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### Green manufacturing standout sees carbon accounting software as next step

Few companies can make a stronger claim to [green manufacturing](#) than Harbec Inc., a maker of machine tools and injection-molded plastic parts in upstate New York. The company runs a wind-energy turbine on-site, captures waste heat from a cogeneration plant, collects rainwater, maintains highly energy efficient buildings and recycles its scrap plastic. Last year, the National Institutes of Standards and Technology gave it an award for excellence in sustainable manufacturing.

Now Harbec wants to do a better job of proving its green bona fides by automating the way it tracks, manages and reports carbon use. Harbec will soon deploy Carbon Connect, a new carbon accounting application from Epicor, its ERP vendor.

Harbec is seeking certification under [ISO 50001](#), the energy-management standard of the International Organization for Standardization (ISO) and needs to improve its data management to get there. Company officials expect the software and the intensive audit that was required to set it up will provide the baseline data that is needed for ISO certification. That in turn will help it reach its goal of becoming carbon neutral by 2013, which means its energy use won't add greenhouse gases to the atmosphere.

“We need to be able to take every bit of energy that comes onto our property and in the end, show how every single bit of it was used and how we successfully reduced the total amount,” said Harbec founder and CEO Bob Bechtold. Carbon Connect will make the company's energy data “accurate, then credible to a third-party auditor.”

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Harbec's mission statement names “environmental consciousness and responsibility” as a core value, which it has backed up with an array of green manufacturing practices. But the statement also cites a commitment to publicize these practices and become the go-to company for environmentally responsible products, which suggests green is a key element in Harbec's branding strategy.

Like most companies with carbon reporting initiatives, Harbec also wants to be better equipped to inform customers about how much greenhouse gas was used to make the products they buy. That information in turn can help those companies bolster their own [green manufacturing stories](#), Bechtold said.

#### Sustainable manufacturing in action

The Carbon Connect implementation, slated for the second quarter, will further automate the largely manual process by which Harbec collects energy measurements.

“These outputs that we are today now writing down in a spreadsheet will input, eventually, directly to the Epicor package,” Bechtold said.

Calculating the optimal energy mix more precisely is also part of the plan. On-site wind energy, the company’s first choice for an energy source, provides a quarter of its electricity -- and at highly predictable rates. “We can predict 10% of our energy approximately 25 years into the future,” Bechtold said. “That’s what renewable energy gives you -- a window into your energy future.”

The company’s second energy source is the cogeneration (combined heat and power [CHP]) system, which uses natural gas to turn 25 microturbines that generate electricity for manufacturing, then takes the thermal energy that is thrown off and converts it to heating and air conditioning for buildings. A bit less than half of Harbec’s electricity pulses in from the grid, but all of it comes from renewable sources. “We manage that basically with numbers put on a spreadsheet,” Bechtold said. “Someday, we envision all that happening in real time.”

Some real-time communication is already in place. The 250-kilowatt wind turbine turns on and off when power from the electric grid exceeds thresholds stored in a simple spreadsheet that is integrated with the turbine’s control software. “The systems are pretty self-monitoring,” Bechtold said. Harbec also puts [live energy monitoring data](#) from the turbine and cogeneration plant on the Web. (Editor’s note: A username and password are not required to log in.) “We could, if we chose to, make purchasing decisions based on the economics.”

### **Establishing a baseline for carbon accounting**

According to Chris Purcell, an Epicor product marketing manager, Carbon Connect is a rebranding of the SmartWeb Software as a Service (SaaS) application from Village Green Global Inc., an energy reporting consultancy based in Newport Beach, Calif. The two companies collaborated on a “one-off” integration to the Epicor 9 ERP suite.

“The original partnership with Village Green came in 2008, when we started getting questions from customers demanding to see carbon reporting of products,” Purcell said. “Then energy management got more interesting.”

Harbec had been seriously considering third-party [carbon accounting software](#) when Epicor released Carbon Connect last fall, according to Will Ingle, Harbec’s general manager. “You bring in a third-party tool, you’re eventually going to want to integrate it into the ERP,” Ingle said. Given the application programming interfaces, software development and complex nature of ERP, “that gets messy,” he said. “There’s already a lot of data sitting in Epicor [ERP] -- a lot of raw material information.

“The second thing we were a little concerned about was, Who is behind this?” Ingle said. “Are these people who understand green manufacturing and sustainability?” Harbec felt Village Green Global was run by manufacturing people “just like us,” he said. “They’re not [just] jumping on the bandwagon.”

The foundation of Village Green Global’s system is its database of 250,000 pieces of equipment that are typically used by manufacturers, according to Ingle. “That’s going to help us get super granular information [on] efficiencies and what to expect out of our equipment,” he said.

According to Helen Hannah, vice president of global sales at Village Green Global, the equipment database in Epicor 9 (E9) integrates with her company’s database in Carbon Connect. “If there is a

discrepancy between the two equipment databases, then the system will automatically sync back into [the] E9 [database],” Hannah said. Utility bill data on each plant’s actual energy use integrates with the greenhouse gas equivalents tracked in Carbon Connect. “This is all synchronized back into the accounts payable module of E9.”

In addition, Purcell said, utility and waste costs tracked in the ERP accounts payable module flow to Carbon Connect.

### **Green manufacturing pitfalls and best practices**

Months before the actual deployment, two auditors from Village Green Global spent nearly a week at Harbec developing a baseline audit of equipment and energy use and recommending cost savings in a 30-plus-page report that arrived in late January. “It’s quite an onerous task,” Bechtold said.

Although Carbon Connect isn’t installed yet -- Harbec opted for the on-premises version -- company officials are already envisioning how its use might evolve. Plans are in place to add monitoring equipment that would allow energy use data to be transmitted directly from valves and pumps that will otherwise lack direct links to Carbon Connect. “There will be opportunities to do some more sophisticated things with real-time monitoring,” Ingle said.

Will carbon reporting ever become an integral part of the company’s ERP financials? In the deployment announcement last fall, Bechtold called sustainability metrics “as serious to us as other common business metrics like financial reporting.” Ingle said at some point Harbec will probably include the cost of carbon in its financial statements as it begins to buy carbon offsets, or credits, to reach the final rungs of carbon neutrality. But he also expects Harbec eventually to *sell* carbon credits, which he is looking forward to because the credits “are probably going to be expensive.”

Bechtold said taking this sort of long-range view and being patient about return on investment have been the keys to Harbec’s success. Companies often balk at the seven-to-10-year paybacks that are typical of [green manufacturing projects](#), he said. “The light hasn’t gone on for them yet.”

Ingle, for his part, advises manufacturers to think big when setting goals and monitoring performance. The temptation is to seek incremental improvements from obsolete production and energy systems. “Sometimes you can get incrementally not very far over time,” he said.

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