTIVES TO CHANGE

In 2017, the JBS USA Ottumwa facility was recognized by the U.S. Environmental Protection Agency, Region 7 with a Pollution Prevention Award for water conservation efforts and plant-wide improvements. JBS USA Ottumwa intends to carry this momentum forward to bring about additional water conservation projects and achieve more source reduction within the facility. The company also seeks to be an industrial leader of good environmental stewardship for the city of Ottumwa. Water distributed within the city comes from the Des Moines River, and as a discharge site, the JBS USA Ottumwa facility aims to lead by example in pollution prevention efforts.

RESULTS

Air-Cooled Condenser Assist: Condensing operations within the rendering facility produce 140°F water for the plant as a byproduct of a water-cooled heat exchanger. The heated water becomes a source of cleaning water for sanitation and is used for other plant operations as needed. In the summer months, the JBS USA facility will produce 140°F water in excess due to high incoming cooling water temperatures to the heat exchanger. After treatment, this excess is discharged

from the facility back to the Des Moines River. The addition of an air-cooled condenser assist to allow switching between air-cooled and water-cooled condensing would allow for the JBS USA facility to regulate 140°F water production and eliminate the excess 140°F water that is produced. To carry this recommendation forward, JBS USA Ottumwa management must determine if funding is available to support the project and select a vendor to which the project would be contracted.

Rendering Moisture Reduction: The purpose of a rendering facility at any meat processing plant is to turn inedible "waste" products into marketable ones. This is partially accomplished by drying inedible raw material and selling it as dried meat and bone meal. The drying process within the JBS USA Ottumwa rendering facility uses indirect heating via steam to evaporate moisture out of raw material entering the facility's disc dryer. The vapors produced in the drying process are condensed in the water-cooled heat exchanger on the roof



of the rendering building. Any excess moisture present in the raw material entering the dryer will require more steam to evaporate it off, and will create more vapors to condense, leading to increased water consumption. The reduction of this excess moisture in raw material can be accomplished through the installation of dewatering equipment such as screens, and the implementation of behavioral changes on the production floor such as increasing dry pickup efforts prior to power washing. The intern calculated that a 5 percent reduction in excess moisture would be an attainable goal. To implement this recommendation the rendering team at JBS USA Ottumwa must pilot test various dewatering equipment for its effectiveness on eliminating excess moisture. Initial reductions could be achieved with new standard operating procedures for dry-pick up to reduce excess moisture and initiate behavioral changes within the facility.

Flow Meter Installation: The installation of flow meters to sub-meter by department and collect water usage data each shift would allow for management to better understand where large amounts of water are being used, and help pinpoint possible opportunities for source reduction. Conservative use of water data generated by sub-metering could lead to a calculated 3 percent savings in the facility's annual water usage. To move forward with this recommendation management must determine the scope and locations of the meters and budget for the purchase and installation of the monitoring equipment.



Leak Identification and Repair Plan: An extensive water distribution system is required to effectively supply water to each portion of the JBS USA Ottumwa plant. Since its construction in 1976, many additions have been made to the original building and as a result pipe systems in the facility are vast and complex. Keeping track of leaks within such an extensive water distribution system is a challenge. Implementation of a leak identification and repair plan that would re-assign the task of identifying system leaks to team members throughout the plant would ease the work-load of maintenance personnel. This plan would also allow for leaks and their subsequent repair to be identified, tracked and documented in a timely fashion. A robust leak identification and maintenance plan has the potential for a five percent reduction in water consumption within the JBS USA Ottumwa facility. The water conservation team has begun to move forward with this recommendation, beginning to allocate personnel to identify and repair leaks in different departments. To fully develop and implement the suggested plan, standard methods for identification and tagging and a standardized maintenance request form for repairs must be developed, along with formal documentation of their finalized process.

PROJECT	ANNUAL COST SAVINGS	ENVIRONMENTAL RESULTS	STATUS
AIR COOLED CONDENSER ASSIST	\$142,648	47,734,661 gallons water 7,150 gallons sodium bisulfite	RECOMMENDED
RENDERING MOISTURE REDUCTION	\$173,799	19,414,373 gallons water 229,879 therms	RECOMMENDED
FLOW METER INSTALLATION	\$154,064	20,395,091 gallons water	RECOMMENDED
LEAK IDENTIFICATION AND REPAIR PLAN	\$256,773	33,991,818 gallons water	IN PROGRESS

