

PowerHouse Energy

Case Study

Overview

The Embassy Suites Hotel in San Luis Obispo, California is a full service hotel with 196 guest rooms, 11 meeting rooms, a pool and fitness center, and a restaurant and lounge. Rising energy costs and strict environmental standards for air quality, prompted the hotel's management to explore the benefits of on-site power generation. In high power-rate states like California and New York, cogeneration or "CHP" (combined heat and power) cuts utility bills by thousands of dollars per month.

Shawn Milburn, General Manager of the Embassy Suites San Luis Obispo, said, "PowerHouse Energy has already installed energy systems at two of our sister hotels. We are eager to start realizing the benefits of cogeneration," — a process that uses the electricity and heat outputs of generator to supplement a property's daily power and water heating needs.

PowerHouse Energy (PHE) recommended the ENI 85 energy/nov™ on-site cogeneration system — a prepackaged CHP system to provide the hotel with an excellent heat and power platform that is compact and easy to install. This California flagship ENI 85 energy/nov™ system was installed in July of 2005.

Technical Application

The ENI 85 energy/nov™ system was installed in parallel with the hotel's existing electrical utility connection which is provided by PG&E. The CHP system runs continuously to provide ~85 kWh of electrical power to offset the hotel's average electrical demand of 200 kWh. The hotel recovers ~510,000 Btu/hr thermal heat from the system's heat recovery unit. The domestic, laundry and kitchen

hot water loops circulate the 140°F water through two 500 gallon hot water storage tanks to reduce the runtime of the existing hot water boilers. To reduce the hotel's space heating costs, the existing heat pump/cooling tower closed-loop system was tied into the CHP thermal circulation through a plate-and-frame heat exchanger. The tank's captured thermal heat uses a 40°F temperature rise in the water and a flow of 80 gpm through the CHP unit to offset the thermal demands. In the winter months, the ENI 85 energy/nov™ system will provide a significant part of the hotel's hot water, while the boilers remain in a reserve capacity. During the summer months, the system should provide all the domestic water heating needs.

The ENI 85 energy/nov™ system should provide approximately 40% of the hotel's average electrical demand and over 75% of the average thermal demand. The operating reliability of this CHP system, including start up and commissioning, is projected to be +96%.

Financial Results

PHE offers its customers a choice in ownership options: the full economic savings benefit of equipment ownership or PHE can own and operate the installation with guaranteed savings to the customer under an Energy Service program. The Embassy Suites management chose to have PHE install, own and operate the system, guaranteeing the hotel an energy savings on their electrical and thermal energy costs. The ENI 85 energy/nov™ system provides a typical savings of \$900 to \$1,200 per month, or \$12,000 per year, which should save Embassy Suites \$180,000 over the 15 year life of the Energy Service contract – all without any equipment risk or capital outlay by the hotel. The energy savings are net of all operating costs and natural gas used in the operation of the system. PHE also takes advantage of cogeneration and non-core natural gas rates as part of its Gas Purchasing Program to realize additional savings.

PHE maintains 24X7 remote monitoring of the equipment to maximize economic savings and ensure reliable operation. With around-the-clock operating up-time, the cogeneration system has a return on investment of approximately four years and is part of California's Self Generation Incentive Program.

This is another example of the benefits of Distributed Generation provided by PowerHouse Energy to industrial, institutional and commercial properties. Thank you to Shawn Milburn and Sam Sansone for their time, site survey assistance and energy use data.



Name and Type of Business:
Embassy Suites Hotel
Location: *San Luis Obispo, California*
Energy Solution:
I Power Energy Systems' ENI 85 ICHP System