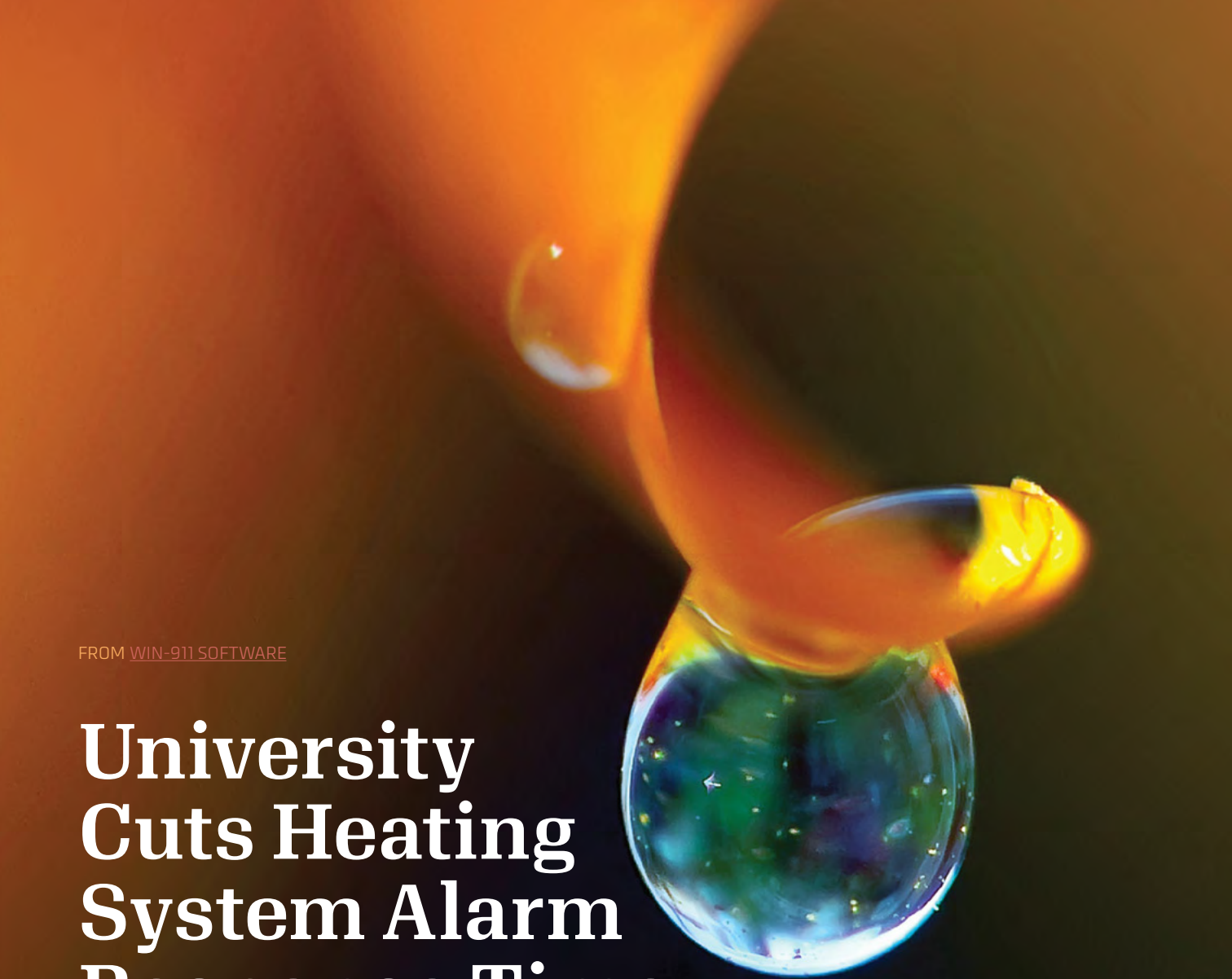


FROM WIN-911 SOFTWARE

University Cuts Heating System Alarm Response Time

SCADA and alarm monitoring software help protect a campus' new heating system and thus lowering GHG emissions, cutting costs and better using resources.

In Canada, higher educational institutions generally use 60% of the electricity allocated to the educational sector, which is equivalent to that consumed by a city of 430,000 households. The operation of academic buildings is associated with significant amounts of water, energy and carbon flows. Effective energy management improves the local and national environment by reducing carbon dioxide (CO_2) emissions that result from energy use.

SCADA systems are used to remotely operate and monitor universities' complex heating systems from a central location. By monitoring and controlling remote equipm ent and resources, SCADA systems provide greater efficiency in terms of faster and more coordinated system control than human operation, as well as lower operational costs and better use of scarce human and financial resources.

The university's team can move onto the floor and visually check the engines and perform maintenance tasks without running up three floors from the boilers to the control room to simply acknowledge an alarm.

Commitment to Sustainability

With 67,000 students and 18,000 faculty and staff, the University of British Columbia (UBC) is British Columbia's oldest and largest university. Its flagship Vancouver campus spans more than 100 acres and comprises more than 160 buildings — including classrooms, research labs, animal care facilities, 12,000 housing beds, an Olympic-size swimming pool, 330-bed hospital, and the world's largest cyclotron.

Until recently, heating these facilities was performed by a 90-year-old steam plant and pipe network that was costly to maintain and frequently broke down. In assessing their carbon footprint, UBC found that 80% of the school's carbon emissions was coming from the natural gas being burned to produce steam for the steam distribution system.

With the commitment of achieving net-zero emissions by 2050 through climate-action initiatives, UBC embarked on an ambitious six-year upgrade. In 2011, leaders created the action plan for a steam-to-hot-water conversion project, which was completed in 2017.

