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Combined Heat & Power Equal Big Savings

On-Site Utility Model
Investment: $0
Typical Savings: $125,000 per year

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With electricity continuing to have double-digit rate increases, and the 2009 winter season expected to bring record high heating costs, hotel properties are turning to the economic and environmental benefits of combined heat and power systems.

Combined heat and power, also called "cogeneration," is the simultaneous production of two types of energy, hot water (or space heat) and electricity, from a single fuel source—often natural gas. The ability to create two forms of energy from a single source offers tremendous efficiency, resulting in cost savings and environmental benefits.

The CHP on-site utility model provides a system at no cost to the customer. The supplier takes full responsibility for operating and maintaining the system. (This CHP unit was recently installed at the Hotel Indigo in Newton, Mass.)

A CHP system provides electricity and hot water at a combined efficiency of almost 90%. This is a significant improvement over the combination of a 33% efficient electric-utility power plant and a conventional hot-water boiler with a 70% seasonal efficiency.

But installing a CHP system requires capital and experience. Most installation costs range from $3,000 to $3,500 per kilowatt. Depending upon location and property type, simple payback can range from four to six years. And once the equipment is installed, the property owner is responsible for operating the system and maintaining it, requiring either staff hours or a third-party service contract. Finding available cash, the capacity for extra debt or carrying a new lease for a turnkey cogeneration project can be a challenge for hotels with a stretched budget already competing for capital improvements.

The latest trend is for hotels to choose an on-site utility or outsource model and allow experts to manage the installation and operation of a system. With the on-site utility model, a service company owns, installs, operates and maintains the CHP system at no cost to the hotel. The hotel only pays for the energy they use from the system, and the price of that energy is discounted. Because a CHP system is so efficient, the cost to produce the energy is lower; therefore the price of the energy is discounted below the local utility rates. With the discount rate guaranteed for the life of the contract, a 300-room hotel may be able to save as much as $2 million over the term of an agreement.

The on-site utility model allows hotels to enjoy the fiscal and benefits of CHP, including efficiency, lower operating costs, significantly reduced energy costs and a decreased carbon footprint, while avoiding the drawbacks of ownership, which include an initial capital expenditure, operating and maintenance costs, and manpower requirements.

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Combined heat and power systems offer considerable environmental benefits because less fuel is used compared to purchased electricity from a utility company or on-site-generated heat from a boiler. A 300-room hotel utilizing a 300-kilowatt CHP system can offset approximately 18,000 tons of CO2 over the term of an on-site utility agreement. This is equivalent to the amount of carbon absorbed by 400 acres of forest, or by removing 250 cars from the road each year for 15 years. CHP also gives hotels a more competitive edge as more consumers actively seek to do business with Green organizations.

When considering other clean energy options, such as solar, keep in mind that solar power systems require the electric utility to supply back-up power on cloudy days and at night—plus, they require a boiler to produce heat and hot water. As a result, a CHP system is actually better for the environment than a solar power system because it has lower greenhouse gas emissions, and it provides a significantly better return on investment.

Because all hotels are not the same, the following qualifying criteria can help determine whether or not a hotel is a good candidate for a CHP system:

- A property has more than 100 rooms;
- Natural gas is available on site;
- There is a central boiler plant supplying space heat and domestic hot water;
- There is an on-site laundry, banquet facility or heated swimming pool or spas.

A combined heat and power system has significant value—both economic and environmental—for hotels. If any hotel is a good candidate, the ownership and management should consider adding a CHP system to an existing hotel or including it in the design of a new property. ▮

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