

**CREATING
ENERGY-EFFICIENT
SOLUTIONS FOR
A BETTER
TOMORROW**

A MUNICIPAL FACILITY
INSTALLATION

Windermere Fire Station became Edmonton's public first Net-Zero building, with energy consumption equaling the amount of renewable energy generated on site. The sustainable design of the building is estimated to reduce greenhouse gas emissions by 40% with respect to National Energy Code for Buildings (NECB) 2011 baseline.

Windermere Fire Station, Edmonton

Design Envelope solutions boost the efficiency of HVAC systems, and simplify maintenance. When paired with cloud-connected tools such as Pump Manager, Design Envelope solutions are easier to monitor and troubleshoot remotely, making system management more efficient.

Background

The City of Edmonton, aiming to achieve carbon neutrality by 2040, supported the sustainable design approach of the Windermere Fire Station.

The design team was committed to implementing a full geothermal system, despite it not being standard practice for such structures. A geothermal field featuring 35 boreholes uses the refrigeration cycle to transfer heat to and from the ground, providing both cooling and heating.

For support on implementing a high-performance HVAC system, the city brought Armstrong into the project. Armstrong recommended Design Envelope solutions, which offer space and energy savings along with key performance-related services, such as SMART Startup and Pump Manager. The integration of Pump Manager enables city officials to track HVAC performance, and troubleshoot issues remotely.

The heating system combines electrically supplied mechanical systems with radiant in-floor heating, which takes advantage of the building's concrete thermal mass. Incorporation of high-performance design and components improved the energy efficiency of the HVAC system. Armstrong's Vertical In-Line Design Envelope 4380 pumps reduced the space requirements of the HVAC system, and simplified installation.

As a result of these innovations, Windermere Fire Station became the first net-zero building in Edmonton, with annual energy consumption equaling the amount of renewable energy generated on-site. The station is designed to perform 40% better than the National Energy Code of Canada for Buildings 2011.

Tech-info

- Design Envelope 4380 Pumps
- Design Envelope Compass H Circulator
- Plate and Frame Heat Exchangers
- Pump Manager
- Smart Startup Service

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