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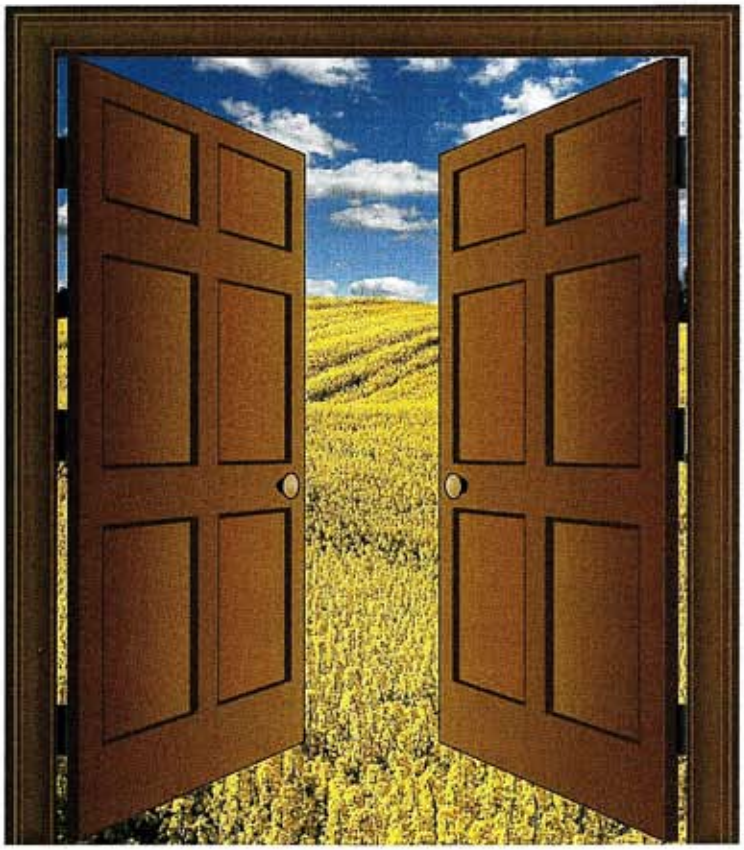
Biofuels in gas turbines: New opportunities?



Onsite efficiency

California's example

Microturbine trends

GROWING IN A NICHE

CAPSTONE SCALES UP ITS MICROTURBINES, SEEKING TO LEVERAGE CARBON-FRIENDLY POLICIES

Darren Jamison, President & CEO of Capstone Turbine Corp., talks about introducing products for a wider power range.

What trends do you see in power generation, especially distributed generation?

Rising energy prices, grid capacity constraints, climate change and need for power security are driving the global power generation and distributed generation markets. At Capstone, our order backlog is up 700% year over year, and we continue to enjoy tremendous sales of our new larger products.

However, the real catalyst has been climate change, as global markets are looking for improved energy efficiency and clean power solutions. The Capstone microturbine is one of the only combustion technologies that can run on natural gas and meet the stringent CARB 07 emission levels (prescribed by the California Air Resources Board). The only other technology that meets that level that is not zero emission is fuel cells. Fuel cells are a tremendous technology but, at five times a microturbine's average cost, are not economical without large government subsidies.

I think after the upcoming election you will see more focus from the new administration on climate change, 'green' buildings and energy efficiency. We may even be lucky enough to see a carbon tax or carbon trade system as both parties have this on their platforms.

What effects will the current economic downturn have, if any, on Capstone?

I believe that Capstone is less susceptible to market conditions than some of our competition for three reasons. First, we sell into a diversified portfolio of end markets from oil and gas to telecom, transit bus, landfills and government.

Second, our markets are global, so we are somewhat insulated from one specific nation's economic issues. Today our largest markets are Europe and Russia, followed by North America. However, Asia, South America and Australia are starting to pick up momentum.

Lastly, because our average selling price is about $1,000 per kW ($30,000 for a C30 — $200,000 for a C200), our projects tend to be smaller in nature and less dependant on outside or third-party financing. Therefore, if a project has an attractive economic benefit, most companies can afford to fund our product out of their working capital funds without relying on outside financing.

Can you describe the reason for introducing the C200 and C1000? What applications do you see for them? Where are the markets?

Capstone is introducing the C200 and C1000 family of products to serve larger load regimes in the same applications and markets we already serve. These markets are landfills, digesters, waste water treatment plants, oil and gas, buildings, data centers, and universities.

The 1 MW - 5MW space is the largest portion of the global cogeneration market. The C200 and C1000 product essentially triples Capstone's annual addressable market in a $4 billion industry.

The new products are in the higher power range. Does that mean the original microturbine niche is not there anymore?

Not at all. The new product allows us to provide a full line or suite of products to our end-use markets. Take oil and gas for example, where we put C30s on unmanned oil platforms, now we can put C200s and C1000s on larger manned drilling platforms with several MW of load. The same is true for data centers, landfills and so on.

What new technologies are you introducing or currently working on?

The first C200 was shipped on August 28, 2008. The first C1000 is scheduled to ship in January, 2009.

We are working on integrating our microturbine into a large solar collector. In this application, the mirror concentrates the sunlight into a receiver and the receiver heats the combustion air that then drives the microturbine. You essentially end up with a solar powered microturbine that then can run on traditional fuels at night or when a solar resource is not available. We are also looking at marine, truck and other liquid-fueled applications. TI