![Reliable Controls logo]

Authorized Dealer

STRATUS

Market segment
Agriculture

Location
Nelson, BC, Canada

Project type
New construction and retrofit

Installation type
HVAC, lighting

Total area
2,415 m² (26,000 ft²)

Protocol
BACnet, Modbus

Woody Nelson

Project Profile

In the heart of cannabis country north of Kootenay Lake in Nelson, Canada, Woody Nelson's production facility is equipped for cultivating, processing, and distributing small-batch cannabis. Woody Nelson processes flowers, solventless extracts, oils, and vapes following EU GMP standards. The cultivation area features three advanced habitats with triple-tier vertical farming and programmable dual-spectrum LED lighting, maximizing output per square meter. An advanced watering system allows both reverse osmosis and glacier-fed irrigation, and a fully integrated HVAC system provides complete air exchange of each habitat once per minute.

The production facility also serves as a regional hub, helping local licensed micro-producers bring their craft cannabis products to market.
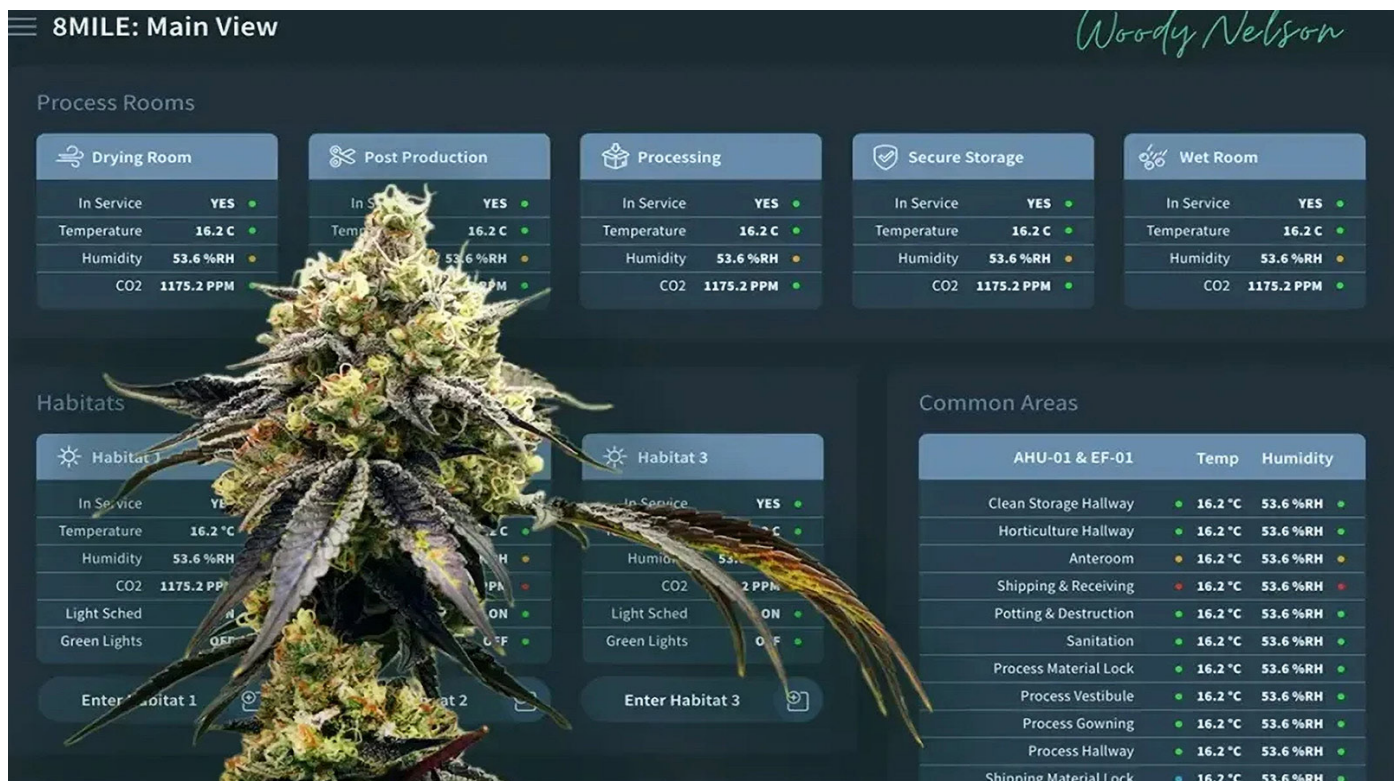
Authorized Dealer Stratus Designs designed, installed, and commissioned a Reliable Controls building automation system for Woody Nelson that integrated environmental control of growing areas, processing rooms, drying rooms, and offices with lighting control, power monitoring, water-supply monitoring, and Health Canada reporting. Prior to the installation, the building had no automation system.

