



# Complying with Strict Regulations at the Quebec Biotechnology Innovation Center



**Q**BIC occupies 27,000 square feet in the Laval Biotechnology Development Centre (LBDC), a 128,000 square feet multi-tenant building located in the heart of Center of Biotechnology and Human Health of Metropolitan Montreal. It is occupied exclusively by companies active in research and development in biotechnology. QBIC offers eight fully furnished laboratory suites (bio-containment 2) including a type 2 reverse osmosis purified water system, natural gas, gaseous nitrogen network, central vacuum system, emergency electric circuits, sophisticated ventilation systems, security, biomedical, chemical and radioactive waste management services.

## The Challenge

Since the QBIC is a new build, the integrators, ACCS Control-Tech, had to take into account progressive tenant occupation, while designing systems adapted to a 100% occupation rate. Furthermore, HVAC systems serving biotechnology facilities need to control and maintain the environments in order to ensure the health and safety of employees, to minimize process defects and to assure quality. Moreover, Biotechnology facilities have to comply with stringent regulations and provide a

controlled environment with redundant systems to assure quality. The QBIC also required a centralized system to manage all sub-systems, including HVAC, laboratory equipment and lighting as well as the different spaces within the building, comprised of clean rooms, labs and office spaces.

## The Solution

To integrate all subsystems and offer centralized management, ACCS created an open control system based on LONWORKS. Controls had to be adapted to the specific needs of laboratories and office spaces and were created around a strategy for:

- Temperature
- Humidity
- Air quality CO2 etc.
- Building pressure
- Air volume
- Variable air volume with 100% fresh air
- Variable speed drives
- Automatic lighting

The system is comprised of 90 Distech Controls' LNS® based free programmable controllers (EC-4, EC-8, EC-12, EC-VAV-C) for laboratory and HVAC control, and LNS based Douglas Lighting Controls products, for the lighting subsystem. The LONWORKS network was designed and commissioned using Distech Controls' Lonwatcher and the GUI and monitoring tools were created through the Londsplay tool.

The free programmable controllers provided the flexibility to manage the different components and mechanical systems such as the labs' chemical hoods and exhaust fans as well as the building's fresh air handlers and pumps. They also allowed programming of specific and unique sequences of operation, such as the air volume control strategy to maintain the laboratory at negative static pressure relative to the environment.

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The free programmable controllers permit easy and quick modification to the control logic for adaptive energy saving strategies and recalibrations as tenant occupancy and needs change over time. The controllers were quickly programmed using LNS based plug-ins, which can be launched directly from Lonwatcher. The Lonwatcher network management tool allowed fast and cost efficient setup, commissioning and maintenance of the LONWORKS network.

Londisplay (GUI) allowed ACCS to create a custom visual interface for the building. They easily created a comprehensive graphical environment of the facility from top-level site plans to equipment details. Londisplay also gives the ability to display and interact with network data points and information, again for easy modification as occupancy grows. Alarming and data point logging were achieved through Lonwatcher.

### Benefits

The flexibility of the LONWORKS system allows for simple and quick modification as interior arrangements are modified and added for each new tenant. With initial construction completed over two major phases, starting in 2002, the QBIC is now home to nine biotechnology firms. The centralization of all control logic and subsystems provides for high levels of reliability and flexibility of interaction between all subsystems, making the system easy to maintain and monitor. A significant benefit achieved for the QBIC is complete control over energy management and laboratory conditions. The building automation system permits a high precision control strategy, managing sensitive mechanical/electrical equipment while achieving high-energy efficiency.

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