

Automatic For The People

Today's automated building control systems optimize resources with impressive ease

by STACEY MCLACHLAN

As we reach the peak of the information age, convenience, accessibility, and user-friendly tech are now expected in all avenues of our life – even what it comes to the mechanical operations of a building. But engineers and programmers have stepped up to the plate to create one-stop-shop programs and tools that help complex behind-the-scenes components work together in harmony.

These streamlined automated building control systems save time, energy, and money for operators, and offer incredible control, all in the name of convenience and quality of life.

IT'S ALL CONNECTED

The Internet of Things (IoT) revolution is driving more connected devices to push data to the cloud to be processed, analysed, and controlled. “While this evolution is infantile in the building controls environment today, the pace of change in technology means that this possibility will become a reality in a relatively short time,” says Cameron Sandell, global director of smart buildings for Norman Disney & Young (NDY), a Tetra Tech Company. “There are a lot of large tech organizations pushing this evolution – or disruption – to the building controls market and as such it is unlikely to fail.”

There is currently an increased use of off-the-shelf packages that are heavily reliant on industry open protocols such as BACnet, Modbus, and Dali. But there is another evolution taking place with IoT that will potentially replace these old industry standards: “As the market offer of hardware product supporting protocols like MQTT mature, we’ll see more opportunities for new data consumption layer products to be developed, like analytics, graphics, dashboards, and reports,” says Sandell.

With the latest in wireless mesh network control, Houle is offering a solution-in-a-box for customers wishing to monitor, analyze, and predict, explains Gabriel Ana, Houle’s director of technology. “It’s an opportunity to realize tremendous operational savings as well as assurance.” Devices such as lighting fixtures or other building equipment, connect to wireless modules and communicate to a site controller via a secure network, and that controller monitors everything from voltage variations to attempted system intrusions. With point-and-click operation, users can change the schedule, check the functional status or power consumption and much more.

Systems like the ultra-scalable integration portal from Houle can manage individual systems, entire buildings or even large campuses, using a single PC or multi-user workstations connected to local area networks to provide real-time monitoring and analytics/optimizing services. Houle also offers options like an IoT monitoring system, which includes remote administration and real-time monitoring from its 24/7 operations centre.

TAKING CUES FROM TECH

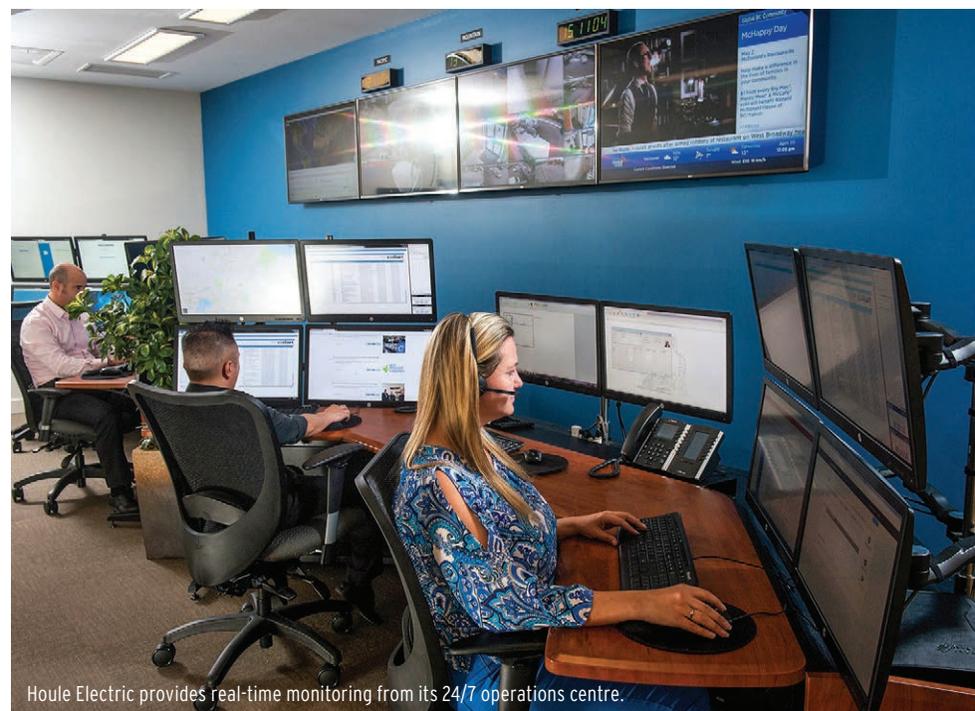
“The automation of buildings is beginning to catch up with the IT world and is now exploiting designs and processes that have been normal in that space for decades,” explains Sandell. “The emergence of cyber threats to data has caused a rethink of single converged networks with high-availability servers to make cyber risk easier to manage.”

