THE GREAT GOURMET

A Food Processor Case Study

Mathias Ag Program

Maryland Energy ADMINISTRATION
Powering Maryland's Future

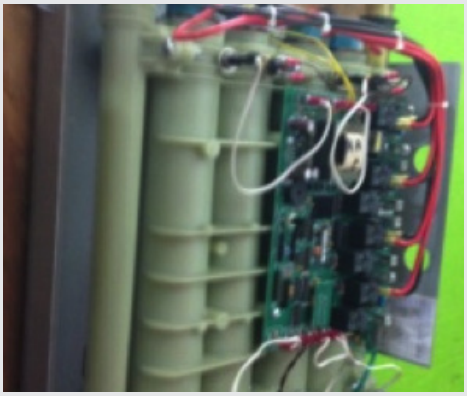
Kim Scott operates a food processing facility in Federalsburg, Maryland. For over 10 years, The Great Gourmet has been providing crab cakes and other seafood products to customers across the country. In 2008, it was named to the Inc. 500 in recognition of its status as one of the fastest growing private companies in the U.S. And in Kim's plans for continued company growth, energy efficiency plays an important role.

The Great Gourmet spends about $52,000 each year on electric energy. The facility has several large walk-in freezers and coolers that operate year round and account for a significant portion of the annual electric consumption. With utility costs climbing ever higher, Kim was eager to find a way to protect her company's bottom line. When she learned of a new grant opportunity through the Kathleen A.P. Mathias Agriculture Energy Efficiency Program to help pay for energy efficiency measures, she decided it was time to make the following improvements to the facility:

Refrigeration controls deliver energy savings by enabling refrigeration units to work more efficiently. Solid-state floating head pressure controls for the large condensing units vary the head pressure based on outside air temperature, so the units only work as hard as they need to. Updated evaporator fan motors operate more efficiently than previous models, and defrost controls for walk-in refrigerator/freezer units deliver additional savings.

Solar hot water systems use the sun to heat water efficiently. In this closed-loop system, water in the solar loop is pumped to flat plate solar thermal collectors on the roof, where it is heated; the heat is then transferred to domestic hot water in the storage tank through a flat plate heat exchanger with 90% efficiency.

On-demand water heaters heat water only when it is needed, which eliminates standby losses—the energy lost from continually warming water that sits in a hot water tank. For The Great Gourmet, these units will provide hot water when the solar hot water system cannot fully meet the facility's needs.



These measures will reduce the electricity costs associated with The Great Gourmet's refrigeration and water heating by 22.8%. As shown in Table 1, the expected annual cost savings is $11,936.

Table 1: Implemented Efficiency Measures and Associated Savings

Recommended Measure	Electric Savings (kWh)	Estimated Annual Energy Cost Savings	Installed Cost	Estimated Payback in Years
Refrigeration Controls Install solid state floating head pressure controls for the large condensing units. Install 50 brushless, high efficiency, electronically commutated evaporator fan motors. Install defrost controls for walk-in refrigerator/ freezer units.	93,170	$9,680	$78,208	8.1
Solar Hot Water Install a drain back solar thermal heating system with flat plate solar thermal collectors, drain back accumulator tank, collectors and building loop circulation pumps, controller and accessories, solar thermal hot water storage tank, and a compact high-efficiency heat exchanger.	17,541	$1,823	$42,848	23.5
On-Demand Water Heaters Replace one large electric hot water heater with a propane-fired, high efficiency, on-demand water heater. Replace three smaller electric hot water heaters with tankless, electric high-efficiency, on-demand water heaters.	4,166	$433	$3,850	8.9
Totals	**114,877**	**$11,936**	**$124,906**	**10.5**

The equipment was installed in April 2013, and while Kim is relieved that smaller energy bills are helping her funnel more money into growing her business, she also appreciates an added benefit. "I think all businesses should look at ways to shrink their footprint," she said. "I feel blessed to be able to do something good for the environment and save money at the same time; it's wonderful for us."

The energy efficiency measures implemented at The Great Gourmet hold promise for other food processing facilities with significant refrigeration and water heating needs. The 10.5 year payback on these measures is well within the service life of the equipment, making it a cost-effective investment for businesses looking for a competitive edge.