



THE NEXT REVOLUTION

THE GROWING ROLE OF ENERGY EFFICIENCY IN
ONTARIO'S AUTO SECTOR

Energy Efficiency in Automotive

Brought to you by the Independent Electricity System Operator and your local electric utility.



Conventional wisdom used to be that increased demand for electricity was a great indicator of economic growth. The logic was simple—the more we produce, the more energy we must need. Not anymore. Today, businesses throughout Ontario have embraced energy efficiency as a key to greater competitiveness. For them, using less energy actually powers new business opportunities.

Between 2011 and 2014, Save On Energy business programs saved 4,077 GWh of energy and 389 MW of demand in the province. With energy efficiency, businesses can realize substantial energy savings, but also improve their cost structures, processes and overall competitiveness. Some businesses see improved employee engagement, for others it means reinforcing ties with their community, and for others still, it translates into a better customer experience. And perhaps most of all, many value the opportunity to contribute to the health and well-being of their communities by using energy wisely.

To help businesses continue to move forward toward greater efficiency and competitiveness, the province has introduced a new approach that puts energy efficiency ahead of all other supply options. This approach, “Conservation First”, is designed to take us to the next level of energy savings.

With ambitious new energy reduction targets in place, the bar is set higher now than it's ever been. Save On Energy programs delivered by local electric utilities have been re-designed to ensure that, together, businesses can meet provincial goals while at the same time reaping the rewards of sound internal energy management practices. Looking ahead, there will be even greater opportunities for businesses to reduce their overhead through retrofits, energy audits, lighting and equipment upgrades.

This publication will help you find ways to take advantage of the many benefits of using energy wisely. In reading about different approaches to energy management, and business leaders' determination to turn great ideas into great results, perhaps you'll find the inspiration to do the same. To find out more about what energy efficiency can do for your business, visit saveonenergy.ca or contact your local electric utility (ieso.ca/findutility).

Terry Young

Vice-President, Conservation and Corporate Relations
Independent Electricity System Operator

THE PAST 25 YEARS HINGED ON PRODUCTIVITY. THE NEXT QUARTER-CENTURY WILL BE ALL ABOUT ENERGY

BY DAVID KENNEDY

The legacy of 'lean'

In 1988, when the phrase “lean manufacturing” first appeared in a relatively obscure business journal, few could have predicted two simple words would revolutionize the auto industry. Nevertheless, little more than 10 years later, lean had become dogma in plants across North America. To cut costs and stay competitive, the North American auto plant reinvented itself.

Today, Ontario's automotive sector faces a much different set of challenges. With mounting pressure to contribute to increased cost competitiveness and an urgent need to adjust to legislative changes that will put a cap on greenhouse gas emissions, the industry is again undergoing major changes.

The next step forward

On this point, a group of automotive energy managers from some of Ontario's largest original equipment manufacturers (OEMs) and suppliers met in a Toronto boardroom to discuss how the province's automotive sector is rethinking energy management and overhauling its approach to conservation.

The changing cost equation

Energy bills are rarely an auto plant's highest operating cost, often accounting for between eight and 20 per cent. However, increases in Ontario electricity prices over the past 15 years have led many companies, such as General Motors of Canada, to redouble their conservation efforts.

Meanwhile, more stringent environmental regulations are making it even more important for industry to act.

“For us, it has really been about driving cost reduction and trying to be more competitive,” said Ray Warner, utility manager at GM.

Like plants that resisted shifts toward lean manufacturing, those looking the other way on conservation are likely to be left behind.

“By putting in this energy efficiency [strategy], you're future-proofing your business,” said Shane Carnegie, electronic product specialist with SEW Eurodrive.

Energy efficiency trends were the focus of a related research survey conducted in 2015 by Annex Business Media. Powered



FRONT ROW, L-R: - Shane Carnegie, Electronic Product Specialist, SEW Eurodrive; Emily Aguiar, Director of Corporate EH&S, Martinrea International; Tim Collins, Conservation Engineer, Erie Thames Powerlines Corp.; Cliff Lester, National Manager of Business Development and Automotive Industry Specialist, SEW Eurodrive; Agatha Pyrka, Industrial Business Manager, Independent Electricity System Operator (IESO)
SECOND ROW: Michael Ouellette, Editor, CanadianManufacturing.com; Kia Barkhordari, CDM Supervisor, Industrial, Enersource Mississauga; Gaspare Provenzano, CDM Account Specialist, Powerstream Inc., Ryan Ram, Energy Manager, Canadian General Tower
BACK ROW: Ray Warner, Site Utilities Manager, General Motors of Canada Ltd.; Dan Moca, Energy Manager, Husky Injection Molding

