

Fluke ProcessMeter™ proves that less can be more

**Technology
 at Work**

When the Fluke 787 ProcessMeter™ was launched five years ago, it was the first tool to combine a digital multimeter (DMM) and a loop calibrator in a single handheld tool. It also cost less than the price of some loop calibrators alone. For technicians who need to conduct a wide variety of tests, but don't want to buy—and especially carry—a large number of tools, the Fluke 787 was a welcome relief.

The versatility of Fluke's ProcessMeters, the Model 787 and the recently released Model 789, makes them the tool of choice for engineers and technicians across a wide variety of industries — from oil pipelines and pulp plants to biotech companies.

Separating oil from water

When you're working less than 20 miles from the Arctic Ocean on the Trans-Alaska Pipeline, performance and reliability are absolute requirements for tools. For the last two years, Bob Curtis, an instrument technician for Phillips Alaska, Inc., has used his Fluke ProcessMeter for a wide variety of critical measurements.

Curtis works at Phillips' Kuparuk Oil Field facility, where water and gas are separated from crude oil in preparation for shipment down the pipeline. He performs maintenance on the process instrumentation and controls, including a variety of devices ranging from transmitters and valves to PLC's and DCS control systems.

His Fluke ProcessMeter has simplified his life by combining many functions into one tool. Using the voltmeter function, he measures power supplies, loop voltages, control circuit voltages, and incoming ac line power. The current meter portion is handy for measuring loop currents. Curtis uses the frequency function for several measurements including frequency in ac lines and power supply regulators. Another critical application is measuring the frequency of turbine meters for flow measurement and the frequency from magnetic speed pickups on rotating equipment (turbines, pumps). The analog output feature is used primarily for driving 4-20 mA loops to signal inputs, I/P's, and valve positioners that take a 4-20 mA input directly. The resistance portion of the meter is used for checking loop resistances, device impedances and continuity.



"I've used Fluke multimeters for years because they're easy to use and reliable," said Curtis. "I used to use a Fluke 87 because of the auto-ranging and record capabilities it had. When the Fluke 787 was introduced with the integrated analog output capability, it allowed me to carry less test equipment because I could drive devices with my Fluke."

For work and home

Working as an electrician for Bethlehem Steel Corp., the nation's second largest integrated steel producer, you have several responsibilities. There's the normal day-to-day electrical work and troubleshooting, and for Phil May and his partner, there's also the responsibility of taking care of all the ac variable frequency control drives for the coal injection facility – 58 to be exact.

Tuning the drives was the job of an outside vendor until a couple of years ago, when Fluke ProcessMeters were brought to May's attention by an outside motor drive technician. Looking over the specifications, he was impressed by the accuracy and the many testing capabilities available with one tool.

"We use our Fluke ProcessMeter for setting up the 4-20 mA signals for our variable frequency drives and we also use it for normal troubleshooting work just about every day," said May. "It has really speeded up the way we're able to get our job done."

Meeting regulations

Biotech companies focus on the research, development and commercialization of products manufactured utilizing biotechnology principals. Throughout the entire process they must follow extensive regulations from both domestic and foreign governments. Greg Fletcher, an instrumentation technician for Amgen, the world's largest biotechnology company, understands the importance of calibrating instrumentation used for testing and validation. That's why he uses a Fluke ProcessMeter.

"I've been using the ProcessMeter to source and measure 4-20 mA as long as they've been available," said Fletcher. "I chose the 787 because of its sourcing current and low cost, and because of my past experience with Fluke and their products."

24 in, 12 out

John Gale, electrical engineer for ACS, a company that designs and manufactures incineration and scrubber systems, wears a lot of hats. He's responsible for the development, design, programming and engineering of industrial control, data acquisition and continuous emissions monitoring systems.

Some of ACS's systems will have 24 current loop inputs and 12 current loop outputs that must be calibrated at commissioning and during routine maintenance and calibration intervals. Gale's challenge was having the patience to go through each loop several times to verify the accuracy of the equipment under calibration. But using a Fluke ProcessMeter has speeded up the time it takes him to calibrate the systems because of the combination of a traditional multimeter with a current loop calibrator and its large display, which is easy to read at a glance. This eliminated one piece of equipment plus the extra batteries and test leads that he had to cart around when he went into the field.

"The ProcessMeters are rugged, accurate, reliable, and easy to use," explained Gale. "I have over 30 years experience in the electronic/electrical industry and I've used about every type of meter that has been manufactured. I've found that Fluke meters are the most reliable and maintain their accuracy over a longer period of time."

Making water safe

Seattle Public Utilities supplies drinking water to more than 1.3 million people in the Seattle/King County, WA area. To ensure that the tap water is safe, they're required to meet all federal drinking water quality standards for public water systems.

Lee Dilley of Seattle Public Works is one of many people responsible for meeting these standards. He installs, repairs, replaces and calibrates a wide variety of electronic equipment used for managing the drinking water. To calibrate 4-20 mA loops in chlorine analyzers, pressure transducers, speed controllers, and other industrial equipment, Dilley uses a Fluke ProcessMeter.

