

COOLING SYSTEM UPGRADE

A COMMERCIAL
FACILITY CASE STUDY

First Canadian Centre upgraded to Design Envelope pumps and controls. The retrofit project saved energy, eliminated flow challenges, and improved comfort in a 41-storey office tower.

“We solved some flow issues. We’re not starting chillers as soon each day and we expect more energy savings as the process continues.”

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First Canadian Centre

The Design Envelope IPS 4501W provides intelligent multi-zone control and optimizes HVAC performance and energy efficiency. Designed with onboard sensorless technology it controls up to 8 pumps and 16 zones.

Background

First Canadian Centre was built in the heart of downtown Calgary, Alberta, Canada in 1982. At 41 storeys, it provides 519,630 square feet of space, is 167 metres or 548 feet tall, and was the tallest building in Calgary at the time. It was designed by Bregman + Hamann Architects in the international and late modernist architectural styles, with a 10-storey atrium, conference facilities, retail stores, on-site parking, plus connections to light rail transit and a downtown pedestrian walkway.

Now managed by Great West Life (GWL) Realty Advisors, the completed building was awarded BOMA BEST Level 2 (Silver) environmental certification. GWL prides itself on using state-of-the-art building systems that ensure comfort for triple-A tenants.

In 2019, management identified some flow issues that they believed could be resolved with Design Envelope cooling system upgrades. Armstrong consulted directly with both GWL and TVZ, the local consulting engineer on the project, and later on provided technical support to the mechanical contractors, Botting & Associates of Calgary.

As part of an earlier retrofit project completed in 2016, the high pressure, open loop cooling system had been enhanced with the installation of a Design Envelope pump. GWL found that this one change had created noticeable energy savings.

In consultations with GWL in late 2019, Armstrong recommended upgrading that first Design Envelope pump to the latest generation of Design Envelope technology, installing two more new Design Envelope intelligent pumps, and adding an IPS 4501W pumping system controller.

Benefits

The new configuration resolved some flow issues in the building, and early indications suggest impressive energy savings, as each day the facilities team waits until later than previously to start the chillers, which are expensive to operate.

The upgrade project has resulted in better control and efficiency of the condensate pumps, through optimized efficiency-based staging. GWL has also been provided with connectivity to Armstrong’s Pump Manager service, a cloud-based performance management tool for enhanced monitoring, analytics and preventive maintenance. Efficiencies are expected to increase as Armstrong and GWL work with the analytics and complete the commissioning process.

The Design Envelope IPS 4501W provides intelligent multi-zone control, directly integrating with both the existing BAS and Design Envelope pumps to optimize energy performance. Using on-board Sensorless technology and the flow signal from the BMS it controls the three pumps at the FCC, modulating speed and staging them according to combined best efficiency. The IPS 4501W can control up to 8 pumps and 16 zones.

Tech-info

- Design Envelope IPS 4501W control system
- 3 × Design Envelope DE 4300-1013- 125 intelligent, connected pumps
- 1 × Design Envelope DEPC Upgrade Kit