Canadian Industry Program for Energy Conservation

CIPEC

Case Study:
Maple Leaf Foods Inc.
Corporate Energy Efficiency Strategy

When it comes to energy efficiency, Maple Leaf Foods Inc. is applying the same focus and commitment to energy efficiency that has made it a leader in a range of food industry categories.

In 2001, the company began a process aimed at transforming how everyone in the organization thinks of energy. Ambitious targets and strong leadership from the executive team set the tone. Key to the company's success is a corporate culture that encourages initiative and input from all staff – Maple Leaf Foods Inc. is evolving into a company that has energy efficiency embedded in everything it does.

Along the way, it has benefited from the support available to industrial companies from Natural Resources Canada's (NRCan's) Office of Energy Efficiency. In addition to enjoying bottom-line improvements through energy efficiency, in 2005, Maple Leaf Foods Inc. received an honourable mention at Canada's Energy Efficiency Awards ceremony, sponsored by NRCan, for a heat recovery project.

Highlights

- Energy intensity reduced by more than 6 percent
- Annual energy saving exceeded $8 million
- Savings achieved through a structured and multifaceted approach to energy efficiency

Objective

In 2000, when energy prices began to rise, Maple Leaf Foods Inc. set up three teams to look at energy efficiency: one focused on purchasing, another on investigating alternative sources and the third on reducing energy consumption. Today, the energy efficiency team has expanded and still meets regularly. Comprised of people from different areas of the company, including senior executives, the team is working toward a day when energy efficiency will be part of everyone's work at Maple Leaf Foods Inc.

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Company profile

Maple Leaf Foods Inc. is a leading Canadian food processor, exporting to over 80 countries. It is Canada's leading producer of pork, branded poultry and bread. Company operations are organized into 13 independent operating companies and two major groups: protein value chain operations and bakery products operations.

Headquartered in Toronto, Maple Leaf Foods Inc. had sales of $6.4 billion in 2004. The company employs about 23 000 people in Canada, the United States, Europe and Asia.

Energy use profile

Today the company's annual energy bill is around $80 million. Maple Leaf Foods Inc. operates over 120 plants, with the 10 biggest plants accounting for 50 percent of the company's energy use. This range in plant size and energy use poses a challenge when it comes to developing company-wide energy management solutions.

Project profile

From the beginning, in 2000, Maple Leaf Foods Inc. took a structured approach to energy efficiency. Many organizations make progress on energy efficiency in the early stages of a project, but then the results begin to slide as a lack of structure and consistency impedes progress.

Maple Leaf Foods Inc. avoided this pitfall by designating key senior executives to spearhead the drive to greater energy efficiency. The Vice President, Corporate Engineering, was designated as Corporate Energy Champion. Maple Leaf Foods Inc. also established three groups focused on energy efficiency. The Energy Cost Reduction Group and the Alternative Fuels Group are chaired by the Corporate Energy Champion. The Energy Purchasing Group is led by the company's Chief Financial Officer.

Quarterly Energy Council meetings

To ensure that Maple Leaf Foods Inc.'s structured approach to energy efficiency continues to produce results, quarterly Energy Council meetings are held in the Toronto area. Representatives attend from the three energy efficiency groups and from the Independent Operating Companies (IOCs) under the Maple Leaf umbrella.

At the Energy Council, IOC Energy Champions must

- report on the energy intensity of their facilities
- explain fluctuations in energy use
- outline current and future energy efficiency projects
- share best practices
- review new and innovative technologies

Energy Champions, tools and training

IOC Energy Champions also organize meetings with facilities under the umbrella of their IOC. This helps to drive the energy program down to the plant level and ensure key company-wide initiatives are adopted. A variety of tools and training sessions are available to help Energy Champions achieve their mission.

Maple Leaf Foods Inc. is currently drafting an energy efficiency reference document. It includes checklists, case studies, information on NRCan tools and training, utility program information, useful links, and contacts. Plants also hold energy efficiency awareness days for employees and promote the use of such tools as audit checklists. Employees can win cash rewards if they promote energy efficiency.

One of the most important checklists is the plant audit checklist. This comes in weekly and daily formats to ensure that equipment is shut off. And there are also more formal audits. Maple Leaf Foods Inc. has participated in the Industrial Energy Audit Incentive and other programs offered by utilities.

Maple Leaf Foods Inc. also trains staff through NRCan's Dollars to $ense energy efficiency workshops. The company has found that working with NRCan helps to keep it updated on energy efficiency technology.

Six Sigma and energy efficiency

Six Sigma is a rigorous and disciplined methodology that uses data and statistical analysis to measure and improve performance. It plays a large role in Maple Leaf Foods Inc.'s overall operations. A large part of the company's success in driving energy efficiency throughout its operations can be attributed to Six Sigma. It also gives Maple Leaf Foods Inc.'s staff a common problem-solving framework and language for energy efficiency projects.