The new $88-million, 45-MW District Waste Heat Recovery Project installs heat-recovery systems that reduce UBC's reliance on natural gas. The new system redirects the heat recovered to the campus' hot-water district energy system, which supplies the majority of its buildings with heat and hot water for a cleaner environment.

The system includes a new Campus Energy Center and a Bioenergy Research Demonstration Facility (BRDF), which was also upgraded to produce up to 70% of the campus' thermal energy using clean, locally sourced wood chips and renewable natural gas to power turbines. Prior to installing the new system, more than 8 miles (14 km) of steam pipe was removed. The new system connects more than 160 buildings to a highly efficient hot-water district energy system that includes three 15-MW boilers and burns renewable natural gas to produce thermal energy.

BRDF was built in response to UBC's need to generate sufficient heat and power to meet the campus' growing energy demand through an affordable alternative fuel source that also reduces campus greenhouse gas emissions. The plant converts wood chips into a synthesis gas for heating as well as electricity generation through an internal combustion engine that powers a generator. A first-of-its-kind project in North America, the system processes renewable biomass to generate thermal energy for heating campus buildings.

The new facility is constructed with cross-laminated timber — a sustainable and versatile building material that stores CO_2 instead of emitting it.

The system reduces UBC's reliance on fossil fuels, provides a quarter of campus heating needs, and eliminates 14% of campus greenhouse gas (GHG) emissions. The new heat-recovery systems also are reducing UBC's emissions by more than 1,000 tons of CO_2 annually and will help recover 1 MW thermal, which would otherwise be wasted.

Additionally, the new system is 24% more efficient than the steam plant and pipe network. In 2020, UBC tripled the capacity of its biomass plant, energizing 70% of the Academic District Energy System with clean waste wood, saving an additional $1 million annually and drastically reducing GHG emissions.

Collaborating for Success

To operate and monitor this new heating system, the UBC engineering team is using the Rockwell Automation FactoryTalk® SCADA system that reduces complexity, and promotes efficiency and reliability within their operations. Collecting, processing and examining the data in real-time is imperative to keep this system running smoothly.

The automation crew prefers FactoryTalk to other software because the predictive and augmented maintenance advantages allow them to easily manage and interact with critical data, promoting continuous improvement in the supply chains.

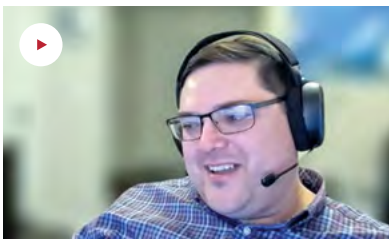
In addition, real-time critical remote alarm-notification software from Rockwell Automation Technology Partner WIN-911 provides "direct connect" integration with FactoryTalk View SE Alarms & Events and helps UBC mitigate any unplanned downtime. WIN-911 software connects seamlessly and directly to the FactoryTalk system, sending remote alarm and event notifications to operators' mobile phones.

UBC uses three standalone WIN-911 systems. The first monitors the power source in the Campus Energy Center, and

WATCH THE VIDEO

WIN-911: Industrial Alarm Notification Software Update Makes It Even Easier to Use

In this video, Steven Rivas with WIN-911 explains major updates to its WIN-911 2021 IIoT and industrial alarm notification software, used by 173 of the Fortune 500 companies, that make it even easier to use. It has a direct data connection with a user's Rockwell Automation SCADA system to monitor operations and notify personnel of problem conditions via voice, email, text, and apps on iOS and Android. Watch the video at **https://bit.ly/3CaDspd**.



The University of British Columbia's new heat-recovery systems redirect the heat recovered to the campus' hot-water district energy system, supplying the majority of its buildings with heat and hot water for a cleaner environment.

the second monitors the hot backup. A third system monitors the various operations of the BRDF power plant. The most important task for the remote alarm notification software is to make sure the three gas-fired water boilers in the CEC are maintained at an optimal level.

The FactoryTalk Alarm and Events connection in WIN-911 uses Subscriptions to bring alarms into WIN-911, which are filtered on four criteria: Names, Class, Severity and Groups. Routes are used to associate Subscriptions with alarm strategies, and configurating Subscriptions and assigning routes for alarm notifications is quick and easy.

"WIN-911 enables our operators to respond faster and more effectively to the ongoing changes and demands of our energy operations," says Huy Pham, industrial controls technical specialist, UBC Energy & Water Services.

Upgraded Notification System

UBC's Energy & Water Services department recently upgraded to WIN-911's new Advanced software platform to leverage the mobile capabilities.

"We have used v.7 Pro with Mobile 911 for years, but chose WIN-911 Advanced to use the new WIN-911 mobile app," Pham explains. "Any alarm that comes through is a critical alarm. We're continually measuring the system's temperature and pressure. So, when an alarm comes through, the operator can quickly view, acknowledge, and respond [to an alarm] no matter where they are on campus."

WIN-911 Mobile allows the operators to respond faster to ongoing changes and demands without being tied to the control room. The team can move onto the floor and visually check the engines and perform maintenance tasks without running up three floors from the boilers to the control room to simply acknowledge an alarm.

Operators also can drill down into reports from their smartphone, chat with team members to see what options are available and decide how to respond.

From a cost-management perspective, WIN-911 allows the team to maintain the equipment with only one to two staff per shift, making their work much more efficient. ●

WIN-911 SOFTWARE Based in Austin, Texas, with offices in Europe, Mexico and China, WIN-911 is a Rockwell Automation Technology Partner. The company delivers critical machine alarms via smartphone or tablet app, voice (VoIP and analog), text, email and announcer.