

Need Energy? Make Your Own

YMCA of the North Shore Saves Resources, Operating Costs with Co-Generation

By Emily Tipping

Many recreation, sports and fitness facilities have been looking for ways to both improve their environmental footprint while also reducing operating costs. At the YMCA of the North Shore in Beverly, Mass., a unique clean energy system from American DG Energy, is helping the Sterling Center YMCA branch save resources, money and the environment.

The clean energy system operated at the Sterling Y is a highly efficient 75-kilowatt combined heat and power (CHP) system. It generates electricity, space heat, hot water and pool heat for the facility. Using this system, the Y only pays for the energy it uses, avoiding the capital installation, operating and maintenance costs. The energy is priced lower than the local utility, which means the Sterling Y started saving money as soon as the system started. It is expected to save more than \$200,000 during the term of the agreement.

"As a Y, we are trying to be a little greener for a number of reasons," said Jack Meany, CEO of the YMCA of the North Shore, who discussed his facility's use of the on-site utility. "One, because it's the right thing to do, and socially responsible. Members want us to be more green, and we have to figure out a way to pay for that. You have to implement measures that will pay for themselves."

Meany explained that the Y's green team began researching ways to make its facility greener, while also paying for those measures. "We started in earnest about three years ago—looking at serious recycling, the kinds of materials we use and energy conservation," he said. "That's when co-generation came onto our radar screen."

While initially, co-generation was not a fit financially for the facility, as the costs of electricity and gas continued to climb and as co-generation technology became more sophisticated, the solution began to make sense.

CHP systems are a cleaner energy option, offering considerable environmental benefits, when compared with purchased electricity from the grid and on-site-generated heat from a boiler. By capturing and using heat that would otherwise be wasted from the production of electricity, CHP systems require less fuel to be combusted, lead to fewer greenhouse gas emissions such as carbon dioxide, and less air pollutants like nitrogen oxides and sulfur dioxide.

In the case of the Sterling Y, the CHP system could reduce the property's emissions by up to 330 tons of carbon dioxide annually, the equivalent of removing the carbon emissions of 55 cars each year.

"When you use an internal combustion engine to produce electricity, at the same time you're producing energy, you're producing heat," Meany said. "And they can produce electricity on site for the same price or a little less, but if you have a use for that byproduct of heat—as most Ys do in the form of a swimming pool and hot water—if you're running a large enough facility, the use of that byproduct actually cuts your heating costs for domestic hot water and heating the pool, and produces a saving. The savings—if they're substantial enough—pay for the technology used to create the energy."

The system was installed at the Sterling Y about a year ago, and Meany said the results have been in line with predictions. "We're saving a substantial amount of money, paying for the technology, and making a little bit of savings on top of that," he said.

American DG Energy sells the energy produced on-site from a CHP system to an individual property as an alternative to the outright sale of energy equipment. On-Site Utility customers only pay for the energy produced by the CHP system, and receive a guaranteed discount rate on the price of energy. All system capital, installation and operating expenses are paid

by American DG Energy. All system installation, operation and support are handled by the company as well.

The Sterling location was chosen because it was the best fit. "This site was particularly effective for us and made the most sense from a payback and sustainability sense," Meany explained. "Other facilities, for a variety of reasons such as peak time and demand, don't make as much sense, though they may in the future."

There is no capital outlay involved on the part of the YMCA, but eventually they will own the equipment.

"We're using the savings we're creating over the first five years, and then we'll buy out American DG on the equipment. We'll contract with them for maintenance, and we'll realize even more savings," Meany said.

How can you tell if such a system is right for you?

"Look at your overall goals of energy savings and then do your research to understand whether co-generation can be a part of that—and maybe even an integral part of it," Meany said. For example, larger aquatic facilities—which have a lot of pool water to heat—can really benefit from this technology. And new buildings can also reap the rewards. "As you think about designing and paying for new buildings, it can help you afford them, and cut their operating costs," Meany said.

Other Ys, community centers and fitness facilities are also using the technology. For example, American DG Energy Inc. has reached agreements with many facilities, including the Metro YMCAs of the Oranges in Wayne, N.J. (one of the largest associations of YMCAs, serving more than 164,000 members annually) and Club Fit in Jefferson Valley, N.Y.

Will It Work for You?

To gain the benefits of a Combined Heat and Power (CHP) system, your facility should have a suitable thermal load, according to American DG Energy's Web site. Here are some of the other characteristics that will make your facility a good fit for this kind of solution:

- The property has more than 120 beds, rooms or units.
- Natural gas is available on-site or nearby, and the property uses a minimum of 4,000 therms per month (especially during the summer months).
- A central boiler plant provides domestic hot water.
- A central plant supplies space heating with hydronic distribution.
- The property has an on-site laundry, food service area or a heated swimming pool.
- The property has a central electric meter.
- The local utility charges more than 10 cents/kWh.
- The property spends more than \$10,000 per month on electricity and \$3,000 per month on natural gas.

There are exceptions, but the company reports that CHP works well for businesses located in the Northeast, California and Hawaii, where electricity prices are high. The Gulf Coast is a strong market as well.

--Source: American DG Energy Inc.



45 First Avenue, Waltham, MA 02451
www.americandg.com

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