

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

**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


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