

# Atwater Apartments

## Residential

### The Challenge

Located in the heart of Chicago is the 484-unit Atwater Apartments, a luxury apartment building. When the building relied on electric space heating, residents had experienced double- and triple-digit percentage increases in their electricity costs in the winter months compared to the summer months. Atwater ownership set out to reduce their electricity costs as part of a plan to reduce turnover and improve resident satisfaction.

The Atwater's engineering firm developed a plan to convert the 760,000-square-foot apartment building from electric space heating to hydronic (hot water) heating. Capstone distributor Vergent Power Solutions began working with the project engineers to design an efficient microturbine-based combined heat and power (CHP) system that would support the new hydronic heating system.

### The Solution

The CHP system, installed on the roof of the 55-story building, featured two ICHP C65 microturbines and new hydronic boilers tied into the existing chilled water piping system. The project had to first remove dedicated year-round cooling equipment from the chilled water loop. This involved adding economizer controls to commercial tenant air handling

### Power Profile

#### Customer

Atwater Apartments

#### Location

Chicago, IL in U.S.

#### Commissioned

March 2020

#### Fuel

Pipeline Natural Gas

#### Technologies

- 2 C65 ICHP Microturbines
- 10-year Factory Protection Plan (FPP)

#### Capstone Green Energy Distributor

Vergent Power Solutions



**Apartment and condo towers are an ideal application for microturbine CHP systems due to their coincidental electric and thermal loads. As grid prices in Chicago continue to rise and more attention is given to clean energy solutions, we expect other multi-unit residential building owners to follow the Atwater's example."**

— Justin Rathke, President  
Vergent Power Solutions

A low-angle, upward-looking photograph of a modern skyscraper with a glass facade, set against a clear sky. The image is partially obscured by a green overlay on the left and bottom edges.

**Smarter Energy  
for a Cleaner Future**



**Two ICHP C65 microturbines fueled by natural gas provides Atwater Apartments, located in Chicago, reliable power while also reducing energy cost.**

equipment and reworking the make-up air system to provide residential floors with cooling to spaces with year-round cooling needs.

Though the hydronic heating system projects 1,360,000 kWh/year in energy savings, the conversion to hydronic heating would mean that the landlord's on-site energy bills would increase as the energy usage would shift off of tenant electricity bills and onto the building's natural gas bills. This is why the owner selected microturbines: their high efficiency would help minimize the impact on the building's energy usage. Furthermore, the microturbines would minimize greenhouse gas emissions by utilizing the microturbines' waste heat.

To ensure that the microturbines would maximize their return on investment, the equipment needed to operate as close to maximum capacity as possible. This was not an issue on the electrical side, as the building's minimum consumption rate was well above the maximum electrical output. Similarly, in the heating season, the heating capacity for the building was well beyond the output of the microturbines heating output.

Part of the system refinement process was to develop a custom operating schedule for the heat recovery from the microturbines in order to maximize the energy recovery as well as maintain safe domestic water temperature.

In order to ease the burden of maintaining unfamiliar equipment, the project included a 10-year Factory Protection Plan (FPP) to cover all maintenance on the microturbines.

## The Results

By producing 1,138,800 kWh per year of electricity at the building, transmission losses from the power grid

inefficiencies are eliminated, making this an extremely efficient energy solution. In addition, replacing the older, less efficient water heaters by using the microturbines and condensing boilers heaters for domestic water heating, the building uses less energy and produces less carbon emissions.

To date, each microturbine has run more than 16,000 continuous hours with 99% uptime per unit.

This first-of-its-kind CHP installation in Chicago was a 2020 ASHRAE award winner.

## Capstone C65 ICHP Microturbine



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