"I've used the 787 for four years now and what I like most about it is the ease of use and that the 4-20 mA output and input is shown in percentage as well as current," said Dilley. "I started using Fluke over 25 years ago. I still have my original meter and it still works great! I think that speaks for the reliability and quality of Fluke products."

Generating clean power

Public Utility District No. 1 Chelan County is a hydro-generating plant on the Columbia River in Washington State. The district's three hydroelectric generating projects have a combined total generating capacity of over 2,000 megawatts of low-cost, clean, renewable power and produce 9 million megawatts of power each year – enough to meet the needs of a city of more than 900,000 people.

Rock Island, one of the district's two hydro projects, is part of an 11-dam system on the Columbia River. Mike Kerns, electrician foreman for Rock Island, and his crew of electricians maintain all the electrical equipment within the two powerhouses at Rock Island Dam. They troubleshoot problems with hundreds of systems involved with the plant, from high voltage transformers and generating units down to simple lighting circuits, and there's also the pump systems, variable speed cranes, computer I/O circuits, spill gates, emergency diesel generators and fiber optics. In addition, they take care of maintenance and troubleshooting at a high voltage substation that feeds the national grid and a large Alcoa aluminum plant.

"We cover a wide spectrum of equipment which all involves the use of one type of meter or another," explained Kerns. "I've used a Fluke ProcessMeter for about a year and I just purchased another one for my crew."

The 787 is used as a volt/ohm meter in troubleshooting and as a current signal transmitter for 4-20 mA signals for various electronic controllers. "The reason I went to the 787 was because of the built-in 4-20 mA current source/simulator. We use this for calibrating electronic temperature, pressure sensing, and other equipment using current signals."

Bringing light to darkness

For Doug Gray and Jon Peterson, instrument technicians for Alyeska Pipeline Service Company, reality is working in the dark 75 percent of the time. Alyeska operates the Trans-Alaska Pipeline, an 800-mile, 48-inch, fully-insulated pipeline that transports North Slope crude oil from Prudhoe Bay to Valdez.

Gray is responsible for the calibration, maintenance, and repair of process control and life support equipment. He uses a Fluke ProcessMeter for personal protection in determining if a circuit has been properly isolated for work, in measuring input voltages to controlled devices, feed back voltages, 4-20 mA transmitter output, and as a source for 4-20 mA.

"I like the meter's large display. It's easy to read in tight places and lights up enough to be used in the dark," said Gray. "And being able to source current provides me two pieces of equipment in one. I have to travel to remote sites wearing heavy clothes and the less I have to pack with me, the better."

Peterson works on instrumentation and controls, fire detection systems and electrical maintenance. "I've used a ProcessMeter for two years calibrating control loops on relief valve and gas turbine controls," explained Peterson. "We chose Fluke's ProcessMeter because it's smaller, its battery lasts much longer, and the meter's range is continuous."

Working in the arctic environment and at remote locations is challenging and having equipment they can depend on is critical. "Fluke has always provided a quality device," said Gray. "I acquired my electronics degree using Fluke equipment in college and it is the test equipment preferred by my company and by industry."

789 – The super-sized ProcessMeter

So how do you make a mission-critical tool even better? When Fluke recently introduced the Fluke 789 ProcessMeter, it added a display that's 200-percent larger than the 787, with enhanced backlighting and two brightness settings for easy readability.

Fluke went back to these same technicians to have them test the functionality of the 789 in the same work environments as before. And while the super-sized display was the most notable improvement, the addition of a 24-volt loop power supply, a HART® mode with a built-in 250 ohm resistor with loop power, improved battery power with four AA batteries, 0-100 % mA span check buttons to toggle from 4 to 20 mA, and an infrared I/O serial port compatible with FlukeView® Software were also valued changes.

"What I liked best about the 789 is the enlarged, easy-to-read display, the molded-on case, and the 0-100 % span check for the 4-20 mA output," said Bethlehem Steel's Phil May.

"I like that the 789 is a combination of multiple meters and source devices," added Doug Gray of Alyeska Pipeline. "And it's compact and durable."

Some sites used the 789 for a specific measurement while others used it for a variety of measurements.

"I used the 789 for voltage checks, current readings and current sourcing," said Greg Fletcher of Amgen.

Phillips Alaska's Bob Curtis reported that his crew used the 789 on a variety of equipment, for a wide range of measurements, including:

- Voltmeter function to measure power supplies, loop voltages, and control circuit voltage;
- Current meter function to measure loop currents;
- Frequency function for measuring ac line frequency, frequency from turbine meters for flow measurement, and frequency from magnetic speed pickups on rotating equipment (turbines, pumps, etc.);
- Analog output primarily for driving 4-20 mA loops to signal inputs for I/P's and valve positioners, and to simulate 4-20 mA inputs to DCS for loop checking;
- Resistance function to check grounds on a newly installed Bently Nevada's 3500 Series Machinery Protection System.

To these technicians, the 789 was more than super-sized – it was a valuable improvement to an already valuable tool.

