

Energy Efficiency Is Good For Business

Industrial U.S. manufacturers are saving money by saving energy

Companies like [Crown Battery](#), [HARBEC, Inc.](#), [Nissin Brake](#) and [United Technologies Corporation](#) are saving significant money each year thanks to energy-efficiency improvements made possible in part through industrial efficiency utility programs.

For U.S. industrial manufacturers, the potential savings are staggering. The manufacturing sector has the potential to invest more than \$100 billion in cost-effective energy-efficiency technologies by 2020, which would result in annual energy savings of almost \$50 billion.¹

Too few manufacturers are aware of the potential savings and the resources available through utility efficiency programs. These programs can provide resources to help finance process efficiency, motors, and energy management systems; boiler conversions; lighting retrofits; and the installation of clean and efficient Combined Heat and Power systems.

Manufacturers that have taken the step to invest in energy efficiency are already gaining impressive paybacks. On a national scale, the more than 150 manufacturing participants in the Department of Energy Better Plants program, representing 11.4 percent of U.S. manufacturing, have reported cumulative energy cost savings of \$2.4 billion. Just by continuing these efforts, this group of manufacturers could save a projected \$11 billion in 2020. Better Plants partners have also reported estimated cumulative avoided carbon emissions of almost 27-million metric tons, equal to the annual emissions from seven coal-fired power plants.²

Big Energy Use = Big Savings Opportunity

- The industrial sector (manufacturing, mining, construction and agriculture) is the largest U.S. energy user, consuming about one-third of all energy demand.³
- Manufacturing accounts for the vast majority, nearly three quarters of industrial energy consumption, equal to nearly one quarter of all energy consumed.⁴
- The industrial sector is the only sector in the U.S. economy where emissions are projected to grow – with projected increases from current levels of nearly 20 percent by 2025.⁵

CASE STUDY: Energy Efficiency Is Good For Business
Crown Battery
"Saving Energy is a Fact, Jack"

The battery business is a competitive one, and companies like Crown Battery – based in Fremont, Ohio – will go to great lengths to maintain a competitive edge.

Crown Battery's products are found in heavy-duty equipment around the world, including the defense industry, construction, renewable energy installations and recreational marine and automotive industries.

To stay ahead of the pack, one strategy that allowed Crown Battery to reduce its operating expenses and bolster its brand is a focus on using energy as efficiently as possible in the company's 220,000-square-foot manufacturing facility.

Over the last three years, Crown Battery has saved almost \$1.3 million, thanks to energy-saving measures and investments available through AEP Ohio, the local utility. And, along the way, the company has made its products more sustainable. "That's got me one saving money, but it's also more sustainable," explained Matt Culbertson, who leads the company's energy efficiency initiatives. "A lot of people come to us because they see how much we've improved our energy efficiency. It feeds our reputation."

And what started as a money-saving venture has evolved into a company-wide commitment to continuous improvement in energy efficiency.

Every quarter, top management and their team meet with all 650 employees to review how the company is doing as a whole, with energy data broken down by division. Employees are encouraged to identify energy-saving ideas on a sign-up sheet in the company cafeteria, and anyone who submits an idea gets a "Save a Buck O'weeny" T-shirt, as part of the Crown Battery TV series, that says "Saving Energy is a Fact, Jack," on the back.

"I've been walking around town, and coming into work, wearing these T-shirts," said Culbertson.

Crown Battery Quick Facts

Type of Project:	Lighting upgrade, battery charging upgrade, geothermal cooling, etc.
Investment:	\$1,299,480
Payback period:	Approximately 4.5 years
Utility Incentives:	\$316,893
Savings:	\$150,000 to \$210,000 annually and rising

Energy savings continued on back >

Ontario Manufacturing executives have had a lot of time to save money.

"AEP Ohio incentive programs have allowed Crown Battery to get money back on capital investments and increase our energy efficiency. This has shown through employee participation in energy savings, and given Crown Battery the road map to energy savings success."

— Matt Culbertson
Project Energy Engineer,
Crown Battery



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CASE STUDY: Energy Efficiency Is Good For Business
HARBEC Combined Heat and Power
To Power Forward, An Energy Evolution Solution

For over a decade ago, when Bob Bechtold started a pump manufacturing company in Ontario, New York, the building's electric bills were about as high as they could be. One technology many feared would fix the end of traditional building: CHP.

Bechtold had a different view and was excited by the possibilities this powerful technology offered businesses. "HARBEC, the company he founded, would go on to master CHP technology, CAC/AM and 3-D printing to do, as Bob put it, "whatever you can imagine," and a host of other services for a number of years, including problem-solving in the field.

Bechtold began to think of creative problem-solving when he turned his attention to two issues that plagued the company's shop in the mid-1990s. Low-voltage electricity from the local utility was creating havoc on HARBEC's sophisticated, high-precision equipment, and the shop had trouble turning a small strip on warm days, with temperatures well above 100 degrees Fahrenheit.

