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The Business Case for Sustainable Energy Systems

Posted By [David C. Richardson](#) On February 22, 2016 @ 9:57 am In [Energy Storage Solutions Weekly, Renewable Energy](#) | [1 Comment](#)

When Bob Bechtold started along the path toward smart building a couple of decades ago, the term had yet to gain widespread popularity. Exploring his passion for renewable energy during the 1980s, he installed his first wind turbine and geothermal heating system, at his home. Later, he began to think that he could make the same kind of positive impacts at work with sustainable energy systems. As President and owner of HARBEC Inc., a company that fabricates precision plastic components in Ontario, NY, he began exploring that option.

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He also had a few immediate concerns he wanted to address at work. During summers he says temperatures could approach "sweatshop conditions in the plant, making it stiflingly uncomfortable for employees." On top of that, he says, there had been "some problems with inconsistent power quality that had damaged some equipment." He began looking for a way to increase the quality and reliability of the electricity supplying his facility, and a means of keeping his workers cool. Generating power, heating, and cooling onsite, would provide a sustainable solution to both issues.

Finding Financing in a Learning Curve

Seeking to finance the investment in sustainable energy systems to achieve better control over conditions and quality, Bechtold presented his creative ideas to his potential financiers. But whenever he mentioned the terms green or sustainable energy, he says the banks tended to shy away, thinking he was "some kind of burnt out hippie." He decided he might have better luck if he could make a business case.

Reframing his intentions "as an economic issue," he went back to the banks, and the banks agreed to finance combined heat and power (CHP) and a wind turbine. Unfortunately, he says, the CHP system came in somewhat over budget, and he had to postpone the wind turbine construction. However, he had a partner in Automated Logic's WebCTRL system that been helping keep track of the Return on Investment (ROI) for his new investments in power generating capacity.

Within two years, he was able to document that the project made economic sense, and the bank released financing to continue the project by installing the wind turbine as initially planned.

Bechtold says Logical Control Solutions, local implementers for Automated Logic, played an important role. "They have a good handle on the product and how to make it work for your needs; they come in and figure out what gauges to put in, where to put them, how to implement them on the monitoring system, and how to demonstrate it on the graphics."

He says the company also brings a personal touch to servicing their software, for instance, "When we put our first wind turbine up, they didn't have an icon for a wind turbine. They had to build the graphic for a spinning wind turbine, but they didn't just put a picture there—they made the turbine spin [when wind levels cause it to be operational]. So if you look at our website, it will show all of the details of everything through to the level of spinning wind turbines and all of what is happening at any moment in time."

In 2012, HARBEC management set a goal of achieving ISO (International Organization for Standardization) 50001 SEP (Superior Energy Performance) certification in order to achieve

carbon neutrality the following year. That decision would mandate the collection of precise resource consumption and energy usage data—a task that would require the expanded use of its Automated Logic WebCTRL system.

The task presented a new challenge for HARBEC's WebCTRL system, "not from an automation standpoint, but from a monitoring and measuring standpoint," comments Jeff Eisenhauer, manager, energy systems, HARBEC. The project began with the company's acquisition of metering devices sourced through Logical Control Solutions Inc., which had installed the WebCTRL system in 2001. In 2012, Logical Control Solutions installed sub-metering systems on all electrical generation and major energy-consuming equipment, including the Capstone microturbines within its CHP plant, the Carrier air handling units and absorption chillers, and the two onsite wind turbines. Reporting capabilities were then integrated into the WebCTRL system.

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In the year following the 2012 WebCTRL system upgrades, benefits proved to be dramatic. By increasing its operational efficiencies, primarily within the cogeneration plant, HARBEC was able to increase the overall efficiency of its HVAC systems, reduce natural gas consumption by 20%, reduce overall greenhouse gas emissions by 40% (calculated at 375 tons of carbon dioxide) and cut utility costs by 14%. By exceeding 15% energy savings over the entire reporting period (2009–13), HARBEC was designated a SEP Platinum Certified Partner.

The WebCTRL system now documents the plant's use of compressed air, natural gas, hot and chilled water as well as tracks all city water consumption at points throughout the facility. HARBEC is using the system's EnergyReports application, with its extensive trending capabilities, to track energy usage at the equipment level, allowing plant staff to monitor performance and meet benchmarked goals. Reflecting its commitment to accountable and sustainable operations, the company provides real-time public access to its energy usage data through its [website](#) ^[3]. With reporting options available in 3D bar, line, pie chart, and tabular formats, data is easily viewable according to Bechtold.

"We want to spread the word that it really works, and there is great opportunity to improve, both for the bottom line of the business and the good of the planet," he says. **ESS**

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