

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 200,000-square-foot manufacturing facility.

Over the last three years, Crown Battery has saved almost \$1.3 million, thanks to energy-saving measures and incentives available through AEP Ohio, the local utility. And, along the way, the company has made its products more sustainable. "That's why we are saving money, but being more green and safe," 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 senior staff will sit at 600 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 as a sign-up sheet in the company cafeteria, and anyone who submits an idea gets a "Save a Buck O'weeny" T-shirt, as per the Crown Battery TV series, that says "Saving Energy is a Fact, Jack," on the back.

"I've been wearing several bags, and coming to 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, New York
"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 our clients, when Bob Bechtold started a pump manufacturing company in upstate New York, the technology industry was almost entirely about a new technology many haven't heard of yet: traditional manufacturing: CHP (combined heat and power).

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 make CHP technology, CACGAM and C2 printing as an 800-pw-ft, "weather-resistant" sign, and a truck repair for its immediate application to being problems in 2010.

Bechtold began to create a 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 resulting in high HARBEC's operational, high-pressure die-casting, and its truck repair for its immediate application to being problems in 2010.

"I quickly learned that I couldn't afford an alternative," he said. "We wouldn't be competitive. The only thing I could do was go to the source and fix it at the source. And that was CHP."

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 so much trouble in the shop was also a potential energy source. He set out to look at the problem in a different way.

The company ultimately installed an energy-efficiency improvement to reduce its overall energy needs, and then installed 25 microturbines powered by natural gas (called combined heat and power, or CHP) plants (fueled by low-voltage diesel engines) in 2010.

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 spend time with 100 banks to create a small portion of the up-front costs but finally to get the bank financing. The bank, Bechtold said, did more research (including an efficiency and energy project) to make the financing much easier than when he got market financing. "Usually you leverage your energy consumption. You can't do anything things because you know that you're going to keep a bank 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 >

Ontario, New York
"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."
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HARBEC, Inc. Quick Facts

Type of Project: Combined Heat and Power (CHP)
Investment: \$1,500,000
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Utility Incentives: \$100,000
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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=141T7kDvbo>

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—successfully has a leg up on its competition 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 values during fluctuations in the auto market. When customer demand wanes, Nissin can more easily stabilize 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 cost factors.”

—Ken Lee, vice president of Operations

“Our utility has done a great job of working with us to identify energy efficiency opportunities,” said Dana Ware, manager of Production Support. “Combining our energy costs as one way to stabilize overall costs and to deal with production volume changes.”

Leveraging incentives from the utility, AEP Ohio, Nissin leveraged incentives from 2008-2013 to invest about \$1.67 million in energy-efficient interior lighting, occupancy sensors, and upgrading compressed air system, HVAC control and machine rooming area equipment. Utility incentives reduced the payback period by more than one year, reducing time, and were essential in getting interest buy-in from Nissin leadership. The incentive payments helped gain these approvals covering more than 30 percent of the project expenses. These projects would not have been completed if AEP’s incentive program did not exist.

Nissin did it homework before implementing efficiency improvements, including hiring an external consultant to identify opportunities and help manage the utility application process. Ware, along with identification of further maintenance work among their plant and took advantage of AEP rebates, the internal equipment manufacturers to learn about potential energy efficiency projects and what worked for their business.

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
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Energy savings continued on back >



“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




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CASE STUDY: Energy Efficiency Is Good For Business

United Technologies Corporation Connecticut Facilities
Paving Ahead

In 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 addresses the energy savings measures will save the company \$1.1-\$2.3 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 reduces up to two percent a year.

Executive involvement UTC into the strategic alliance because “while getting the biggest bang for the buck by working with industrial partners. Learn that our own internal initiatives based on annual targets, 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 industrial 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 technical expertise throughout the natural cycle and back 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, manufacturing processes and existing energy-saving ambient fire to 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 ensure better use 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 >



“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

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 railroad industry, steel mills, renewable energy installations and recreational marine and automotive industries.

To stay ahead of the pack, one strategy that’s 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 250,000-square-foot manufacturing facility.

Over the last three years, Crown Battery has saved almost \$1.3 million, thanks to energy-saving measures and incentives available through AEP Ohio, the local utility. And, along the way, the company has made its products more marketable. “Not only are we saving money, but it helps increase our sales,” 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 helps our reputation.”

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

Every quarter, top management and the owner meet with all 550 employees to review how the company is doing as a whole, with energy data broken down by division. Employees are encouraged to submit energy-saving ideas via a sign-up sheet in the company cafeteria, and anyone who submits an idea gets a “Save a Buck Dynasty T-shirt,” a play on the Duck Dynasty TV series, that says “Saving Energy is a Fact, Jack,” on the back.