In the past, building control systems – whether security, lighting, HVAC control, or metering – have been installed on dedicated networks, each with

their own remote access capabilities, creating multiple cyber vulnerabilities. Conversely, the single converged network and virtual servers create a single entry point for all systems and a single server for all systems, allowing efficient management of cybersecurity risk mitigation, base operating systems licensing costs, patching, and updating. “This modern approach has also led to the evolution of blended data across multiple control systems for better asset management, space utilization, energy efficiency, extension of plant life cycle, and new user experiences,” says Sandell. “Compound this with the capacity to bring in new data sources through web services or from corporate enterprise solutions, and the value proposition for tangible business outcomes increases exponentially for owners and occupiers alike.”

MIXING IT UP

As in many other aspects of consumerism in 2019, those shopping for automated building systems are looking for freedom of choice. “More often than not, customers want to be able to switch between applications, service providers, and technologies without making redundant their investment in the infrastructure required to support it,” says Sandell. Customers are looking to deliver Smart Building outcomes that are potentially unique to their properties, in order to create differentiation in the leasing market from the asset down the road or next door. “Customers are trying to solve the business issues of their customers, prospective tenants, and often these business issues of their prospective tenants relate to attracting and retaining young talent,” Sandell points out. And because this younger generation has been raised in an era of technological connectivity with fast access to information and convenience, as well as with a concern for the environment, Smart Building outcomes allow a lot of these demands to be met in the workplace.



Houle Electric provides real-time monitoring from its 24/7 operations centre.

A myriad of technologies are being combined to support a single goal, and system integration is the seamless key to achieving optimal incorporation. “Successful integration encompasses more than equipment,” according to Vipond’s marketing material. It needs the right people, the right software, and the right understanding of the client’s needs. It also requires a clear working knowledge of a wide range of technologies and how they can successfully interact. “Managing disparate platforms and operating systems is becoming increasingly complex and most simply do not have the budget for a ‘rip and replace’ strategy,” writes the Vipond team.

Vipond’s Physical Security Information Management system leverages various existing systems into a single interface – everything from video surveillance to access control to intrusion detection.

COME TOGETHER

Last year Johnson Controls announced the release of Metasys 10.0, which has been designed to deliver more unified building management. The latest Metasys release provides facility personnel with smarter building automation, faster responses to critical alarms, and new integrations with fire detection, security and lighting systems – all with visibility from a single common interface.



Metasys 10.0 system and Metasys Application Programming Interface from Johnson Controls.

Metasys 10.0 introduces a new and improved set of integrations. These include new integrations with C-CURE 9000 Access Control and victor Video Management Systems, and simpler integrations with SIMPLEX Fire Systems and with lighting systems from leading lighting providers.

A new Metasys Application Programming Interface (API) enables data to be securely extracted from Metasys 10.0 and integrated with Johnson Controls or third-party data visualization tools for robust data analysis and reporting.

“Metasys has always delivered a strong integrations platform, but we’re really excited about how easy we’re making it for customers to integrate both HVAC and non-HVAC systems into Metasys 10.0,” says Chris Eichmann, VP and general manager, Global Controls Products, Johnson Controls. “Providing our customers with access to critical system data from a single, intuitively-designed interface makes it faster and easier for them to do their jobs.”

EFFORTLESS EFFICIENCY

“In North America, a building’s energy consumption accounts for nearly a third of operating costs,” notes engineer Lindsay Austrom from Williams Engineering. “Energy benchmarking, then, is a valuable tool not only for reducing carbon footprints, but also for decreasing utility expenses.” By collecting data in one

place via an automated building system platform, one has the information needed to determine if a building’s performance is improving or worsening over time.

Building control systems, if designed, installed, and commissioned properly, create enormous impact on a buildings green credentials. The ability to determine whether or not spaces are being used at any particular time, either through access control systems or people finding systems, allows plants to be operated only when necessary,” says Sandell.

No longer does air conditioning and lighting need to operate to a time schedule when at least some of that time the space is not used – the blending of data from various systems can create new control opportunities to minimize energy waste. And when the plant and equipment are in operation for less time, this potentially extends the life of the equipment.

OPEN UP

“The old world of proprietary communications protocols is all but dead,” says Sandell. Products that don’t support open communications are being shunned by the market, in favour of the freedom of choice offered by open systems. “These systems, coupled with an appropriate infrastructure design, provide the best future-proofing opportunities that are commercially available and deliverable in today’s product market,” he adds. “There are many large projects in CBDs around the globe that are seeing this leap forward as necessary to attract premium tenants to their assets. This in turn will drive a retrofit market with similar aspirations as new assets are completed.”

With open systems and blended data comes the opportunity to provide more granular analytics. “There is a drive in the market to embrace machine learning and predictive maintenance, which is all well supported by modern designed integration,” says Sandell. “Having a single source of data truth for all building control subsystems allows a new depth of refinement for maintenance planning, budgeting, capital works planning, and resource deployment.”

The future is both here and still coming. While we don’t know what we don’t know, Smart control systems combined with Smart systems and data integration design will allow the current generation of developments to embrace whatever comes next. **A**

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