



Is The Microturbine Market Overhyped?

One man's loss is another's opportunity. Power quality, shareholder values, environmental issues and regulatory rulings compete for both positive public perception and investor dollars. Solutions bring investment opportunities.

"The California message was mixed, with two major drivers for investors, high prices and reliability issues," Steve Taub, Cambridge Energy Research Associate's (CERA's) associate director for distributed energy, speaking to P&GJ. He encouraged a more global perspective. "It was nothing extreme as in India where so many people have reliability problems and where generators can actually compete against utility business, he said. Solutions highlighting microturbines, fuel cells and superconductivity in both regions are likely to be announced this year.

Major microturbine participants at the moment are Capstone Turbine, Elliott Energy Systems, Turbec, Honeywell and Ingersoll-Rand. Delivery and sales figures, however, vary greatly depending on the source.

"The microturbine market is hyped," Max Mayer, Frost & Sullivan's energy analyst told P&GJ. Mayer sees oilfield and wellhead flare gas mitigation as prime microturbine applications, especially in Canada. "Approximately 659 new microturbine units were sold in 2000 for US\$24.5 million," reported Mayer, "but only two companies have an operational commercial product right now - Capstone and Honeywell." His new study, North American Fuel Cells and Microturbine Market, is expected in March.

"Energy technology stocks have been performing well for another week in response to the California situation," reported Merrill Lynch in a late January issue of its iOn Energy Technology. The company's favorite energy technology stock picks are Capstone, FuelCell Energy, Ballard Power Systems and American Superconductor. Capstone, the only microturbine company on the list, "has addressed a key business risk by acquiring recuperator core manufacturing operations from CAT/Solar," Merrill Lynch wrote in November.

Technically, Solar, which Mayer

describes as both a division of Caterpillar and the leader in recuperator cores, decided it didn't wish to be in the business of manufacturing recuperator cores, so it licensed the technology to others to manufacture. Therefore, both Capstone and Honeywell are manufacturing their own recuperator cores now, based on Solar's designs, he said.

The recuperator core recycles hot gas to the combustion chamber in what he describes as a relatively simple process of fins and plates welded together. The complexity? "No one has done it before," he said. For unit prices to fall, "they have to both manufacture them on a large scale and do it right." Honeywell Power Systems Inc., a subsidiary of Honeywell, and possibly soon a division of GE, is reported to have delivered more than 300 microturbine units last year. Forty 75-kW Parallon 75 turbogenerators were delivered in May to Mercury Electric Corporation in Calgary, Alberta, Canada for use in single-unit or multi-pack applications ranging from flare gas mitigation, cogeneration, standby/back-up power to base load power.

They may use only 600 cubic meters of natural gas per day, but industrial use rumors of lower-than anticipated engine life may, at least temporarily, limit growth until those can be addressed. That's where anticipated GE involvement may bring added life to a good thing.

An important market player is Elliott Energy Systems, although the company is rumored to be plagued by test unit failures. In fact, in three microturbine tests prepared as part of a 1999 cogeneration

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feasibility study at the University of California at Irvine for a California energy commission, two Bowman units set up to recover waste heat, using 35-kW and 60-kW Elliott microturbines exhibited repeated component failures and required both onsite representative visits and return of the units to the manufacturer. After an initial failure in the Capstone unit, startup did not even require an on-site Capstone representative. (See Environmentally Preferred Advanced Generation Microturbine Generator (Distributed Generation) Project, Sept. 1999, <http://pier.saic.com>).

Capstone's microturbines have been used in coalbed methane and wastewater treatment applications. For the former, use of a microturbine running on what amounts to free natural gas solves a heretofore major obstacle of securing onsite power without waiting years for NOx permitting and paying a quarter million dollars for electrification, said Keith Field, Capstone's director of communications. For the latter, PPL was named last year by the EPA as its "Energy Ally of the year" for its Allentown, PA wastewater plant using Capstone units.

Contrasting three-year-wait listed power generation products, Field claimed 548 units shipped through 3Q 2000 and said the company will fill orders within four-six weeks of the order date. "We anticipate we will be able to ramp up to meet escalating demand," he said.

Energy Co-Opportunity (ECO), a non-profit energy services cooperative owned by hundreds of U.S. electric utility cooperatives, announced a contractual relationship with Los Angeles-based Capstone to purchase its 30-kW MicroTurbine power systems. The Association of California Water Agencies, a 440-member consortium whose members supply water to 90% of California's farms and cities, negotiated with privately held Harza Energy LLC to work toward securing up to 2,000 microturbine unit orders over the next two years. "There are plenty of people touting a fuel cell in every car and a microturbine in every basement, said Taub, "but we frankly don't believe it."

"We have, in general, been much less enthusiastic about distributed generation than others [have been]. Our role is to be objective and independent." He does, however, see distributed generation as a very important opportunity with roles to play, just in niche markets, and not to the extent that it will put utilities out of business. "It will take time," he said, "and it will be a gradual process."

Wanting a dream to come true doesn't necessarily make it true. "We're trying to bring people back to reality," said Taub. At last month's CERA Week in Houston, he said that microturbines are commercially available, but they will eventually compete in a market dominated by the small turbine generators manufactured by Caterpillar, Cummins Engine Co., Generac, Kohler,

and even Honda. One thing they each have going for them is that they offer private enterprise solutions rather than federal programs.

With no federal energy rulings in the crosshairs, it will be up to individual states, local politicians private businesses and keen energy executives to mold or reshape state energy issue policies. "No longer do we debate about whether we need to protect our environment. Instead, we discuss how we can keep America green while keeping our economy growing," said Christine Todd Whitman, the new EPA chief.

"In a Canadian oilfield application, the burning of waste gas is environmentally friendly," said Mayer. "The fuel is essentially free so economics are essentially favorable, whereas not favorable to just put one on the side of your house."

"The current popularity won't last forever," Taub advised the microturbine crowd. In the short run, various state governments will likely revisit requirements for environmental permits, building codes and tax considerations. That's the good news. On the flip side, "beefing up the electric infrastructure undercuts the motivation for installing supplemental generation. That spells good news for the nation as a whole, but bad news for the business of distributed generation, so one needs to take advantage of it while it lasts." **P&GJ**