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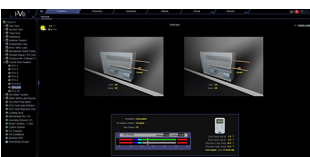
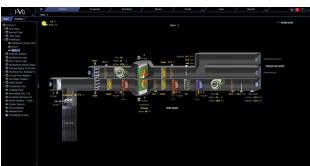
Case Study – evol1

EDUCATION / HEALTHCARE / LODGING / GOVERNMENT / OFFICE BUILDING / RETAIL / SPECIAL



Canada's First Zero Carbon Office Building Relies on Carrier i-Vu® Building Automation System for Comprehensive Management of All Building Systems

The i-Vu Building Automation System Provides Real-Time Management through a Graphic-Rich User Interface



To help meet sustainability goals, custom 3D graphics were created to provide a 360° view of all building systems.

The Cora Group is a premier developer and manager of Class A office space predominantly within Canada's Waterloo Region. For over four decades, the company has established over two million square feet of space, earning them the enviable reputation as one of the largest developers and managers of commercial, industrial and residential real estate in the Waterloo region.

Situated in the heart of Waterloo's emerging IdeaQuarter is the Cora Group's innovative evol1 building. Engineered and built to attract today's tech-savvy millennial workforce, their goal was to create a comfortable and energy-efficient urban office environment using state-of-the-art sustainable building principles.

Constructed in accordance with LEED¹ Platinum principles, evol1 wanted to achieve a net positive energy output, generating more energy than it consumes. To achieve this, evol1's building automation system (BAS) needed to successfully integrate, monitor and manage existing heating, ventilating and air-conditioning (HVAC) equipment, as well as ancillary building systems. Additionally, the final solution would need to provide real-time 360° views of all systems while providing facilities staff centralized management from any location.

SOLUTION:

The Cora Group chose Conestogo Mechanical, Inc. as the local Carrier Controls Expert to meet the controls and BAS objectives for the evol1 project. Conestogo was chosen based on its past reputation with other prominent Canadian buildings, and their ability to design and implement Carrier control solutions.

The installation features native BACnet control of mechanical equipment as well as BACnet integration to various systems throughout the building. The Carrier i-Vu® BAS was installed to provide centralized management of all equipment and systems from a single user interface. Custom 3D graphics were designed to give facilities staff real-time visibility and control from any location.

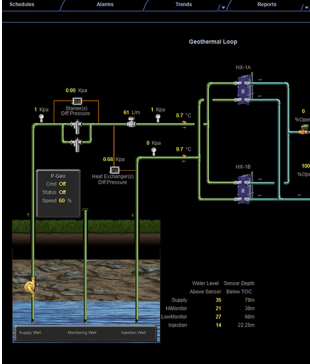


Turn to the experts

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Kyle Mavin
HVACR/Controls Lead
Conestogo Mechanical inc.

SYNOPSIS:

evol1 is a uniquely modern 104,000 ft² building - the first zero carbon building constructed in accordance with LEED1 Platinum principles and is the first multi-tenant building of its kind in Canada. Developed and managed by The Cora Group, evol1’s building goals included:

- Installing a non-proprietary, BACnet building automation system
- Selecting a BAS to integrate a wide variety of mechanical and building system components
- Achieving a net positive, zero carbon output facility
- Representing the very latest in building comfort, control and operating technologies

The Cora Group selected Conestogo Mechanical to recommend, design and configure, install, and maintain a complete BAS solution. “We have worked with them before and knew they had the resources,” said Cora Chief Operating Officer, Adrian Conrad. To provide additional peace of mind to the Cora Group, Conestogo had the comprehensive BAS component and engineering support of the local Carrier Enterprise office.

When Conestogo officially came on board approximately two years prior to evol1’s completion, their mandate was to:

- Review the mechanical budget
- Provide value engineering
- Execute a successful BAS solution
- Create a full custom-designed graphics library to dynamically show — in real time — precisely how each monitored component is operating

“From a controls and building automation perspective, evol1 was the most interesting and technically-challenging project that we’ve had to date,” said Kyle Mavin, Conestogo’s HVACR/Controls Lead. “Creating a successful controls and BAS solution for a zero carbon, net positive and LEED Platinum certified building comes with its own inherent complexities. To address this, we integrated all third-party equipment/systems using BACnet IP and BACnet MS/TP.” Mavin said. The Carrier i-Vu® system monitors and controls:

- VRF synchronous electric heat pump chillers
- Solar heating wall
- Separate hydronic loops
- Tenant space CO₂ levels
- Refrigerant leak alarms
- Geothermal open wells
- Solar heating wall and plenums
- Fan coils and condensers
- Hot water heaters and boilers
- Water meters and atrium air handler
- Cistern water
- Electric vehicle charging stations
- Fresh air make-up air unit
- Mechanical room exhaust

In addition, native BACnet controllers including MPC XPs, AppControllers, and UC XPs were installed on various equipment in the building to monitor and control dampers, hot water and chiller water coils, pumps, valves, exhaust fans, vestibule heaters, and the reclaim water system, enabling hundreds of points of information to be transferred from the mechanical equipment into the i-Vu system.

As a result of the precise level of monitoring and control that i-Vu delivers, evol1 generates more energy than it consumes and is the first building to earn the Zero Carbon Building – Design certification by the Canada Green Building Council (CaGBC) and the first-ever Zero Carbon award, also from the CaGBC.

A full graphics library was custom-designed to dynamically show precisely how each monitored component is operating. “With the detailed custom graphics and data we have through i-Vu Pro, our view into evol1’s energy management, resource consumption, comfort and any performance variance is immediate. Creating such an advanced, graphic-rich BAS that delivers precise control to attain extremely stringent sustainability goals was a rare and rewarding challenge. And i-Vu ties it all together.” Mavin concluded.

Project Summary

Location: Waterloo, Ontario / Canada

Project Type: Building automation and controls

Building Size: 104,000ft²

Built: 2018

Facility Usage: Multi-Tenant Office Building

Objectives: Create a unique, modern, comfortable and energy-efficient urban office environment to be constructed in accordance

with LEED Platinum principles and achieve a zero carbon, net positive energy output. Also integrate all building systems and manage them through a single web-based user interface.

Controls: Carrier i-Vu Pro 7.0 building automation system (BAS), two i-Vu XT Routers, two MPC controllers and expanders, 44 Open App Controllers, 13 Open UCXP controllers with expanders, approximately 200 different sensors throughout the various systems

Major Decision Drivers: Carrier i-Vu Pro 7.0 BAS capabilities seamlessly connects all systems and building components and controls with a single user interface.

Unique Features: Canada’s first zero carbon multi-tenant office building; custom-designed algorithms to connect multi-language BAS components; high-end project-specific graphics

Installation Date: 2018

For more information, contact your nearest Carrier Representative, call 1.800.CARRIER or visit our web site at carrier.com/commercial