PROFESSIONAL REVIEW

Power plant equipment manufacturer relies on Fluke accuracy to verify acceptance tests

Name: Chris Quaranta, Test Manager

Company: Hebeler

Tools: Fluke 289 True-rms Industrial Logging Multimeter, ScopeMeter® 196B and 196C, 715 Loop Calibrator, 724 Temperature Calibrator

Hebeler engineers, designs, and fabricates equipment for the power generation industry at its facilities in Buffalo, New York, and Port Colborne, Ontario. Fluke recently talked to Hebeler Test Manager Chris Quaranta about how those systems are verified ready for operation. Here is what he told Fluke News:

We engineer, design, and build a variety of equipment used in all kinds of power plants. Each product is dedicated to a specific function, from controlling fuel gas, to lubricating bearings and providing hydraulic power to operate valves. We run final acceptance tests on all of the equipment that we build and then ship it directly to the site for as close to turnkey installation as possible. Along the way we test every component of those systems, including pressure switches, analog instrumentation, valves, and wiring as well as the system as a whole.

For functional testing we've engineered our own test stands that simulate the control panel in the power plant. This allows us to simulate the actual operation of the components under controlled conditions. The test stand has a PLC to operate on skid equipment, such as valves, and a rack of motor controls to operate pumps. We can monitor instrumentation performance on the HMI [human machine interface] screen.

Traceable results

Because the test stands are not calibrated, we require a calibrated meter to verify test results, so we included ports in the test stands for calibrated test tools. For example, we plug in a Fluke 289 meter to see current measurements to three decimal places traceable back to NIST. So, if I'm testing a pressure transmitter that's zero to 500 psi to 4–20 mA, and I want to see the current output at 375 psi, I can show that pressure value on my HMI screen, and simultaneously show the calibrated current measurement on my 289 DMM.

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Some of our systems have hydraulically actuated gas valves with an LVDT [Linear Variable Differential Transformer] that provides valve position feedback. To test the timing on those valves, you apply a signal to the primary and stroke the valve. Then you need to determine the point at which you gave the command for the valve to move and at what point it reached the fully closed or fully open state.
I use a Fluke ScopeMeter® (either the 196B or 196C) for that because it allows you to read the AC feedback signal directly. That's important because a lot of times we have end customers witnessing the test, and a scope is the best way they can see a graphic representation of the results. We just plug the ScopeMeter into the banana jacks on the test stand.

Dependable performance

For individual component testing, I use the Fluke 715 mA Loop Calibrator mostly to stroke valves. And I use the Fluke 724 temp calibrator to verify thermocouples and RTDs.

Basically we use Fluke test tools to document that our products meet our customers' specs, traceable to NIST standards. The reason we use Fluke, besides their accuracy and traceability, is that they are pretty much indestructible."