The Ronald Reagan Presidential Library

Public Facility

The Challenge

President Ronald Reagan kept a sign on his Oval Office desk that said simply: It can be done.

Back in 2005, administrators of his presidential library in Simi Valley, California were similarly determined to find an innovative, environmentally friendly solution that could supply the energy and cooling needs for the facility that houses the late president's legacy.

Partnering with Capstone, they implemented an ideal solution featuring a combined cooling, heating, and power system (CCHP) for this high-profile campus. It's been almost 20 years since the system was commissioned, and it has impressively delivered on the promise of ultra-reliability, low emissions, and high efficiency.

The Solution

At the heart of the CCHP system are 16 natural gas C60 microturbines, which are divided among three UTC PureComfort™ packages, each with four Capstone microturbines and a Carrier absorption chiller, plus four standalone Capstone C60 (60 kW) units. These provide 95 percent of the energy required by the 100,000 square-foot facility, including electricity for the Air Force One Pavilion, home to Air Force One, tail number 27000, which flew seven U.S. presidents. The microturbines also generate 75-80% of

We wanted to make sure the system we installed provided not only the needs and requirements of cooling and energizing the building, but also leaving as little of a footprint on the environment as possible... Overall, we are pleased with the performance of the turbines, the efficiency of their electricity-generating capabilities, and the hot water they provide."

— John Lehne, Facilities Manager,
Ronald Reagan Presidential Library

Power Profile

Customer
The Ronald Reagan Presidential Library

Location
Simi Valley, California, USA

Commissioned
October 2005

Fuel
Pipeline Natural gas

Technologies
- 16 C60 microturbines
- 3 UTC PureComfort™ packages featuring 4 microturbines each
- 4 standalone C60 units
- 1 Carrier absorption chiller
- 15-year Factory Protection Plan

Capstone Green Energy Distributor
Cal Microturbine

Natural gas-fired microturbines generate nearly all of the building's electricity, while capturing the process heat to operate absorption chillers for energy-efficient cooling or space heating.

power needed to maintain humidity and temperature levels for preservation of archival museum items.

In addition to producing 960kW of electricity, the microturbines provide chilled and hot water. This trigeneration method adds to the system's efficiency by recycling the heat from power generation for the facility's heating and cooling. In other words, exhaust from the operating turbines is collected and channeled to an absorption chiller. The chiller has a closed water loop through it, which chills and provides water for the air-conditioning systems, resulting in 387 tons of refrigeration. Other turbines have a hot water loop on them, which provides heat and hot water for the entire facility.

The Results

Reliability is key when you welcome over 300,000 visitors each year and are responsible for maintaining historic documents and artifacts. Since the system was installed in 2005, it has provided 24/7 availability. The turbines have only one moving part and air bearings, so their maintenance needs are very low, requiring only routine filter changes.

The system has also performed exceptionally well in terms of environmental goals. The use of natural gas as a fuel produces lower emissions than traditional fossil fuels. Further, the system operates at an 82 percent efficiency level compared with the 30 percent of typical grid power. Altogether, the system reduces annual NOx emissions by nearly 23,000 pounds and CO2 emissions by nearly 4 million pounds, which is the equivalent of removing more than 400 passenger vehicles from the road each year.

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