"I quickly learned that I couldn't afford an air conditioning," he said. "We wouldn't be accepted. The only thing I could do was to heat and cool from all of the properties and do some work. Clearly, I needed a better solution."

Bechtold needed consistent and reliable power, and he needed a means of keeping his workers cool. After exploring options, he realized that the heat that caused no trouble inside the shop floor was in fact a potential energy source. He just needed to look at the problem in a different way.

The company already made use of energy-efficiency improvements, to reduce its overall energy needs, and then installed 25 microturbines powered by natural gas called Combined Heat and Power, or CHP, plants followed by two on-site wind turbines (in 2010 and one in 2016).

The biggest hurdle in moving the project forward was getting the bank to issue credit, because CHP and renewable energy were poorly understood at the time. "HARBEC had to go through NYSEG to cover a third portion of the up-front cost but, mostly, we just had to explain the benefits to the bank. Bechtold said that most lenders, understanding a utility and energy projects can make the financing much easier than when they get a utility check. "Utility will leverage the energy efficiency," he said. "You can do anything else because you know that you're going to keep a lot of power."

HARBEC, Inc. Quick Facts

Type of Project:	Combined Heat and Power (CHP)
Investment:	\$1,500,000
Payback period:	8 years
Utility Incentives:	\$100,000
Savings:	Averaged \$20,000 reduced electric and gas costs monthly

Energy savings continued on back >

"We try to never talk about 'waste heat' anymore. Utilities call the thermal energy in the generation process 'waste heat,' but at HARBEC we prefer to look at it as 'thermal opportunity.' Waste heat is only waste if we are too stupid to take advantage of it."

— Bob Bechtold
President, HARBEC, Inc.



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¹ U.S. Department of Energy (DOE), Better Plants Progress Update, Fall 2015. <http://betterbuildingsolutioncenter.energy.gov/sites/default/files/attachments/2015%20Better%20Plants%20Progress%20Update.pdf>.

² U.S. Department of Energy (DOE), Better Plants Progress Update, Fall 2015. <http://betterbuildingsolutioncenter.energy.gov/sites/default/files/attachments/2015%20Better%20Plants%20Progress%20Update.pdf>.

³ U.S. Energy Information Administration, Annual Energy Outlook 2015, April 2015. (https://www.eia.gov/forecasts/aeo/section_deliverenergy.cfm)

⁴ U.S. DOE, Report to Congress: Barriers to Industrial Energy Efficiency, June 2015. (http://www.energy.gov/sites/prod/files/2015/06/f23/EXEC-2014-005846_6%20Report_signed_v2.pdf).

⁵ Rhodium Group, Taking Stock: Progress Toward Meeting US Climate Goals By John Larsen, Kate Larsen, Whitney Herndon, and Shashank Mohan, January 28, 2016. <http://rhg.com/reports/progress-toward-meeting-us-climate-goals>.

What Manufacturers Are Saying

“Not only are we saving money, but it helps increase our sales. A lot of people come to us because they see how much we’ve improved our energy efficiency. It helps our reputation...My advice to other manufacturers? You need to take advantage of this. Not only does it improve your facility, but it allows you to go to market cheaper than your competitors and it frees up money for other big capital improvements.”

–Matt Culbertson, project/energy engineer
Crown Battery

“Controlling our energy costs is one way to even out overall costs and to deal with production volume changes. Leveraging incentives in partnership with our utility made these efficiency projects possible.”

–Dana Ware, manager of Production Support
Nissin Brake

“Industry can leverage its energy consumption. You can do amazing things because you know you’re going to buy that bulk of power.”

–Bob Bechtold, president
HARBEC, Inc.

Access all of the case studies here:

<http://alliance4industrialefficiency.org/resources/casestudies/>

This is just the tip of the iceberg. For example, check out:

- Video showing how [Siemens](#)’ efficiency systems are improving life at Wesleyan College⁶
- Case study profiling how Illinois-based [Continental Tire](#) is leveraging utility incentives⁷
- Video showing how Michigan-based [Wright Plastic Products](#) collaborated with its utility to identify and implement savings⁸
- Case study profiling North Carolina-based [Hickory Chair](#)’s efficiency gains with its utility⁹
- Video overview of the [Combined Heat and Power](#) opportunity¹⁰

⁶ http://www.bloomberg.com/news/sponsors/siemens/this-power-solution-can-stand-up-to-the-next-superstorm/?adv=7051&prx_t=kD0CA39UHAG0ANA&ntv_idp=1

⁷ http://www.actionenergy.com/portals/0/forms/continental_tire_case_study_final.pdf

⁸ https://www.youtube.com/watch?v=cWlGl_D-BYo&index=25&list=PLEC4496E311217D63

⁹ <https://www.duke-energy.com/pdfs/hickory-chair-case.pdf>

¹⁰ <https://www.youtube.com/watch?v=14lT7kfdvbo>

CASE STUDY: Energy Efficiency Is Good For Business

Nissin Brake Ohio, Inc.

