At a glance

Location

St. Martin in Passeier, Italy

Commissioned

September 2010

Fuel

Natural gas

Technologies

- Two Capstone C65 ICHP microturbines.
- Capstone Heat Recovery Modules installed on each C65 to capture the microturbines' waste heat.

Results

- Quellenhof was labeled the first clean-and-green hotel in Passeier.
- Annual CO_2 reduction of 800 tons (approximately 1.8 million pounds).
- Quellenhof predicts it will save €75,000 each year; of that, €10,000 alone is expected to be due to reduced maintenance costs.
- Quellenhof estimates it will achieve a return on investment in less than 3 years.
- ICHP system generates 1 million kW-hour (kWh) of electricity and 1.8 million kWh of thermal power.
- The system produces 125kW of electricity for day-to-day hotel operations.
- Heat Recovery Modules capture waste heat to produce 224kW of thermal power to heat pools and wellness areas.
- ICHP system exceeds 80% energy efficiency.
- ICHP system fulfills nearly 50% of the hotel's overall power needs.
- Microturbines operate continuously 8,000 hours per year with minimal downtime for scheduled maintenance.

Quellenhof Sport and Wellness Resort

The Quellenhof Sport and Wellness Resort in St. Martin in Passeier, Italy is a sophisticated paradise that radiates wellness in every detail from the temperature of its luxurious swimming pools to the clean-and-green power system that today upholds the hotel's heavenly atmosphere.

With 150 rooms and more than 5,000-square-meters (53,800-square-feet) of wellness area that includes 20 spas, eight saunas, and 20 swimming pools, the Quellenhof Resort is a significant energy consumer. Originally relying on 100 percent utility power for hotel operations and traditional boilers for heating, the luxury hotel needed to upgrade its energy initiatives to match its five-star standards.

To charter a perfect spa vacation for guests seeking tranquility in an eco-friendly environment, the Dorfer family, hotel owners since 1923, decided Quellenhof needed a new power supply that was efficient, reliable, and could deeply limit greenhouse gas emissions to help preserve the surrounding Trentino Alto Adige Region – an area extremely focused on environmental sustainability.

In September 2010, two Capstone C65 ICHP MicroTurbines® in a combined heat and power (CHP) application were commissioned at the family-run hotel, labeling the "clean-and-green" hotel the first of its kind in Val Passiria.

"I was looking for an alternative energy system that could save energy while increasing efficiency," said Heinrich Dorfer, Resort Owner. "I asked several companies and came to the conclusion that Capstone

microturbines are the most efficient turbines at an appropriate price. With their ultra-low emissions, microturbines fit our sustainability concept and support our energy saving goals."

Having supported sustainable eco-tourism values for decades, the deluxe resort has implemented an aggressive waste recycling program, installed low-energy lighting, and was built according to bio-architecture principles. The clean-and-green Capstone microturbines further Quellenhof's commitment to eco-tourism with an annual CO_2 reduction of 800 tons (approximately 1.8 million pounds).

Generating power for the avant-garde suites and wellness areas, the natural-gas C65s maintain a caliber of services unparalleled in the Trentino Alto Adige Region. While the cogeneration system produces 125kW of electricity for day-to-day hotel operations, the microturbines' waste heat exhaust is captured by Capstone Heat Recovery Modules to produce 224kW of thermal power used to heat swimming pools and wellness areas.

The cogeneration system generates 1 million kWh of electricity and 1.8 million kWh of thermal power onsite, exceeding 80 percent energy efficiency. With the microturbines, Quellenhof estimates it will save €75,000 each year in energy costs, reaching a return on investment in less than three years.

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Quellenhof Sport and Wellness Resort

Using natural gas supplied by the local utility, the Capstone ICHP system fulfills nearly 50 percent of the hotel's overall power needs. The microturbines replaced several traditional boilers at the site, which required higher amounts of natural gas and produced less heat.

"In addition to the significant cost savings and low-emission benefits of microturbines, they're very low maintenance and don't require a drop of oil," said Ilario Vigani, IBT Group President, Capstone's Italian distributor that secured the order with Quellenhof. "Capstone microturbines operate at up to 99 percent availability and because they lack wet components, scheduled maintenance occurs less frequently."

Quellenhof officials estimate that approximately €10,000 of the total annual cost savings of €75,000 will be a result of the microturbines' reliability and low maintenance.

Because the microturbines are installed in a turbine room next to the hotel, it was important they didn't conflict with the harmonic music filtering through the wellness areas. With a nearly inaudible noise output of only 65 decibels at 10 meters (32.8 feet), guests can relax in the South Tyrol sun without noise interference from the microturbines that run continuously more than 8,000 hours per year.

"Being a large hotel resort with thousands of guests every year, it's our duty to care for the environment as much as possible," Dorfer said. "The hotel is a large entity, and as we require a huge amount of energy I was – and I still am – convinced that the production of energy with the turbines is a cost-efficient and sustainable way to do it." ■

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