

# PORK PROCESSING FACILITY CASE STUDY

## PORK PROCESSING FACILITY IS PROVIDED WITH HOT WATER SOLUTION

When a pork processing facility operated by Perdue Premium Meat Co., located in Sioux City, Iowa, needed hot water for sanitation wash down, it partnered with Kemco Systems to install reliable and efficient Direct Contact Water Heaters (DCWHs). The facility was provided instant hot water for sanitation and production hot water as needed.

Perdue Premium Meat Co. is located within the heart of pork production country in the United States. Traditionally, pork processing facilities are constructed within a 100-mile radius of their farms supplying pork. This facility was built due to high demand in the geographical area.

The new pork processing facility is operating at maximum capacity. As such, this facility wanted to prioritize eco-friendly efforts and reduce utility costs. Kemco's DCWH reduces water heating costs by approximately \$19,757 per year for the primary heater, not including the backup heater, as compared to conventional gas-fired heaters or boilers operating at 65% efficiency at this facility. The GHG ton reduction by installing this DCWH is estimated to be at 147 tons per year for this facility. With its 99.7% efficiency rate, the DCWH will provide both energy conservation and financial savings.

### SIGNIFICANT SAVINGS

**147 TON GHG  
REDUCTION**

**FOR THIS MAXIMUM  
PRODUCTION FACILITY**



Kemco is the leader in Direct Contact Water Heater design, which this facility turned to our historically trusted technology. In 1978, Kemco introduced the first direct contact water heater and has maintained its industry leading reputation ever since as it continues to service the food processing industry with sanitation needs. Food processing facilities need hot water on demand and as needed for sanitation. The Kemco DCWH allows for on-demand hot water stored or direct-to-process. Two DCWHs were installed for a fully redundant system for ease of future maintenance and emergency hot water needs at this facility.

## PROJECT OVERVIEW: THE PROBLEM

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A key consideration in choosing Kemco was efficiency in thermal energy for direct-to-process. The Kemco DCWH has an efficiency rate because it minimizes loss of energy from the stack. As such, the Perdue team saw the DCWH as advantageous over boilers, which only manage a 65% total system efficiency due to their blow down and their larger steam loop for thermal losses with little to no condensate return.

DCWHs were the obvious choice for Perdue's applications and specifications. Kemco installed two 3 million BTU direct contact water heaters at the facility. Notably, unlike competitors, Kemco's DCWHs provide hot water within 15 minutes of startup compared to the several hours needed by competing equipment. Kemco has accomplished its unique design through a patented direct contact process between flame and water that captures all the flame's heat energy, allowing for the fastest and most efficient water heating process. This eliminates the need for facilities to plan production around hot water availability or heat during peak production times.

The non-pressure vessel design of the direct contact water heater eliminates the need for a licensed operator, which is standard for boilers. The DCWH also removes the need for boiler feed chemicals and reduces maintenance costs. In many cases, the Kemco DCWH can completely replace steam, providing a fully steam-free heating system. In the case of this facility, there are no boilers present. Kemco's DCWHs are the main source for generating hot water.



## THE SOLUTION

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Our team of engineers evaluated the facility's needs, including its water supply and existing equipment, alongside processing production goals. Kemco manufactured all equipment in 304 stainless steel to ensure years of trouble-free service. To complement the DCWH functionality, two large hot water tanks were also installed to allow the facility to take advantage of free heat from their ammonia compressor system, when available, thus contributing to an even greater reduction of energy usage with the total Kemco system. Finally, Kemco conducted start-up and training for employees at the facility within NSF certification standards.

The onsite training/startup was extremely helpful for Perdue maintenance and operation personnel to understand the day-to-day operations as it was commissioned with the tech. "The training and ease of operation really confirmed our faith in the system and ensures our success," said Roger Saylor, Project Manager for Perdue Premium Meat Co.

Kemco's direct contact water heaters are NSF-certified food equipment. NSF-certified food equipment undergoes rigorous third-party testing to ensure compliance with all NSF and FDA standards. Certification criteria go beyond performance, assessing factors such as design and material selection. Machinery must be easily cleanable and any materials in contact with food must not compromise product integrity. With health and safety at stake, NSF certification serves as a trusted mark of quality and reliability for industry professionals and consumers alike.

## CONCLUSION

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**FROM DESIGN TO INSTALLATION, THE FULLY INTEGRATED WATER HEATING SYSTEM MEETS THE NEEDS OF THIS PORK PROCESSING FACILITY. WATER HEATING AT OUR 99.7% EFFICIENCY RATE PROVIDES ENERGY SAVINGS FOR A GREATER ROI.**