

Real-time Monitoring in use for Cannabis

Canopy Growth is one of Canada's largest Cannabis producers, in business since 2014. One of the brands that is part of the Canopy Growth Corporation is Tweed, located in Smiths Falls, Ontario. Rotronic was contacted for its Real-Time Environment Monitoring system called RMS. Due to the requirements of export, GMP and CFR compliance, Tweed selected Rotronic to be its partner for monitoring.

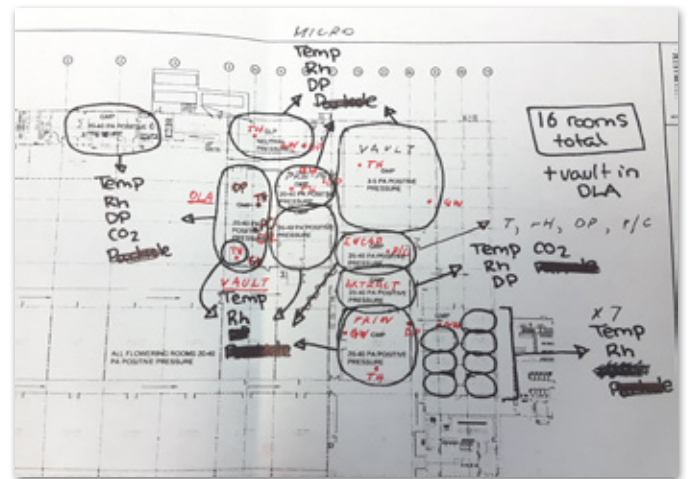


Environmental monitoring is important for healthy and strong plant growth.

How did the project start?

Canopy Growth's existing system for rh and temperature monitoring was limited, reporting only could be done from a centralized location, not easy to scale and had no means of adding in other parameters. In 2017, the cannabis producer turned to pharmaceutical metrology specialist Rotronic, a solution was needed to monitor the environmental conditions such as humidity, temperature, differential pressure, CO₂, O₂, ethanol and particle counting.

To win the business and the confidence of Tweed, Rotronic installed a test system that measured Rh, temperature and differential pressure for two months without a single issue. This convinced Tweed that Rotronic and RMS was the right solution to meet GxP and CFR compliance.



Capture the user's requirements.

What are the advantages of the RMS?

The Rotronic Monitoring System supports Tweed to meet the requirements of risk management, compliance with regulations and in general give better insight into their operations. The central 24/7, real-time monitoring brings high security and savings through automatic reporting. Historical data can be retrieved and analyzed at any time. Alarming of various measuring points reduces product loss and increases worker safety.



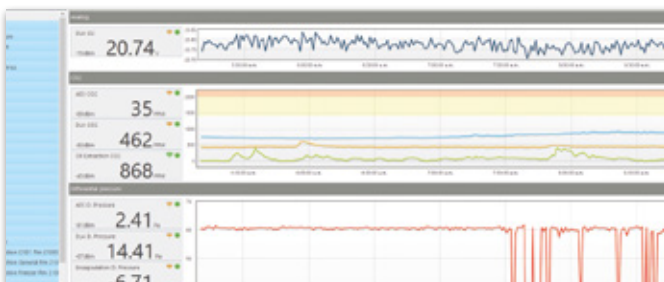
Differential Pressure Monitoring of the Labs.



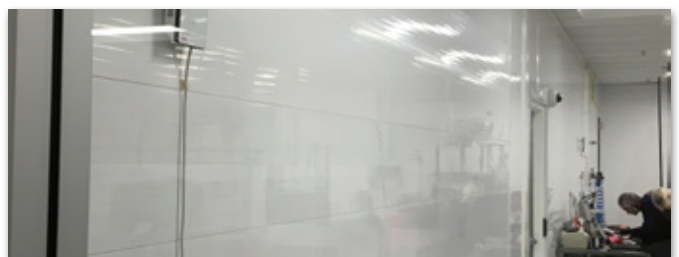
Rotronic and third party products ready for installation and integration into the RMS continuous monitoring system at Canopy Growth.

Monitored parameter following the production process at Tweed

| Application | Parameter | Requirement (not exhaustive) |
|-----------------------------|---|--|
| Trimming | RH, T, ΔP | Positive pressure in the harvesting room prevents contamination of valuable plants. Relative humidity and temperature are monitored to keep the room at proper environmental conditions. |
| Drying | RH, T | Maintain optimal drying conditions. |
| Oil extraction | RH, T, CO ₂ , ΔP | Compliance is the main concern along with safety due to CO ₂ extraction. Excessive CO ₂ concentration is harmful to your health. |
| AES Extraction Room | RH, T, CO ₂ , ΔP | Compliance is the main concern along with safety due to CO ₂ extraction. Excessive CO ₂ concentration is harmful to your health. |
| Encapsulation | RH, T, ΔP, particle counting | Gel caps produced in this room, strict standards need to be maintained. |
| Oil Packaging | RH, T, ΔP | Oil product being packaged. Pressure in the room is positive to prevent contamination. |
| Pre-Pack | RH, T, ΔP | Plant Product being packaged. Pressure is positive to prevent contamination. |
| Micro Lab | RH, T, ΔP | Various testing performed on raw material and finished product. Pressure in room is negative in order not to allow the air in the lab to escape. |
| Dealer Licensing Area (DLA) | RH, T, CO ₂ , particle counting, O ₂ , ΔP | New products are developed in this area using a variety of methods and equipment. |
| DLA Vault | RH, T | Maintain optimal temperature and humidity for product stored in vault. |
| Breeding | T | Fridge and incubator need to have the perfect temperature. |
| Vault | RH, T | Warehouse conditions, product needs to be kept in optimal environmental condition. |



RMS Chart view of Tweed measuring data.



Gateway transferring the following data: relative humidity, temperature, differential pressure, particle and gas detection.

Rotronic Monitoring System RMS

The Rotronic Monitoring System is one of the most flexible monitoring systems on the market. From small applications with only one measuring point to large installations with several thousand measuring points, RMS offers tailor-made solutions. Existing hardware can be easily integrated, in return Rotronic devices can be integrated into existing software environments – depending on the application. RMS complies with all FDA and GxP regulations and is constantly being expanded in collaboration with the pharmaceutical industry.

Products used at Tweed

- RMS-LOG-915 Data logger with LAN interface
- RMS-HCD-S Humidity and temperature probe
- RMS-GW-915
- RMS-MADC Mini Data Logger for integration of third party devices
- RMS-MLOG-T-10 + remote probe
- RMS-SaaS software solution CLD-E
- RMS-Converter for integration of third party devices
- Third party devices, DP, particle counters, gas detectors

Canopy Growth

In April 2014, Canopy Growth became the first cannabis company in North America to be publicly traded. They followed that with being the first to complete a “bought deal”, to diversify their platform to include both greenhouse and indoor growing, to acquire a major competitor and to be listed on the Toronto Stock Exchange. Continuing those firsts, Canopy Growth remains the only cannabis company to be a member of a major global stock market index, in this case the S&P/TSX Composite index.



www.canopygrowth.com

Tweed

Away from the markets, Tweed, a Canopy Growth subsidiary, was the first to introduce the now standard concept of Compassionate Pricing to make medical cannabis affordable for patients. It is the most recognized cannabis brand in the world. www.tweed.com