Stratus Designs implemented MACH-ProCom and MACH-ProSys BACnet Building Controllers with extensive networking capabilities and scalable inputs and output to control large mechanical equipment. Twenty-three MACH-ProAir controllers provide VAV control with airflow sensors and onboard damper motors, eliminating the need for separate sensors and actuators. Facility operators use the high-resolution graphical interfaces on three MACH-ProView LCD controllers to access, control, and monitor comfort and energy use. With the MACH-ProView LCD, users can choose from a selection of configurable views to display real-time data and edit object values on custom background images using text, graphics, and animations like buttons and sliders.

Integrated equipment

Custom ICE WESTERN air-handling units with Distech BACnet/IP and Allen-Bradley Modbus TCP, Carrier mini-split heat pumps with Intesis BACnet MS/TP, Schneider power monitoring with Modbus TCP, irrigation water skid with Modbus TCP, generator with Modbus RTU, automatic transfer switch with Modbus TCP, custom water-treatment plant with AutomationDirect CLICK PLC over Modbus/TCP, irrigation pump skid with automated pH dosing

Installed equipment

Total system objects
2,450

23 MACH-ProAir™ controllers

2 MACH-ProCom™ controllers

14 MACH-ProLight™ controllers

10 MACH-ProSys™ controllers

3 MACH-ProView™ LCD controllers

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BACnet/IP integration meant Stratus Designs could optimize system monitoring, setpoint reset, and equipment override for fail-safe or extended load-shedding operations. Modbus integration to gas-fired burners provides extended visibility and easy troubleshooting, and Modbus/TCP integration to the facility's power distribution provides peak demand limiting and load shedding while on generator power.

Savings in lighting costs and energy consumption are easily achievable when you can integrate lighting control directly into your building automation system. For Woody Nelson, Stratus Designs installed 14 freely programmable MACH-ProLight controllers to provide 0–10 V continuous dimming and sophisticated spectral control so facility managers can easily implement advanced lighting strategies that maximize crop yield and quality.

The facility's water system is integrated with the building automation system for extended alarming and monitoring of well levels, pH, and irrigation buffer tanks.

With RC-Archive software, Woody Nelson owns and controls its building data and benefits from a robust record of building performance. RC-Reporter software extracts intelligence from that data with readable, reliable analytics that help Woody Nelson find opportunities to improve energy efficiency. Building operators can access the system using RC-WebView, a time-saving browser-based building management solution that combines the power and accountability of enterprise tools with a simple interface.

For indoor cultivation facilities like Woody Nelson, the primary focus is the health and quality of the plants. Once the building automation system was tuned to accomplish this goal, Stratus Designs continued to make further optimizations to provide as much energy savings as possible.

This project was a joint achievement between Woody Nelson and Stratus Designs. Frank Marcus, COO of Woody Nelson, came to the project with an extensive background in enterprise networking and industrial controls from many critical infrastructure verticals, including oil and gas and the power industry, using diverse equipment from

GE, Siemens, Allen-Bradley, Honeywell, and many others. Frank selected Reliable Controls after an in-depth analysis of the off-the-shelf and custom integrated solutions available in the market.
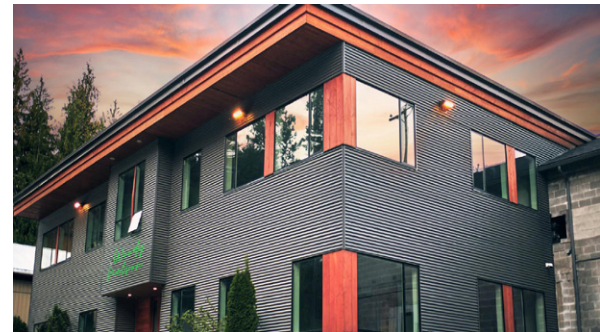
"While many solutions cater to the cannabis industry in Canada, none met the expectation of a standards-based industrial control system that could fill the role of a direct control system that integrates many BACnet and Modbus devices in a single-pane-of-glass user experience," said Frank. "Reliable Controls manages all aspects of facility operations, avoiding costly point solutions that complicate deployment and limit opportunities to automate data analysis used in our everyday tuning and operations. The price point compared to traditional automation vendors makes it an accessible, high-performance solution in the highly competitive cannabis market."

Special thanks are due to Toby Summers, Frank Marcus, Jolyon Saville-Peck, and Mark Stoll, from Woody Nelson and Adam Clarke, Eric Heel, Mark McLellan, Michael Richards, and Melissa Vink from Stratus Designs.