“I see folks walking around town, and coming into work, wearing those 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



Efficient manufacturing processes have cut in half the time to form batteries

“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



Energy savings continued on back ▶

Let the Energy Savings Continue:

Crown Battery's energy-saving journey started in 2008 with simple steps like replacing inefficient lighting systems. It moved on to more ambitious energy-saving measures, including a more efficient battery charging system (70 percent of the facility's energy is used to charge batteries) and installing an open-loop geothermal process cooling system. Today, thanks to these combined efforts, Crown is saving between \$150,000 and \$210,000 annually on its energy bills.

Energy-saving measures are identified, vetted and managed through a comprehensive energy-management program that includes diagnostics, planning and regular energy audits to test progress. The program is managed by the Crown Energy Team, led by Culbertson.

The company's goal is to reduce its energy usage by three or four percent each year, allowing it to use less energy—and save money—for every battery produced. This, in turn, translates to higher profits.

Crown Battery has utilized incentives provided through AEP Ohio, which has helped offset some of the up-front investments for energy savings. And, Crown Battery is an active participant in AEP Ohio's Continuous Energy Improvement Program, which provides opportunities to network with other companies and access to tools, coaching and resources to identify additional energy savings. AEP Ohio incentives have helped reduce the payback period for energy-efficiency investments to date by more than a year, from 5.7 years to approximately 4.5 years.

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

And while many manufacturing companies will only consider investments that provide a one-to-two-year payback period, Crown Battery considers this approach shortsighted because energy savings provide benefits year after year.

"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," said Culbertson.

Established in 1926 Crown Battery has been manufacturing quality products for over 80 years. Crown Battery is privately owned, with corporate and manufacturing operations in Fremont, Ohio. The company's operating principle "The Power Behind Performance," represents Crown Battery's commitment to providing power to millions of people around the world—power that makes life easier, and raises standards of living, health and safety for the communities Crown Battery serves.



T-shirts are provided to encourage staff to submit energy-saving ideas



Bob Michael, Director of Plant Engineering (left) and Matt Culbertson

**GET STARTED
SAVING
TODAY:**

**Combined Heat and Power and Waste Heat to Power
could supply 20 percent of U.S electric capacity by 2030**

The Alliance for Industrial Efficiency is a growing coalition of business, labor, and non-profit organizations that advocate for policies that increase U.S. manufacturing competitiveness through industrial energy efficiency, especially the use of Combined Heat and Power (CHP) and Waste Heat to Power (WHP). To date, the Alliance has focused on improving financing for CHP and WHP, increasing demand for CHP and WHP, and incorporating CHP and WHP in the Environmental Protection Agency's Clean Air Act rules.

For more information go to alliance4industrialefficiency.org or call 202.365.2194


ALLIANCE
FOR INDUSTRIAL EFFICIENCY

CASE STUDY: Energy Efficiency Is Good For Business

HARBEC Combined Heat and Power

To Power Forward, An Energy Evolution Solution

Four decades ago, when Bob Bechtold started a parts manufacturing company in upstate New York, the toolmaking industry was abuzz with anxiety about a new technology many feared would spell the end of traditional toolmaking: CNC machining.

Bechtold had a different view and was dazzled by the possibilities this powerful technology afforded toolmakers. HARBEC, the company he founded, would go on to master CNC machining, CAD/CAM and 3-D printing to do, as Bob puts it, “heretofore undoable things,” and is now known for its innovative approach to solving problems in the industry.

Bechtold tapped that spirit 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 wreaking havoc on HARBEC’s sophisticated, high-precision equipment, and the shop floor literally turned into a sweat shop on warm days, with temperatures well above 100 degrees Fahrenheit.

“I quickly learned that I couldn’t afford air conditioning,” he said. “We wouldn’t be competitive. The only thing I could do was go to town and buy out all of the popsicles and ice cream bars. 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 so much trouble on the shop floor was in fact a potential energy source. He just needed to look at the problem in a different way.

The company ultimately invested in 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 (one 250kW and one 850kW).

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 relied on a grant from NYSERDA to cover a small portion of the up-front costs but mostly to add the needed credibility to the bank. Bechtold said that newer lenders specializing in efficiency and energy projects can make the financing much easier than when he got started, because “industry can leverage its energy consumption. You can do amazing things because you know that you’re going to buy a bulk 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

ONTARIO, NEW YORK



“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.



Energy savings continued on back ▶

Let the Energy Savings Continue:

Today, HARBEC's system provides the majority of the plant's electric power needs, and the total heating and cooling required by the company for HVAC and processes. The captured heat from the facility not only drives HARBEC's climate controls, but also powers the process loop that cools its more than 30 injection molding machines—and the faster that happens, the quicker product is delivered. They are able to pay for this capability by offsetting the normal utility cost and instead using the revenue to purchase assets that generate the same required energies. The next step is already underway: HARBEC has connected its system to four adjacent companies, allowing it to sell 100 percent carbon-neutral power to its neighbors at a lower cost than they can get from the utility.

