Harbec Plastics plans to generate its own power

A field of micro turbines will make the 103 person injection molder self-sufficient.

BY AL LEVIN

You think the price of electricity in New York State is too high? Here's a solution that more and more Upstate business are considering: generate your own.

That's precisely the path being followed by Bob Bechtold, president of Harbec Plastics, a 103-employee injection molding business based in Ontario, NY.

Harbec is expanding, with the addition of 17,000 feet to the company's existing 20,000-foot facility. Bechtold installed twenty, 30-kilowatt micro turbines manufactured by Capstone Turbine Company of Woodland Hills, CA to supply his operation with power.

The new space was also built with a heavily insulated roof and walls, active and passive solar lighting and heating, plus geothermal radiant flooring.

Bechtold wants to eliminate dependency on Rochester Gas & Electric, or any other utility for electricity.

His goal, in fact, **is to sell power,** when electricity is in short supply.

And that's just fine with federal and state energy planners. They hope and expect micro turbines to play a key role in helping meet the state's future energy needs during periods of peak demand.

A generator that produces less than 200 kilowatts of electricity is typically called a micro turbine in the power industry. Micro turbines like those produced by Capstone were a significant advance when they began to reach the market at the end of 1998. According to Ewan Choroszlow, a principal at Modern Energy Systems in East Aurora, the system at Harbec Plastics is the largest installed in the world to date. Modern Energy Systems is the Capstone distributor that sold the micro turbine system to Harbec.

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HARBEC CEO BOB BECHTOLD installed 20 micro turbines to supply his Upstate company with power. It is the largest micro-turbine installation in the world. Technician pictured above monitors one of several micro turbines.

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Redundancy figures in system design

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Another company operated by Choroszylow, Combined Heat & Power Inc., produces proprietary natural gas compressors which are an integral part of Harbec's power generation system.

Until now, the software that controls the system was capable of operating only ten micro turbine units at a time. To meet Harbec's needs with a single point of control, Capstone upgraded its software to operate a gang of 20 units and the technology is moving forward rapidly. According to Choroszylow, "Capstone is three years ahead of its competition."

Essentially, micro turbines like the units installed at Harbec Plastics are miniature jet engines connected to small electric generators. Each unit produces a maximum of 30 kilowatts of power.

Micro turbines with greater output are coming soon, but there are benefits in terms of reliability in the concept of installing a large number of small units, according to Choroszylow. "Large installations of multiples make a lot of sense with these small units," he says, adding, "Nobody wants to buy these micros one at a time."

Each micro turbine is a module costing $30,000 to $35,000. Each module is capable of independent operation. The machines are installed in series.

Should one machine in the series fail for any reason, other machines turn on automatically to meet current demand. In other words, redundancy plays an important role in system design.

"If the owner of the Harbec facility had put in two or three large diesel generators, and one of those engines was down for service, which it will be from time to time, he's lost one-third to one-half of his power generation," Choroszylow explained.

Downtime with the Capstone system is rare, however, because the product has only one moving part — a compressor-turbine section that rotates at 96,000 revolutions per minute. With just one moving part supported by air bearings, the unit is virtually maintenance free, unlike more conventional generating systems.

In addition to creating 10 new jobs, the new construction at Harbec provides the precision custom molder, mold maker and model shop with additional warehouse and production space. But the micro turbines are the heart of the project.

"Building the high-efficiency, low emission co-generation facility will help us contain our utility costs for Harbec's competitive benefit," says Bechtold.

Bechtold has been working out the technical details of the "zero energy" building project for the past three or four years, an associate said. The financing package is multi-stage.

HSBC Bank is lending $804,500. Empire State Certified Development Corporation (ESCDC) is providing loans totaling $643,600 through the Small Business Administration's (SBA) 504-loan program. Genesee Finger Lakes Regional Development Corporation is providing the manufacturer with an additional $200,000 low interest loan. And New York State Energy Research & Development Authority (NYSERDA) is providing $200,000 for working capital.

Bechtold will not realize quick return on his energy investment. Typically, private sector companies look for a three to five year payback to justify investments in energy efficiency. But one source familiar with the Harbec project said payback could take as long as 10 years.

Nevertheless, many energy experts say deployment of micro-turbine technology — some call it distributed energy — is a cost effective way to avoid electricity supply shortages and high prices.

For customer owned systems to become widely utilized, however, the cost of micro turbines must fall to less than $500 per kilowatt — two to three times lower than current costs.

"Bob Bechtold is an early adopter," Choroszylow commented.

Nor has Harbec disconnected from RG&E, because, according to Choroszylow, "He has a long term desire to sell them electricity when they need it." To do so, Harbec must remain connected to the grid.

However, advocates of the use of customer-owned micro turbines to avert California-type power shortages say RG&E and other utilities in the state make that impossible to carry out.

If a "self generator" like Harbec remains connected to the grid, the utilities impose demand charges whether or not they deliver energy to the customer.

Advocates of self-generation accuse the utilities of throwing up roadblocks to protect themselves against loss of market, with the support of state government in New York.

The utilities argue, as usual, that their demand charges are justified since they need the same infrastructure in place to satisfy a customer's potential demand irrespective of the amount of power the customer actually purchases.

"I've had a lot to say to the Public Service Commission during the pasts 18 months" about standby energy and demand charges, said Harbec's attorney, Gerry Wahl.

The energy business is slow to change in New York. And the state will continue to protect the utility industry, one of its largest tax collectors, until there is a crisis. You can count on that. But, Harbec is pioneering an energy strategy that deserves a hard look by any heavy energy user in Upstate New York, because the chance of our energy costs going down over the next five years or so is not very high. ◆