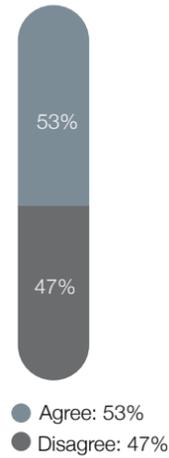
by the Independent Electricity System Operator (IESO), the survey polled more than 500 executives across sectors to gauge their perceptions around energy conservation. The survey found eighty-five percent of respondents who have conducted an energy audit realized financial savings from the exercise; and 53 percent of respondents agree the energy efficiency strategy at their company provides a competitive advantage.

One of the leading reason companies postpone or avoid retrofits is a long pay-

back period, a finding the group echoed. “[Companies] base everything on ROI,” Gaspare Provenzano, CDM account specialist at Powerstream, said. “If it’s outside of one year ROI, you can almost forget about it.”

Between rising energy costs, incentive programs, and uncertainty around future electricity prices, however, retrofits such as state-of-the-art LED lighting and variable frequency drive motors are becoming cost avoidance measures and playing a central role in corporate strategic planning.

COMPETITIVE ADVANTAGE: THE SURVEY SHOWED 53% OF RESPONDENTS AGREE “THE ENERGY MANAGEMENT STRATEGY AT MY COMPANY PROVIDES A COMPETITIVE ADVANTAGE”



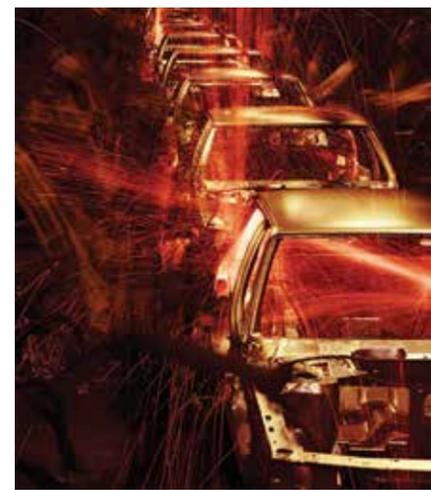
THE LOW-HANGING FRUIT INDUSTRY LEADERS ARE TARGETING FIRST

Lighting

One of the few systems essential to operations across the board is also one that offers excellent returns for a low investment cost.

Even for firms that have yet to make energy savings a priority, a lighting retrofit is an easy, commonsense upgrade.

“Energy for us, per part isn’t actually our highest cost,” said Emily Aguiar, director of corporate environmental health and safety at Martinrea International. “When we’ve been looking at investing capital it hasn’t been where we’ve put our money.”



Nevertheless, Martinrea was quick to see the bottom-line benefits of a lighting upgrade. As a result, the company recently retrofitted many of its older buildings with newer, more energy efficient lighting systems.

With high energy efficiency, excellent light quality and significantly longer life than alternatives, LED lighting is the premiere choice for a retrofit.

Compressed Air Systems

Whether it’s as simple as minimizing leaks in an old compressed air system, or upgrading to a more efficient system, business can realize significant savings.

“The easiest thing to go after is to find those leaks...and there are leaks everywhere,” said Ryan Ram, energy manager at Canadian General Tower. “It’s one of the easiest ways to build momentum in the plant and of build an awareness with folks

“The easiest thing to go after is to find those leaks...and there’s leaks everywhere” **Ryan Ram, Canadian General Tower**

in the plant.”

With such a wide range of compressed air systems, it’s important companies do their research. For example, Ram said by replacing the refrigerated dryer on CGT’s compressed air system with a desiccant dryer, which was better-suited to operations, CGT was able to save around \$120,000 per year.

Chiller Systems

Regardless if a plant uses a series of smaller, decentralized chillers or an industrial-sized central system, optimizing chilled water can translate to dramatic energy savings.

Husky Injection Molding for instance, has been working to replace its old chillers with new systems, and is currently installing its final turbo chiller. Dan Moca, energy manager at Husky, said his team is also fine-tuning the new machines to maximize conservation.

ENSURING LEADERSHIP MAKES CONSERVATION A PRIORITY

Despite the benefits of upgrades, the discussion revealed that many plants are still spinning their wheels on energy efficiency. Often, it’s a result of leadership not being aware of how great an impact conservation can have. When asked how he kick-starts an energy-saving initiative at Husky, Moca said he starts with the executive.

“I [try] to go from the top down,” he said. “From the bottom up is very hard – almost impossible.”