"We essentially created a microgrid," mused Bechtold.

The original system paid for itself in 8 years, created a significant cost offset and dramatically improved employees' working conditions. And, it's provided dramatic benefits to the company's brand.

"If you come to this area and ask anyone about HARBEC, they might not know what we do, but they know us and where we are because of the two wind turbines on the lawn," Bechtold said. "People drive by and will stop and let their kids get out and touch the towers or take pictures. People tell me how much they love it. My employees get that too; there is a lot of pride in the company about it."

Bechtold said he gets frustrated by the manufacturing industry's focus on a one-to-two-year payback period for these kinds of energy related investments:

"Our first wind turbine took us just under eight years to pay back. The difference is, after eight years, we have an asset that is still spinning and giving us electricity and will for another 15 or 20 years. So I have this enormous asset that's paying me back every month. Or I could have used the same amount of dollars to pay for my utility bill and would have nothing to show for that money. Did I make a bad business decision? I don't think so."

In keeping with the company's focus on constant improvement, HARBEC continues to explore new ways to save energy. The company reports the impact of energy dollar savings to employees, and thanks to profit sharing, employees are keen on identifying new energy saving strategies. A suggestion box in the cafeteria encourages employees to offer ideas at any time.

"Our focus is on doing more with less," said Bechtold. "It's all about less energy per widget, forever."

HARBEC, Inc. is a precision plastic and metal component parts manufacturer based in upstate New York that provides high quality parts and sub-assemblies to the aerospace, medical, electronics, transportation and consumer and sports products industries. HARBEC, Inc. is a carbon neutral facility and generates the majority of its energy needs on-site.



HARBEC'S newest CHP upgrade, completed 2016



HARBEC'S original CHP plant includes 25 microturbines

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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 variability. Nissin Brake Ohio, Inc.—which provides parts to Harley-Davidson, Honda and other major auto companies—increasingly has a leg up on its competitors thanks to lower annual operating expenses achieved through a multi-year effort to ratchet up 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 stabilize 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 cost factors,” said 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 \$185,000 in energy-efficient interior lighting, occupancy sensors, and upgrading compressed air system, HVAC control and injection molding press equipment. Utility incentives reduced the payback period by more than one year, explained Ware, and were essential to gaining internal buy-in from Nissin leadership. “The incentive payments helped gain these approvals by covering more than 30 percent of the project investments. Those projects would not have been completed if AEP’s incentive program did not exist.”

Nissin did its homework before implementing efficiency improvements, including hiring an external consultant to identify opportunities and help navigate the rebate application process. Ware, along with members of facilities maintenance were among Nissin staff who took advantage of AEP workshops, that brought together 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

FINDLAY, OHIO



“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



Energy savings continued on back ▶

Let the Energy Savings Continue:

Nissin has continued to accelerate efficiency with the support of additional utility incentives during 2014-2016, through more efficient chiller operations, HVAC control and exterior lighting systems, plus, additional upgrades to compressed air and injection molding press equipment.

Prior to upgrading its air compressors, all were running at max speed 24/7 and using a significant amount of energy in the process. The overall upgrades to the compressed air system included: lowering the operating pressure from 115 psi to 90 psi; installing a sequencer control system which automatically monitors demand and operates the system more efficiently; and an annual air leak analysis program.

“The opportunity for energy savings is even more significant than we thought,” Ware said, “and the sequencer control system allows us to measure operational costs more accurately. We’re saving money with the reduction of compressed air we use and the operating time of the compressors has been lowered. By operating less time, the machines will last longer, reducing the need for capital investment.”

Since 2008, Nissin has used about \$289,000 in rebates from AEP to supplement private capital to fund the investments, which have saved approximately 10 million kilowatt-hours of power—equivalent to powering almost 1,000 homes with electricity for a year. As a result, Nissin has saved \$3.4 million in avoided energy costs since 2008. These savings are just one of the rewards for increasing efficiency. “Energy improvements have a significant ongoing return on investment, by helping to lower operating costs,” Lee said. “The incentive programs result in a visible return on investment, which has helped convince management to reinvest those incentives into further energy improvements.”

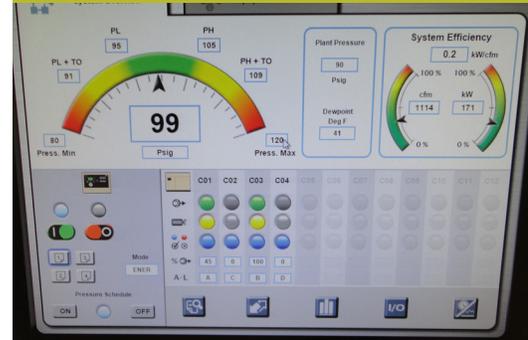
Using less energy to get the job done has helped Nissin to reduce climate emissions by more than 7,268 tons—equivalent to taking 1,425 cars off the road for a year—and making progress toward the company’s goal of cutting greenhouse gas emissions by 10 percent over 10 years.

