

All in the Family

Multifamily buildings reap powerful benefits from CHP technology

By Kristy Alpert

When the Apartment Investment and Management Company (AIMCO) decided to update three of its Philadelphia apartment complexes with the latest technology in eco-friendly living, it didn't come in the form of trendy bamboo flooring or futuristic motorized shades. Instead of expensive upgrades and high-tech gizmos, this eco-conscious company invested in one upgrade that was sure to attract savvy renters: green energy.

It was in late 2010 that AIMCO partnered with Aegis Energy Services to introduce Combined Heat and Power (CHP) technology solutions to the three multifamily high-rise apartment buildings located on the upper east side of Philadelphia. The results since then have included an increased electrical and thermal efficiency of 85 percent (up from 33 percent with traditional centralized electric power stations), a reduced load on the city's power grid, 2,500 tons of reduced carbon emissions, and a community of happy renters.

CHP is not a new technology but it is quickly becoming a preferred application for owners of multifamily buildings. A recent survey by Strata Research found that more than 77 percent of renters said it was important for them to rent from an eco-friendly building. With the proven results of CHP technology, it's easy to see why more building owners are turning to these systems.

"Combined Heat and Power, also known as co-generation, is an efficient, clean and reliable technology that simultaneously generates electricity and thermal energy from a single fuel source," explained Dale Desmarais, director of sales and marketing for Aegis Energy Services Inc.

Desmarais says he has noticed that more and more commercial sites are deploying CHP technology as awareness increases. "The market is maturing, and the people responsible for reducing energy costs in their buildings are getting positive feedback from others in similar roles that have deployed

CHP in their buildings and are seeing the results in their energy bills," he says. "As rate tariffs increase by 20 to 30 percent, the sites using the technology have secured a way to isolate themselves from these fast rising costs. In addition, state and government entities are now actively promoting CHP technology and even providing grants as large as \$2,000 per kW to install the technology."

Powerful benefits

While grants issued by local governments and the U.S. Department of Energy have made a huge impact in offsetting the initial costs of installing CHP systems, the long-term benefits of being able to generate their own electricity and heat from a natural resource like natural gas have remained the biggest draw for multifamily building customers, says Kent McCord, director of marketing strategy for Doosan Fuel Cell America Inc.

Started in July 2014, Doosan Fuel Cell America has since become one of the biggest names in fuel cell technology. A fuel cell is a CHP device that generates electricity and heat through an electrochemical reaction without combustion, making for an extremely clean and efficient form of energy. Doosan offers a PureCell® fuel cell system that operates solely on natural gas, which results in an ultra-clean, reliable and affordable solution for generating its own electricity and heat.

"Multifamily buildings are good applications for our PureCell combined heat and power fuel cells because they have a large, steady demand for both electricity and heat," says McCord, who predicts this segment of the market will continue to grow as more building owners begin to understand the benefits of the technology for their specific purposes. "There is significant potential for growth in the multifamily community sector, but the key to successful multifamily applications is that they must be 'master metered' or 'sub-metered.'"

One of Doosan's latest projects included being a part of one of Hartford, Connecticut's most historic green renovations to date. Doosan Fuel Cell

PHOTO COURTESY OF APARTMENT INVESTMENT AND MANAGEMENT COMPANY



Apartment Investment Management Company's integration of Combined Heat and Power (CHP) technology in its 360 State Street apartment complex increased efficiency by 85 percent.

PHOTO COURTESY OF DOOSAN FUEL CELL AMERICA INC.

A fuel cell CHP system was the perfect multi-family dwelling solution for the owners of the 777 Main Street apartments.



America was chosen by Becker + Becker, a sustainable development and architectural firm, to install a nearly \$3 million fuel cell as part of an \$85 million conversion project to transform the 26-story Hartford National Bank building into an eco-friendly, mid-century, modern, mixed-use apartment complex called 777 Main. Originally built in 1967, the historic building is now honored with a LEED Gold Design rating and is home to 285 apartments all heated and powered by a 400-kilowatt PureCell Model 400 fuel cell that is presumably going to be the key to

helping the building reach LEED Platinum status by the end of the year. Not only was the fuel cell the source of energy behind the project, but it also was the muscle behind eliminating more than 99 percent of particulate pollution from the project's carbon footprint.

The 777 Main Street project proved that fuel cell CHP systems can be retrofitted into nearly any building — even a historic building in the downtown of a major city. In addition to the breakthrough this project symbolized for CHP technologies, McCord notes that other multifamily building owners with vision and money to adopt new energy

solutions will continue to be ahead of the game if they take advantage of these fuel cell systems. With so many new consumers looking to save money and live green, the energy savings, energy security and environmental responsibility these systems offer is unparalleled, and is a win-win for both renters and building owners.

The Office of Energy Efficiency and Renewable Energy lists the benefits of CHP as capable of enhancing energy security, advancing climate change and environmental goals, improving business competitiveness, increasing resiliency of the energy infrastructure, diversifying the energy supply, and even improving energy efficiency by capturing what would be wasted heat. While those benefits are remarkable in themselves, they could apply to any building. The specific benefits for multifamily buildings include:

- **Continuous power.** Fuel cells can continue to operate in the event of a utility power outage, providing much-needed security to the building's residents. In other words, they can be a replacement or supplement to an emergency power generator as well as an energy savings solutions.
- **Reduced carbon footprint.** Not only does CHP act as an environmental solution by reducing CO₂ emissions, but in conjunction with natural gas, this ultra-clean, highly-efficient system works to both reduce the overall carbon footprint and increase the environmental efficiency of a building.
- **Locally sourced.** CHP is deployable throughout the United States, and, as a local power source, it has benefited the country by creating green jobs and relieving the overly congested electric grid to improve energy security across the country. ▮

FOR MORE INFORMATION

- on CHP and its many benefits, visit
- www.understandingchp.com
 - www.aegisenergyservices.com
 - www.doosanfuelcell.com/en/solutions.do