The industry leaders at the table, from construction and design managers to conservation engineers, were in complete agreement.

“I approach [plants] at the senior level, where they’re interested in growth, competitiveness, leadership [and] product quality,” Powerstream’s Provezano said. “They can then go to lower or middle management and the plant floor and say, ‘okay you’ve got to look into that situation.’”

Learning how to speak to management helps overcome this hurdle, added Ray Warner. “Your energy projects are always about selling it to somebody,” he said. “You’ve got to learn to speak the speak.”

Foremost, focusing on the conservation aspects of the project – something executives may place less value on – is one of the least effective ways to pitch ideas to senior

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Gaspare Provezano, Powerstream Inc.

management. Instead, a pitch should always come down to the bottom line.

“At the end of the day... it’s dollar savings,” said Canadian General Tower’s Ram. “If the business is aligned it presents a [convincing] business case and whatever challenges and barriers that we have, we have enough support to work through those.”

Agatha Pyrka, industrial business manager with the IESO, pointed to incentives that can help build that business case. The IESO Industrial Accelerator Program provides incentives to retrofit old equipment with energy-saving technology. Once companies see the results, they’re often motivated to keep going.

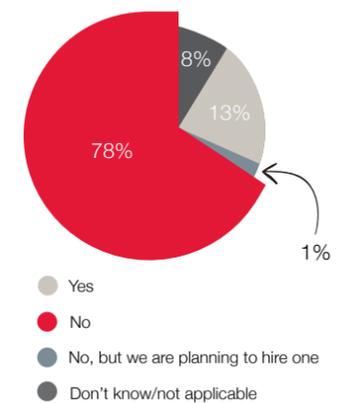
“One of the big differences with companies who are a little more progressive is... any money that they get from an incentive, oftentimes these companies will take that and reinvest that back into further energy efficiency projects,” Pyrka said.

Kia Barkhordari, CDM supervisor of industrial at Enersource, said addressing a company’s power factor is a benefit some executives like to see.

“As utility companies charge...for low power factor, if you have a project that improves power factor, [and] therefore reduces the [additional charges], that goes directly to their bottom line,” he said.

In explaining how he makes business cases, Barkhordari includes a range of potential benefits in hopes that a couple of metrics find the right audience. At the senior level, where competing interests are pervasive, you never know what is going to strike a chord, he said.

ENERGY MANAGER: THE VAST MAJORITY (78%) OF COMPANIES SURVEYED DO NOT HAVE AN ENERGY MANAGER ON STAFF, INDICATING ROOM FOR GROWTH IN THIS AREA.



OVERCOMING OBSTACLES

For major manufacturers, the biggest challenge is often time. GM’s Oshawa Assembly Plant, for example, only has a two-week summer shutdown period, a week and a half around Christmas and some long weekends when lines aren’t running. Such short

shutdown periods mean energy conservation upgrades must be well-planned and executed to avoid lost production time.

“For us, it’s a very big challenge,” Ray Warner said.

He added that working around the issue

takes significant strategic work. LED lighting retrofits, for instance, were scheduled for the summer shutdown with some additional work taking place over weekends.

CGT faces similar issues, especially when doing major installations.

Ram said it's key to schedule upgrades in manageable stages. Instead of retrofitting the whole facility overnight, taking upgrades one step at a time is a vital lesson to learn. Upgrading in measured stages allows employees to be trained on new machinery and creates a buzz on the plant floor – something that can be vitally important to how quickly a plant's workforce adopts conservation strategies.



CONVERTING THE SHOP FLOOR TO THE CAUSE

After getting the go-ahead from management it's critical to engage employees in conversation. Though the culture of energy efficiency has made tremendous strides in the boardroom over the past 15 years, this shift is just getting underway for employees.

From long-time staff who have grown accustomed to doing a job a specific way, to workers who have difficulty identifying what's in it for them, energy managers sometimes face an uphill battle.

"It's one of the status quo [problems] we had to overcome," Ram said. "Folks had been accustomed to these things over the years, it's just a matter of showing them and

“For us, it has been really about driving cost reduction and trying to be more competitive” **Ray Warner, General Motors of Canada Ltd.**

'dollarizing' the value.”

Ram often works closely with the operations team, building momentum and eventually getting individuals to start identifying problems for themselves.

"It builds an awareness – everyone starts to talk about it," he said. "The guys who are on the line every day, they'll look at it and say, 'hey, we've been using compressed air to agitate some water system, whereas we can use electric-driven.'"

