

## Field Use

### CNX™ Wireless Test Tools

**Name:** Colin Wilson

**Company:** Okanagan Automation, Ltd.

**Application:** Control systems design, installation, and service

“The CNX system simplifies troubleshooting by allowing one person to do the work of two and to work a safe distance away from energized equipment.”

“The CNX i3000 iFlex module is so convenient. With its six-foot long cable I can position the flexible head in tight locations and then position the display where it’s easy to read.”

### 1. Background

I have been a Technologist and Red Seal Journeyman Electrician at Okanagan Automation for the past two years. I have more than 15 years of experience designing, building, and repairing industrial automation equipment, and hold degrees in robotics and automation as well as electronics.

### 2. Doing the job of two people safely

We have a customer operating two 400 horsepower rotary presses that make wood pellets. One of the variables used by the PLC to control the process is motor current measured by a system of current transformers and analog amplifiers. We were asked to verify that the current readings were accurate.

Typically, this work would require one technician to put on personal protective equipment (PPE), open up the motor control center (MCC), attach a clamp meter, and report the motor current while a second tech monitored the PLC readings. In this particular setting that procedure was not possible as the 600 V MCC sections feeding the presses have an available fault current in excess of 35,000 A—well outside the limit of the customer’s live work policy.

Instead, I shut down the MCC and installed a Fluke CNX i3000 iFlex Wireless Current Module inside each section using the magnetic hanger to position the display on the backside of the access door. After closing up the sections I discovered that the CNX DMM could pick up the i3000s through the very heavy cabinet up to about 12 feet away, so I re-energized the MCC and had the presses started. Using the motor currents displayed on the CNX 3000 I verified that the PLC was reading the same values.

### 3. Diagnosing a CNC lathe motor

At another site I was asked to diagnose a computer numeric control (CNC) lathe that had developed a problem where the spindle would stop if the speed was set below roughly 500 rpm. I connected the CNX DMM to the 0–10 V dc spindle drive signal from the NC control and used an i3000 iFlex current module set on Hz to monitor the motor speed. With the DMM displaying both values, I had the operator step the spindle down from full speed while I monitored the readings. We quickly confirmed two things:

- The drive signal was linear with respect to the speed set in the control;
- The spindle servo drive cut out when the input signal dropped below ~0.65 V.

Swapping out the defective servo drive had the lathe up and running properly again.

The CNX i3000 iFlex module is so convenient. With its six-foot long cable I can position the flexible head in tight locations and then position the display where it’s easy to read.

#### **4. Simplifies troubleshooting**

So many situations require two people to monitor multiple readings. If we're working around energized equipment that requires one of us wearing PPE. Or if it's only me, I may have to take measurements from different locations and extrapolate the desired value.

The CNX system simplifies troubleshooting by allowing one person to do the work of two and to work a safe distance away from energized equipment. It's also very handy that each module can be used as a stand-alone logging meter as well so I have less equipment to deal with.