AERCO
A WATTS Brand

Case Study

Customer
HVAC Solutions Provider

Location
Canada

Industry
Office & Warehouse Facility

Product
Benchmark
Benchmark E

Canadian HVAC Leader Achieves Decarbonization Goals with AERCO Hybrid Boiler System

What the Client Needed

To meet aggressive decarbonization and electrification goals, a large Canadian company doing business in the HVAC space selected AERCO's Benchmark® E electric boiler and Benchmark® 1000 gas-fired boiler as the backbone of a resilient hybrid heating system. Working in tandem with an air-source heat pump, the Benchmark units deliver efficiency, reliability, and compliance with local utility requirements. This configuration not only ensures uninterrupted performance during extreme cold and grid stress but also supports LEED energy optimization objectives, helping the facility achieve sustainability targets without compromising operational flexibility.

The primary objective of company management was to install a heating system that combined an Air Source Heat Pump (ASHP) with an electric boiler and gas-fired backup unit. They wanted the system to maximize LEED points while ensuring system resilience and operational flexibility.

Those objectives align with AERCO's vision of supporting hybrid plants by offering a portfolio of solutions. The result is design flexibility when installing heating systems that meet decarbonization and electrification targets.

Management decided that the solution would use a heat pump as the primary source, an electric boiler, such as the Benchmark E, as a secondary source, and a natural gas boiler as emergency back-up. Including electric and gas boilers was especially important because the company is located in a Montreal suburb. During extremely cold days – common in Quebec – electric heating units operate at full load, placing tremendous stress on the local grid. For that reason, the utility in Quebec requires all companies switch to a non-electrical option when the temperature drops to -12° C or lower. The AERCO Benchmark 1000 allows the system to be in compliance.

The Solution

While the heat pump provides primary cooling and heating, the Benchmark hybrid boiler plant ensures high efficiency and reliability during peak demand and extreme cold, where grid stress and utility mandates require non-electric heating.

The Benchmark E model used is a 216 kw (750 MBH) boiler. It was selected as the secondary source because its exceptionally reliable design reduces maintenance. A dependable electric boiler as the supplementary source is important, as it ensures enough heat is produced, especially during extremely frigid days. It also supports the LEED strategy by relying on clean electricity.

The Benchmark 1000 only operates if there are:

1. Extreme outdoor temperature conditions where the heat pump may not meet the full heating demand or if the utility requires a switch to non-electric heating
2. Power outages to ensure the system can still provide critical heating when electric sources are unavailable

Other benefits of the AERCO Benchmark boilers include:

Space-saving Design – Both boilers have compact footprints. The Benchmark E measures 34W x 56D x 78.4H (inches) and the Benchmark 1000 is 28W x 24D x 78H (inches). In addition to their compact size, the Benchmark boilers have a front-access design. Competitive products need a large overhead clearance to access the boiler during maintenance and repairs, creating space challenges.

Intelligent Controls – The AERCO boilers can communicate with the building automation system (BAS) natively, which helps simplify system integration. At the heart of this setup is AERCO's Edge® Controller, a shared control platform for both the Benchmark E and Benchmark 1000. The Edge Controller delivers seamless synergies between gas and electric boilers, ensuring compatibility, maximum efficiency, and peak performance across the hybrid system. Each unit features advanced diagnostics that notify designated personnel of any faults or maintenance needs, enabling quick resolution and optimized uptime.

Complementing these controls is a unique three-way valve that manages flow between the Benchmark E and Benchmark 1000. When designated parameters are met, the Edge Controller and BAS work together to adjust flow paths intelligently, guaranteeing smooth transitions between electric and gas-fired operation.

Inherent Redundancy – Multiple heating products create system redundancy. It ensures that the temperature will always be comfortable in the office and warehouse.

Return on Investment

Preliminary results confirm Benchmark E's flawless performance during supplemental heating periods, demonstrating its reliability and readiness when demand peaks or grid restrictions apply. Combined with Benchmark 1000, the system ensures uninterrupted comfort and compliance with utility requirements - critical for achieving decarbonization and electrification goals.

Heating and Hot Water Solutions

AERCO International, Inc. • 100 Oritani Drive • Blauvelt, NY 10913
USA: T: (845) 580-8000 • Toll Free: (800) 526-0288 • AERCO.com