

High Liner Foods Touts Energy Savings, Cuts Thousands of Dollars in Production Costs

NH MEP Demonstrates How Lean Manufacturing Drives Energy Efficiency

Concord, NH – The energy savings achieved in a tri-state New England pilot project offer the promise of helping manufacturers cut energy costs. Based on the impressive results of pilot project participants, the New Hampshire Manufacturing Extension Partnership ([NH MEP](#)) announced that it would continue the initiative and urged manufacturers across the state to take advantage of the program.

“The Lean Energy and Environment pilot project helped us identify more than \$200,000 in opportunities for energy efficiency at our Portsmouth manufacturing facility,” said [High Liner Foods](#) Vice President Art Christianson. One of North America’s largest value-added seafood processors, High Liner Foods was selected as one of two New Hampshire companies to participate in the test pilot.

Developed by the New Hampshire, Massachusetts and Maine Manufacturing Extension Partnerships (MEP) in collaboration with the U.S. Environmental Protection Agency (EPA), the pilot project was designed to field test EPA’s energy and environment toolkit and integrate it into the lean manufacturing techniques employed by the MEPs.

“High Liner Foods is a great example of the kind of energy savings that can be achieved by our Lean Energy and Environment initiative,” said NH MEP Operations Manager Zenagui Brahim. “Traditional energy audits review a company’s facility and look for opportunities to update equipment or lighting. With our Lean Energy approach, however, we analyze the production process itself from beginning to end with the goal of cutting energy consumption. In the case of High Liner Foods, the project team revamped the production process, cutting 10 days off refrigeration time for one product and designing a heat recirculation system to capture energy that previously was lost.”

The pilot project kicked off at the Portsmouth facility of High Liner Foods with a one-day lean education event designed to introduce employees to the assessment process that would be used to identify and eliminate waste. That was followed by a 2.5 day value stream mapping exercise led by MEP project managers in which the project team brainstormed ideas about potential energy savings. The team decided to focus on the company’s mozzarella cheese stick line because it utilizes more equipment than any other product line, and therefore seemed to offer the greatest potential for energy savings.

A walkthrough of the production facility with a certified energy auditor quickly identified areas for initial savings. In a 100-foot area lighting far exceeded recommended levels, and the area was delamped for immediate energy savings.

Other more challenging issues that emerged from the value stream mapping exercise were tackled in a series of “kaizen” events, or rapid process improvement events, designed to develop solutions for energy and environmental improvements. Four of the largest energy-saving proposals included:

- Changing the initial handling of the raw product. The mozzarella previously was purchased in 40,000 lb. lots from a Vermont cheese maker and then refrigerated for 10 days at minus 11°F to enhance its stretchiness. The project team proposed flash freezing the cheese at minus 70°F, which would achieve the same consistency while eliminating the energy required for 10 days of refrigeration.
- Minimizing the use of compressed air. Compressed air is one of the most frequently overlooked sources of energy savings and is often widely used when other less costly alternatives are available. In the mozzarella stick production line compressed air was used to blast each carton on the packaging line to ensure that it was full. The MEP project manager, having read of the latest electro-mechanical

techniques used by European food processors, identified a less expensive alternative involving photo-sensor detection and a mechanical rejection system. The project also repaired leaks in the compressed air lines that were resulting in thousands of dollars of lost energy.

- Creating variable frequency drives for the hydraulic pumps, compressed air systems and portable heater units. Previously, these systems had no way to incrementally increase their output. Additional demand required putting on another 50 HP compressed air unit or 70 HP hydraulic pump. The solution: create variable drive systems that could dial up additional compressed air, heat or hydraulic volume as needed.
- Recycling heat from the deep fryer. Previously, heat from the deep fryers was unused. The project team devised a heat recycling system that utilized energy from the deep fryer to preheat the 30,000 gallons of water used daily in the production process to 100°F. From this preheated stage, the water only needed to be heated the marginal increment to 140° or 150°F, thereby saving large amounts of energy. A water recovery system also was developed for both hot and cold water, reducing water consumption and improving the process' environmental impact.

In the end the pilot project identified more than \$200,000 in energy savings opportunities for High Liner Foods, including electricity (\$108,800), compressed air (\$48,000), water consumption (\$21,500), hydraulic power (\$13,000) and heat recovery (\$26,600). High Liner targeted \$90,000 in energy savings projects for the first year and has already begun to realize the payback on its investment.

“The outstanding results of the pilot projects in New Hampshire have led us to offer the new Lean Energy and Environment program to manufacturers throughout the state,” Brahim stated. “We’re convinced that the program provides value to companies of every size — from the largest industrial users to small manufacturing operations. For companies concerned about cutting costs, lean and green is the wave of the future.”