Halting Energy Waste, Accelerating Savings

The automotive industry is notoriously unpredictable, and it can be tough for automotive suppliers to keep pace with industry volatility. Nissin Brake Ohio, Inc.—which provides parts to Harley-Davidson, Honda and other major auto companies—consequently has a leg up on its competitors thanks to lower annual operating expenses achieved through a multi-year effort to reduce its energy efficiency.

Cutting energy waste has helped Nissin manage costs as production varies during fluctuations in the auto market. When customer demand shifts, Nissin can more easily absorb expenses due to lower annual operating costs—thanks to using less energy. Traditionally, all eyes are on the manufacturing departments to improve cost and profitability. These projects allow our facilities group to also make a significant contribution to improving our bottom line.”

–Ken Lee, vice president of Operations

“Our bottom-line costs change from month to month depending on production volumes,” said Dana Ware, manager of Production Support. “Controlling our energy costs is one way to stabilize overall costs and to deal with production volume changes.”

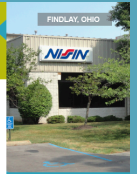
Partnering with its utility, AEP Ohio, Nissin leveraged incentives from 2008-2013 to invest about \$100,000 in energy-efficient interior lighting, occupancy sensors, and upgrading compressed air systems. HVAC control system retrofit, lighting area equipment. Utility incentives reduced the payback period by more than one year, installed faster, and were essential to getting interest buy-in from Nissin leadership. The incentive payments helped gain these approvals to cover more than 20 percent of the project investments. These projects would not have been completed if AEP’s incentive program did not exist.

Nissin did its homework before implementing efficiency improvements, including taking an on-site assessment to identify opportunities and help managers with application decisions. When, along with production of business manager, were among those that worked with the assistance of AEP’s on-site, the on-site support manufacturers to learn about potential energy efficiency projects and what worked for their businesses.

Nissin Brake Quick Facts

Type of Project:	Lighting, compressed air, chiller and manufacturing equipment upgrades
Investment:	More than \$1.67 million since 2008
Payback period:	Approximately 2-3 years for most projects
Utility Incentives:	More than \$289,000 since 2008
Savings:	\$3.4 million in avoided energy costs since 2008

Energy savings continued on back >



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Manager of Production Support, Nissin Brake



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CASE STUDY: Energy Efficiency Is Good For Business

United Technologies Corporation Connecticut Facilities

Paving Ahead

By 2016, United Technologies Corporation’s (UTC) 13 Connecticut facilities have the goal to reduce energy consumption 10 percent, saving an estimated 14 million kilowatt-hours of power over a three-year period—equivalent to powering more than 1,000 homes with electricity for a year.

UTC is addressing the energy savings measures will save the company \$1.4-\$3.3 million in annual operating expenses, improving its global competitiveness and bottom line. To achieve a 10 percent reduction over three years, UTC’s annual target calls for up to two percent a year.

Executive involvement is key to the success of these projects. “We get the biggest bang for the buck by working with executive partners. Learn their use and their objectives, understand their business goals, and that results in an annual bonus dividend from the utility,” West said. “The incentives from this collaboration will enable UTC to better invest in business efficiency projects.”

“The agreement supports UTC’s long-running efforts to understand how much energy we use and where we use it. In order to identify significant energy savings opportunities,” said Dana Ware, Program Manager for Environment, Health and Safety at UTC. “Our long-term goal is to apply what we’ve learned through our agreement with Envision to our facilities around the world.”

A key element of its partnership with Envision, West explained, is leveraging UTC’s installed infrastructure throughout the national and global in the business cycle. By providing a fresh set of eyes to seek new energy savings opportunities, Envision has helped to identify additional efficiencies that may have otherwise been overlooked.

To help reach its goal in Connecticut, UTC created an internal cross-functional team that spanned across various Connecticut locations and business units. This team has already met and identified several ways to potentially save 1.2 million kilowatt-hours of electricity annually at its Windsor Locks facility.

Among the many components of the three-year plan are:

- Installing new LED interior and exterior lighting systems.
- Auditing “cool” air with units, reducing heating, ventilation and air conditioning energy-wasting air from buildings to reduce energy costs.
- Conducting HVAC upgrade projects that include energy optimization, HVAC retro-commissioning and a water control study.
- Conducting several studies to explore utilization of compressed air, sometimes called the “third utility” in manufacturing, after electricity and natural gas.
- Developing an educational program to increase energy efficiency awareness and behavioral changes among UTC facilities managers and general staff.

Energy savings continued on back >



Renovated open floor space design with installation of lighting controls and LED lighting.

“A UTC, we know that sustainability works, and is a smart business and environmental decision. That’s why we are committed to investing in energy efficient, green buildings for our employees, communities and customers.”

–John Manlychek,
Chief Sustainability Officer for UTC



United Technologies Corporation Quick Facts

Type of Project: 3-year agreement with utility to increase efficiency

Investment: Estimated investment in energy-efficiency technology \$15 million over three years

Payback period: To be determined / ongoing project

Savings: \$1.1-\$2.3 million annually