Marijuana Oil Extraction Applications

Critical Environment Technologies™

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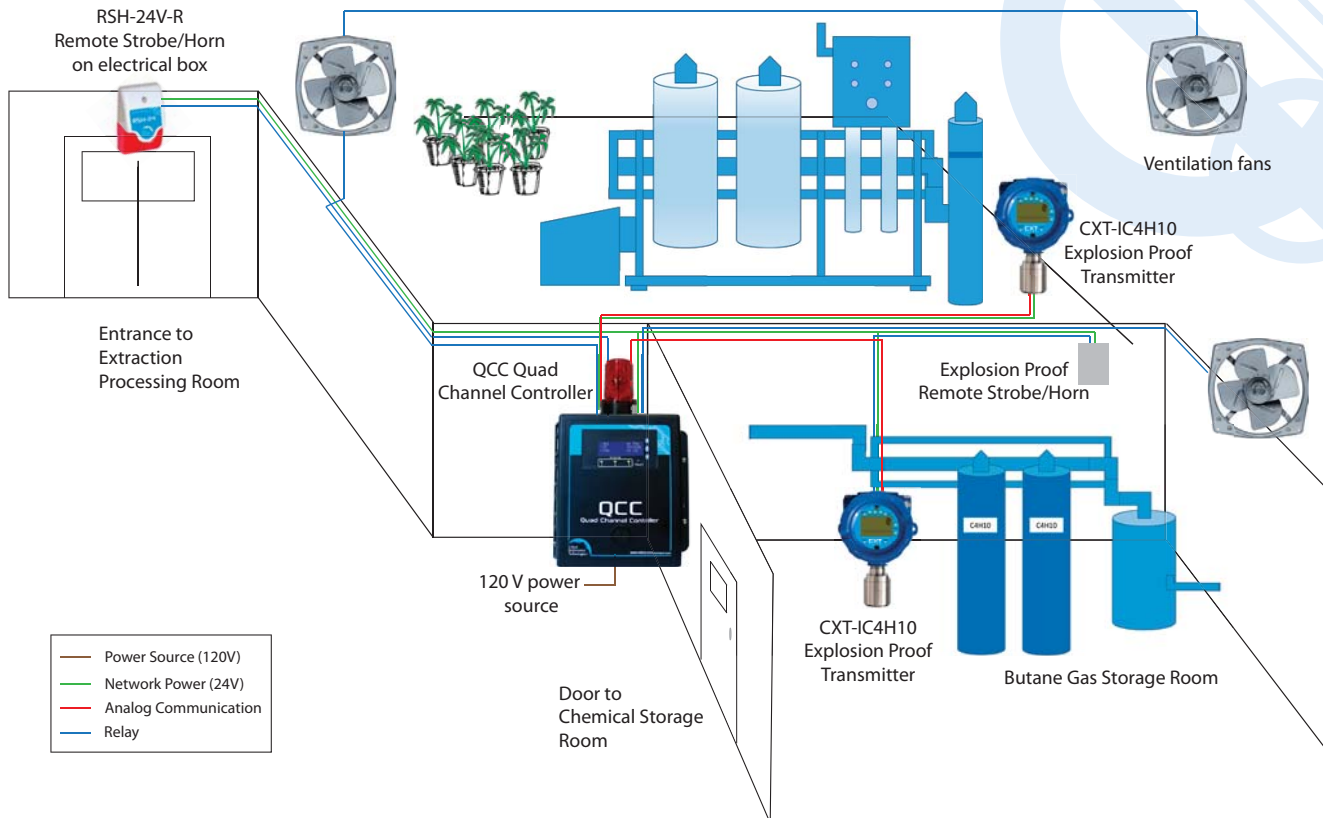## Continuous monitoring of butane in commercial marijuana extraction facilities.

The legal marijuana industry is experiencing a whole new world of possibilities when it comes to product offerings. There are commercial growing, processing and extraction facilities producing forms of the product that can be smoked or eaten.

Edible products are typically infused with a highly concentrated oil, providing edible products as an alternative to smoking. To produce the honey-like oil, the production process typically involves using a flammable and hazardous solvent, such as butane to extract the THC from the plant. During the process, at some point the butane must be released to remove it from the oil which could pose the risk of explosion and asphyxiation. In a closed system, this release is less dangerous than in an open system. However, the potential for butane to leak and/or be released into the surrounding air is legitimate safety concern.

Having Critical Environment Technologies Canada Inc. (CETCI)'s **QCC** Quad Channel Controller with a **CXT** Explosion Proof transmitter with an infrared Butane sensor to monitor for butane leaks is a safety practice that may save facilities from explosions and workers from hazardous gas exposure.

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Typical Marijuana Extraction Facility Butane Monitoring System

RSH-24V-R
Remote Strobe/Horn
on electrical box

Entrance to
Extraction
Processing Room

Ventilation fans

CXT-IC4H10
Explosion Proof
Transmitter

QCC Quad
Channel Controller

Explosion Proof
Remote Strobe/Horn

120 V power
source

CXT-IC4H10
Explosion Proof
Transmitter

Butane Gas Storage Room

Door to
Chemical Storage
Room

— Power Source (120V)
— Network Power (24V)
— Analog Communication
— Relay

Inside the oil extraction processing area, a CXT-A-IC4H10 Explosion Proof transmitter with an infrared Butane sensor should be mounted 6 inches from the floor near the extractor and where the gas is likely to collect. Butane is heavier than air and will collect in low places. Outside the door of the extraction processing area door should be an audible/visual alarm device such as the RSH-24-R Remote Strobe / Horn.

Mounted at viewing height, outside the chemical storage room door should be a QCC Quad Channel Controller with a top mounted strobe. Inside the chemical storage room should be a CXT-A-IC4H10 Explosion Proof transmitter mounted 6 inches from the floor, near the Butane gas cylinders to continuously monitor for potential leaks from the cylinders. In addition, an explosion proof strobe/horn should be installed inside the chemical storage room to provide an audible/visual alert. In the event of a gas build up in either area, in excess of the alarm setpoints, the QCC will go into an alarm state and the relays will be triggered, which will in turn activate the ventilations fans and the Remote Strobe / Horn devices.

The QCC is pre-programmed and field adjustable. Configurable settings include relay assignment, time delays, logic control, sensor types and ranges, alarm set points, etc. There is a 4-line x 20 character backlit LCD display that actively scrolls through the programmed channels and displays the gas name, concentration and alarm status. The QCC has 3 relays that can be configured to activate the exhaust ventilation system, trigger onboard and remote alarms and other equipment or procedures as appropriate. The QCC can accept up to four 4-20 mA inputs and/or Modbus RS-485 digital inputs. An optional analog output module is available that offers two 4-20 mA outputs and data logging.

The QCC communicates with the transmitter(s) and provides a single point of access to view gas level readings and configure the transmitter settings. Up to a maximum of four CXT transmitters can be connected to the QCC. If more transmitters are required, an FCS Flexible Control System controller should be used instead. If the extraction process uses Carbon Dioxide (CO_2) and Butane, installing a CXT-A-ICO2 (0 - 5% vol) Explosion Proof transmitter with an infrared CO_2 sensor is recommended as well.

If the extraction processing area has been approved as a non-hazardous area by a design engineer, the LPT-A Analog transmitter with a combustible butane sensor may be used instead of the CXT. Likewise an AST-IS6-CO2 (0 - 5,000 ppm range) transmitter with a CO_2 sensor may be used.