Change agents, referred to as "Black Belts," are involved in energy efficiency projects, and some attend Energy Council meetings. Black Belts are full-time Six Sigma project team leaders responsible for project implementation. They are knowledgeable and highly skilled in the use of Six Sigma methodologies and tools, as well as in facilitation and change management.

Energy efficiency expenditures assessment

Maple Leaf Foods Inc. allocates capital based on return on net assets (RONA), and energy efficiency projects compete under the same rules. RONA has a positive bias toward energy efficiency because savings do not rely on increasing production or sales volumes. Energy efficiency projects can also be good for the bottom line because they help shield the company against volatility in natural gas and electricity prices.

Results

In 2001 and 2002, Maple Leaf Foods Inc. identified over $10 million in energy saving opportunities. By early 2005, more than $8 million had been saved.

The company sets targets based on energy used per kilogram of production (or energy intensity). From 2001 to 2003, Maple Leaf Foods Inc. targeted a 5 percent annual reduction in energy intensity and achieved, on average, about 3.1 percent annually.

Energy intensity targets for 2004–2005 were set at 3 percent and, by having implemented most of the available low and "no-cost" energy efficiency measures, the company has exceeded its own expectations. In fact, in 2004, energy intensity was reduced by 6.6 percent.

For the foreseeable future, the company plans to target annual reductions in energy intensity in the range of 3 to 5 percent.

Honourable mention in Canada's Energy Efficiency Awards 2005

Keeping 16 million kilograms of meat cool every year uses a lot of energy at the Maple Leaf Consumer Foods' plant in Winnipeg. A commitment to using less energy spurred this subsidiary of Maple Leaf Foods Inc. to install a heat recovery system that could serve as a model for Canada's food processing industry.

The Winnipeg plant uses two ammonia refrigeration systems to cool meat products and to maintain cooler and freezer temperatures. The main refrigeration system for the plant consists of nine compressors with a total power of 2450 horsepower (hp) (1828 kilowatt (kW)) and eight condensers with a total power of 285 hp (213 kW).

The project included installing a heat exchanger to recover heat from the hot gas discharged from the compressors before it enters the condensers. These compressors operate at full load all the time and provide a constant source of heat. The recovered heat is used to offset the amount of steam supplied by the boiler for process water heating. Previously, all of the hot gas discharged was directed to the condensers at roof level, where the heat was released to the outside air.

The heat exchanger reduced the boiler's natural gas consumption by 22 percent, which translated into a 12 percent drop in energy use. The payback period for the project is estimated to be less than two years. Annual savings are estimated to be over $100,000.

Secondary benefits

Maple Leaf Foods Inc. is also enjoying secondary benefits from its focus on energy efficiency. In going after energy savings, the company has had to live up to the "manage by measurement" philosophy embedded in its corporate culture. This focus on measurement has helped Maple Leaf Foods Inc. continuously improve how it manages its operations in ways that extend beyond energy efficiency.

Focusing on energy efficiency is also helping Maple Leaf Foods Inc. stay on the cutting edge with regard to equipment. By encouraging staff to think of energy efficiency in everything they do, purchasing decisions for equipment (e.g. ovens) are not made on cost alone. When energy efficiency is part of the equation, the equipment that is purchased often incorporates the best technology.

Future direction

Despite the successes to date, Maple Leaf Foods Inc. executives and staff recognize there is still room for improvement. Real-time monitoring of energy use and more training are just two approaches being considered.

A more ambitious development in Maple Leaf Foods Inc.'s approach to energy efficiency in the future is embodied in the completion of a process integration study funded in part by NRCan. Typical of its aggressive approach, the company plans to have process integration rolled out across the organization. Process integration goes well beyond traditional energy audits. It takes a systematic and rigorous look at all the ways energy is used in a facility and how different systems interact with each other. It gives engineers a way to identify the inefficiencies in a process and select the best opportunities for improvement.

Critical success factors

Maple Leaf Foods Inc.'s energy-efficient culture did not develop by accident. Inspired leadership from the CEO and other senior executives galvanized middle management and front-line staff. "Make energy efficiency part of everyone's work" is more than just a slogan at Maple Leaf Foods Inc. – it describes where the company is headed.

This culture thrives because it is supported by a structured approach with regular meetings and aggressive targets focused on continuous improvement, ensuring that energy efficiency will always be part of Maple Leaf Foods Inc.'s performance-driven business model.

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The digital mosaic of Canada which appears on the cover of this publication is produced by Natural Resources Canada (Canada Centre for Remote Sensing), and is a composite of individual satellite images. The colours reflect differences in the density of vegetation cover: bright green for dense vegetation in the humid southern regions; yellow for semi-arid and mountainous regions; brown for the far north where vegetation cover is very sparse; and white for the Arctic regions.

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