

Large Canadian REIT

Multi-Residential



The Challenge

This Vergent Power Solutions customer is one of Canada's largest real estate investment trusts (REIT). They manage over 65,000 residential rental apartment and townhouse suites and manufactured home community sites in major urban centers across Canada and parts of Europe. As part of the company's commitment to providing positive returns for their investors, as well as meaningful contributions to society and the environment, they sought a portfolio-worthy energy efficient solution that would increase reliability and reduce operating costs.

In October 2018, the Vergent Power Solutions team commissioned what would be the first of several combined heat and power (CHP) systems in their portfolio featuring Capstone microturbines. As the first of its kind in Canada's multi-residential industry, the new system provided an innovative, high-tech solution in an environment typically characterized by high electricity and heating costs, and a need for consistently reliable power.

The Solution

The company's pilot CHP system was installed at one of its North York buildings, a 35-story apartment complex located near Toronto's airport. Replacing a traditional genset, the system features four dual-mode ICHP C65 microturbines that produce energy for on-site use and the building's thermal load. The units generate more than 1.9 million kWh per year, or about 60% of the building's baseload.

As is characteristic of Capstone CHP systems, exhaust heat can be recovered during energy production. Exhaust heat can be used in a variety of ways, including water heating, space heating, direct or indirect drying, and driving thermally activated equipment.

Power Profile

Customer

Large Canadian REIT

Location

Toronto, Canada

Commissioned

November 2018

Fuel

Natural Gas

Technologies

■ 4 C65 ICHP Microturbines

Capstone Turbine Distributor

Vergent Power Solutions



"The modularity of the system allows us to customize the design in the retrofit market, while maintaining consistent equipment selection across our portfolio. The CHP system has definitely increased our resiliency and our backup power capacity."

—REIT Energy Manager

Reliable power when and where you need it. Clean and simple.



Four dual-mode ICHP Capstone C65 microturbines generate more than 1.9 million kWh per year, or about 60% of the building's baseload.

The REIT's microturbine-based CHP system is capturing waste heat that is then used for year-round heating and domestic hot water, which supplements the building's boilers and offsets the need for additional fuel. At the same time, the fully autonomous system provides backup power in support of critical emergency loads such as elevators, fire pumps and emergency lighting. In the event of a power outage, the system seamlessly provides electricity to keep these critical needs up and running. In accordance with Canadian building code, the system was designed to meet CSA 282.15, which is the emergency life safety standard for buildings. This means that the system is fully compliant with the strictest requirements for backup power, in addition to being a highly efficient energy system.

Since the system design allows all four units to operate continuously, uptime is near 100%—even during times of maintenance. And because each unit has only one moving part, such maintenance costs are dramatically lower than those required for more traditional power generation systems.

The Results

To date, the turbines have operated over 15,000 nearly continuous hours. Though the building's natural gas consumption has increased, the facility has experienced a 58% reduction in electricity usage and has maintained a total system efficiency of greater than 80% LHV. The result is a 24% lower overall energy cost, which amounts to approximately \$168,000 CAD in annual savings. Having received an incentive from the Province of Ontario of almost \$400,000 CAD, the payback on the project is expected to be about five years.

The system's modular design, backup power and quiet operation make it an ideal solution for the multi-residential market.

"In multi-res, our buildings come in various sizes with different thermal electrical loads as well as backup power requirements," according to the company's energy manager. "The modularity of the system allows us to customize the design in the retrofit market, while maintaining consistent equipment selection across our portfolio. The CHP system has definitely increased our resiliency and our backup power capacity."

The success of the building's CHP installation has served as a model for others within the REIT's portfolio. The company has partnered with Vergent Power Solutions and its utility partner in Ontario to implement seven more C65 microturbines for three additional buildings and will be using this exciting technology to replace aging backup generators across their fleet.

Capstone C65 ICHP Microturbine



A C65 provides up to 65kW of electrical power while the UL-Certified C65 ICHP provides up to an additional 150kW of thermal power for CHP and CCHP applications.