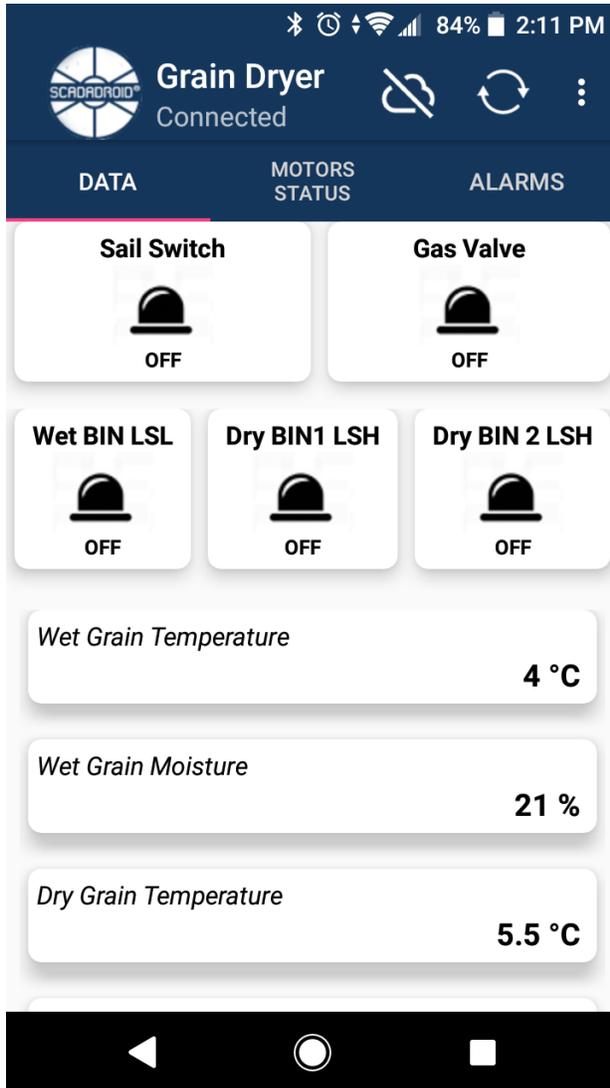




SCADADroid® with MQTT- Providing Peace of Mind for Alberta's Farmers



Reonix Automation Inc., in conjunction with Far West Electric Ltd., set about automating an Alberta farmers' grain dryer. One of the core requirements of the application was providing a more hands-off approach, by relaying some of the crucial data straight to the customer's hands.

We were able to do just that...

Through the use of a SCADADroid® Android® application, and MQTT (a tried and tested Internet of Things protocol standing for Message Queue Telemetry Transport). Our customer was provided a window in to this crucial process, while gaining the freedom to continue a host of other work required to keep the farm running.

In this case, Reonix made use of several components at different levels of the industrial control system, to ensure a much more automated approach.

At the field level, switches, moisture and temperature sensors are connected to an electrical box, which is further connected to a PLC. The PLC uses the moisture and

temperature readings to determine the amount of drying time required which then adjusts the VFDs (connected to the auger motors). Moisture levels of the finished and unfinished product are read as well as the dry gain temperature.

The PLC also acts as a Modbus server, making all this information available. The SCADADroid® reads this data using Modbus TCP from the PLC. It polls the PLC for the speed of the augers, the temperature of the grain, and any failsafe switches for on or off status. Once it detects an alarm condition, it sends out alarms through the cellular mobile phone network, i.e. SMS text, email and voice dial.





At the production levels, in the case of the dryer, the everyday smartphone acts as the monitoring terminal. Here is where the magic happens. Aside from sending texts and automated voice-dial messages (standard to any alarm dialer), the SCADADroid® pushes the Modbus data straight to the farmer's smartphone. The data is sent over the cellular data network using MQTT, so it's fast, efficient, and lets a farmer know the immediate performance of the grain dryer while harvesting, enjoying time with their family or any of the 100 things on the 'to-do list' – before the critical situation of an alarm. Using the custom Android® app, the key data values display on a handheld screen wherever they may be.

For a little insight in to the technology the SCADADroid® utilizes, we can take a look at what MQTT is and how it is applied:

MQTT is a fast messaging protocol, which minimizes signal traffic over wireless networks. If there's an interruption in the transmission of data, the last known values are saved on the publishing device (in this case, the SCADADroid®), and then pushed out to the client device (in this case, the farmer's smartphone) as soon as the cell signal is re-established. MQTT makes this failsafe through its characteristic message queueing system, which also allows it to keep data transmission volume over a cellular network much lower than traditional types of communication, which require a constant stream of information being broadcast.

The benefits of these features can free up a farmer's time. What used to require constant supervision of a grain dryer that could experience a fault at any time, can now be sent to a phone. Farmers can get a full night's sleep instead of checking up on a dryer in the dead of night. They can change alarm setpoints through the app, instead of requiring a technician to reprogram PLCs, or an electrician to rewire costly electrical relays. And MQTT keeps cellular data plan usage to a minimum while the client keeps tabs on the dryer!

Contact Carbon Controls today to learn more: www.CarbonControlsLtd.com