Nissin’s 650 employees are also benefitting from lighting and HVAC upgrades through a brighter and more comfortable workplace. And better lighting has helped to reduce operator fatigue, which translates into an overall increase in the quality of the parts Nissin is delivering to its customers—proof that putting the brakes on energy waste is good for business.

Nissin Brake Ohio, Inc. is a subsidiary of Nissin Kogyo Co. Ltd., a global developer and manufacturer of comprehensive brake systems, with 22 manufacturing plants around the world employing more than 10,000 people.



Efficient injection molding equipment is saving about \$50,000 annually



A control system to monitor compressed air power helps measure operational costs



Ken Lee, vice president of Operations, Nissin Brake receives an incentive rebate check from Lenny Lammlein, customer service engineer, AEP Ohio

**GET STARTED
SAVING
TODAY:**

Combined Heat and Power and Waste Heat to Power could supply 20 percent of U.S electric capacity by 2030

The Alliance for Industrial Efficiency is a growing coalition of business, labor, and non-profit organizations that advocate for policies that increase U.S. manufacturing competitiveness through industrial energy efficiency, especially the use of Combined Heat and Power (CHP) and Waste Heat to Power (WHP). To date, the Alliance has focused on improving financing for CHP and WHP, increasing demand for CHP and WHP, and incorporating CHP and WHP in the Environmental Protection Agency’s Clean Air Act rules.

For more information go to alliance4industrialefficiency.org or call 202.365.2194



CASE STUDY: Energy Efficiency Is Good For Business

United Technologies Corporation Connecticut Facilities

Pacing Ahead

By 2018, United Technologies Corporation's (UTC) 15 Connecticut facilities have the goal to reduce energy consumption 15 percent, saving an estimated 54 million kilowatt-hours of power over a three-year period—equivalent to powering more than 6,000 homes with electricity for a year.

UTC estimates the energy-savings measures will save the company \$1.1-\$2.3 million in annual operating expenses, improving its global competitiveness and bottom line. To achieve a 15 percent reduction over three years, UTC's annual target ratchets up by two percent a year.

Eversource invited UTC into the strategic alliance because "utilities get the biggest bang for the buck by working with industrial partners. Each year we earn enhanced incentives based on annual targets, and that results in an annual bonus dividend from the utility," West said. "The incentives from this collaboration will enable UTC to further invest in industrial efficiency projects."

"This 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 Sean West, Program Manager for Environment, Health and Safety at UTC. "Our long-term goal is to apply what we've learned through our agreement with Eversource to our facilities around the world."

A key benefit of its partnership with Eversource, West explained, is keeping UTC focused on efficiency throughout the natural ebbs and flows in the business cycle. By providing a fresh set of eyes to seek new energy savings opportunities, Eversource 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.
- Adding "cool roofs" with white, heat-reflecting materials and installing energy-saving window tint to buildings to lower energy costs.
- Completing HVAC upgrade projects that include chiller optimization, HVAC retro-commissioning and a water chiller study.
- Conducting several studies to ensure optimal use 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.

FARMINGTON, CONNECTICUT



Renovated open floor space design with state-of-the-art building controls and LED lighting

"At 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 Mandyck
*Chief Sustainability Officer
for UTC*



 **United
Technologies**

Energy savings continued on back ▶

Let the Energy Savings Continue:

UTC's commitment to energy efficiency reflects a culture focused on "eliminating waste, no matter where it is," West said. "It's been our way of doing business for decades."

UTC recently announced the company's new 2020 sustainability goals, which place UTC on track to reduce greenhouse gases 80 percent by 2050 in support of the climate goals set forth by the United Nations. Starting three decades ago, UTC was among the very first companies to begin tracking resource usage with the aim of lowering consumption and emissions. And since 1997, UTC has tripled its revenues while reducing its greenhouse gasses by 34 percent, primarily by saving energy. The three-year agreement between UTC and Eversource will support UTC's broader sustainability efforts to innovate and meet the growing demand for sustainable products, solutions and operations.

The agreement with UTC is Eversource's largest energy efficiency effort to-date. Eversource currently has similar large-scale efforts underway with the University of Connecticut, Massachusetts Institute of Technology and Boston College.

United Technologies Corp. provides high-technology systems and services to the building and aerospace industries. Its businesses include Pratt & Whitney, UTC Aerospace Systems, UTC Climate, Controls & Security and Otis.

UTC 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



The interior of a LEED-certified office building at UTC's headquarters in Farmington, CT



UTC Leadership Center is a multi-use facility with an energy monitoring system that tracks and displays energy use by floor, with real-time data displayed in the lobby.

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