At GM, management has implemented

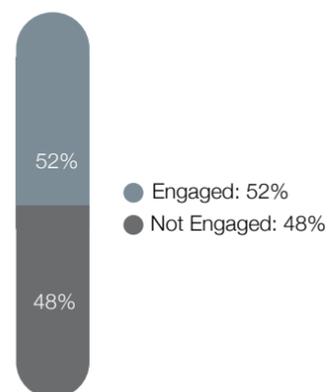
programs that show workers on the plant floor how much energy they're using. The company also puts the figures in terms employees can understand. Warner said comparisons to energy usage at home are often effective.

Likewise, Ram uses similar tactics to promote conservation. He relays energy-saving figures in terms of how many cell phones the electricity could have charged, or how long it could power a TV. For water savings, he measures the number of hockey rinks the water could flood.

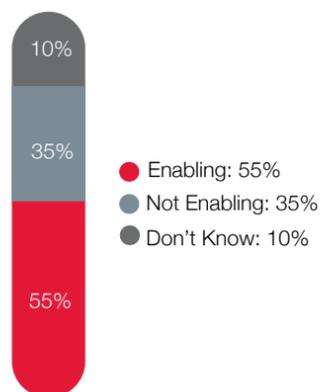
"[I use] something that relates to them that they can actually take home and discuss with their kids," he said.

Beyond top-down initiatives, Husky's Moca noted the importance of appointing energy champions. These unofficial energy managers are similar to health and safety reps and boost plant awareness. In Moca's experience at Husky, once the energy champions are involved, the conservation effort stops being just about a single energy manager and becomes more about an energy conservation team.

EMPOWERMENT: 48% SAID EMPLOYEES ARE NOT ENGAGED IN ENERGY EFFICIENCY



LEADERSHIP: 55% SAID SENIOR LEADERSHIP IS ENABLING ENERGY EFFICIENCY



SUPPORTING YOUR ENERGY MANAGER

It was the lean revolution that proved the auto sector in the U.S. and Canada could adapt to new ways of operating, new technology, and different ways of producing the same parts and vehicles.

Today, energy conservation is simply the next rung on the ladder.

Still, as energy managers patrol the plant floor at an increasing number of large and small manufacturers across Ontario, Dan Moca knows they have their work cut out for them.

"[Companies] think by hiring energy managers they've solved all the problems,"

he said, adding it's critical energy managers are given support and resources.

With cost savings as the driver, plants quickly realize energy savings are just another revenue stream to exploit.

"As a business case we tend to tell the customers by saving so much it's like selling this much more at the end of the year," Provenzano said. "The equation is not perfect, but they realize saving a certain amount is like increasing their sales by five per cent."

A common perception among manufacturers and industry associations is

Ontario's electricity prices are among the highest in North America and the upcoming cap-and-trade program is likely to have a significant impact, the panel acknowledged. However, this doesn't mean Ontario's auto sector cannot be profitable.

With the proper planning and execution, Ontario's auto sector is again poised to reinvent itself – emerging as more efficient, more competitive and more environmentally conscious.

David Kennedy is a reporter for CanadianManufacturing.com

POWERFUL HELP

: Incentives to bring ideas to reality

THE IESO'S SAVEONENERGY PROGRAM FOR BUSINESS OFFERS MANY INCENTIVES TO HELP COVER THE COSTS OF FINDING AND DEALING WITH INEFFICIENT PROCESSES WITHIN A COMPANY.



ENERGY AUDITS AND ENGINEERING STUDIES

Expert auditors identify opportunities for improvements and provide business cases for efficiency initiatives, including:

- Classifying energy savings by project
- Identifying non-energy related improvements
- Estimating the cost of improvements
- Summarizing the return on your investment for each project and prioritize the work based on cost, lifecycle cost savings and non-energy related financial benefits.

SaveONenergy will pay for part of the cost of a basic energy audit. Post-audit engineering studies define exact requirements and estimate potential savings and costs. The entire cost of such an engineering studies is covered by saveONenergy.

RETROFITS

saveONenergy will fund a portion of the costs to upgrade lighting, HVAC systems, pumps, motors, fans or other equipment.

ENERGY MANAGERS

The saveONenergy program will help cover the salary of an approved full-time energy manager's salary. Energy manager resources may be available through local utilities' Energy Manager Program.

ENERGY MANAGEMENT TRAINING

Businesses can receive rebates towards training for a certified Energy Manager, Commissioning Agent and Measurement & Verification training.

Find out more at saveONenergy.ca/business or get your local electric utility to contact you at saveONenergy.ca/get-started

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