

# Tecogen

Advanced Modular CHP Systems



## CM-60 Cogeneration Module

# Case Study



### Blodgett Pool, Harvard University

Alternative energy systems are old news – at least at Harvard University, where a natural gas-powered cogeneration system is set to enter its twenty-sixth year of operation, providing electricity and hot water for the University's renowned natatorium – also known as Blodgett Pool. Considered one of the finest swimming and diving facilities in the nation, the pool is 50 meters long and 25 yards wide with a recessed diving well 15 feet deep. All told, that's 750,000 gallons of water that need to be maintained at a comfortable swimming temperature year round.

When the pool was first built in 1977, a district steam system furnished thermal

energy for the building, the pool, and all the domestic hot water that the facility required. But by 1984, annual costs were running about \$84,000 per year just to keep the 750,000-gallon pool at a comfortable 80°F.

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In an effort to reduce costs, a Tecogen CM-60 cogeneration module was installed in 1984 to provide domes-

tic hot water and to heat the pool. Gas-fired boilers provided space heating and peak-load backup. The result is that total heating costs have been cut by about half with no change in comfort levels. In addition, the cogen system produces over 300,000 kilowatt hours of electricity each year. This electricity is used for building lighting, and has helped reduce

electric utility charges by more than \$20,000 per year.

Annual energy costs at the pool have been cut substantially since the Tecogen system was installed – providing almost \$650,000 in energy savings for Harvard University to date. And with the exception of several routine engine part replacements, the same system has been performing successfully at Harvard for over 25 years, logging about 90,000 hours of operation so far. A new microprocessor was installed in 2002 to ensure the system's maximum operational efficiency. The microprocessor monitors thermal flow and electrical functions, turning the cogen system on and off automatically as needed. In addition, Tecogen monitors the equipment daily through its Remote Monitoring and Control System (RMCS).

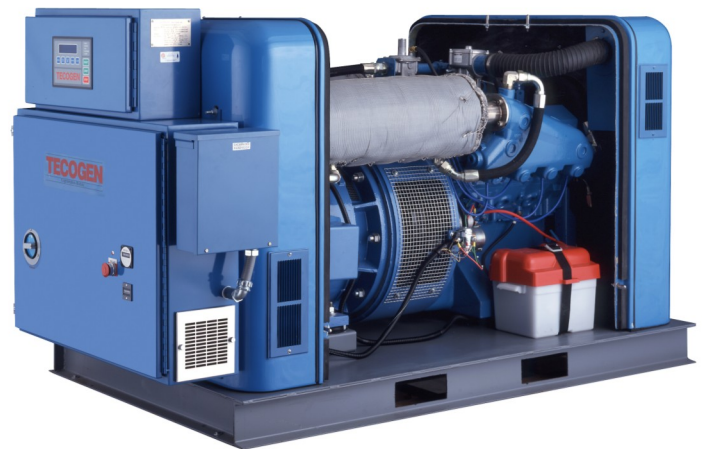
"This remote monitoring and diagnostic capability helps differentiate Tecogen from other suppliers in the distributed generation market," says Joe Gehret, principal engineer for Tecogen. "We're getting data from our systems every morning – a snapshot that tells us at a glance how each of these machines is performing."

Basically, the RMCS is a diagnostic tool that allows Tecogen's engineers to watch what each system is doing. Thanks to the efficiency of the database program that Tecogen uses, engineers can tell a number of things from just a single line of numbers that each system transmits back to headquarters. "We can see what's happening at a given moment in time, in terms of temperatures and pressures. And if one of our systems runs into a problem, engineers in Waltham can use the network to access the operating history and look for signs of what's gone wrong," Joe continues.

More recently, Harvard Business School has purchased a 75 kW TECOGEN unit for Shad Hall. Shad Hall houses the school's Technology Operations Center, and a fitness center that includes basketball, racquetball, and squash courts, as well as fitness and training, whirlpool, steam, and sauna rooms. "We showed the facilities team our operating data from Harvard's Blodgett Pool while they were reviewing technology options," said Tecogen Sales Manager, Jeff Glick. "The fact that the Blodgett unit has proven

its reliability and efficiency so consistently over the past 25 years clearly influenced the team's final recommendation." Mr. Glick reports that the Shad Hall unit began operation in October 2003 and has been meeting all performance expectations.

Tecogen's rigorous attention to service and monitoring, together with an outstanding reputation for reliability and efficiency, has made Tecogen the leading manufacturer of low-emission packaged cogeneration units in the United States. Based on low-cost, mass-produced internal combustion engines, Tecogen's modular units use natural gas to produce electricity right at the customer's facility, capturing the waste heat to produce domestic hot water. Tecogen has a nationwide installed base of more than 2500 units, which it supports through an established network of engineering, sales, and service support.



For more information about Tecogen's  
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