

APPLICATION NOTE

Multimeters help save the day

Epic stories from the field

Fluke recently asked customers to tell us their stories about how Fluke multimeters helped save the day in the workplace. Here is an edited selection of some of the great submissions. Thanks to all who shared.

Ice cream plant

I work for one of the largest producers of ice cream in the world. We had a unit that produces 400 gallons an hour go down. In troubleshooting we found one of the controller boards failed. The parts department was out of stock and this board had a long lead-time. The only option was to try repair the board. I was one of the only technicians who had experience making bench work repairs on electronics but it was not feasible to get the board to the electronics lab for repair. A fellow technician had just purchased a Fluke 87 True-rms Multimeter. I was used to using bench meters but this meter performed excellently.

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We found the bad component on the board and repaired it. Our total lost time was about 2 hours. We saved approximately \$100,000 by repairing the board and in potential lost product.

National accelerator laboratory

I work in the high-voltage department. Our incoming line is 345,000 volts. We have two feeders and each is 1,600 amps. They pulse to about 70 MVA every three seconds when they are doing high energy physics. Machine down time costs thousands of dollars. Last fall the power company had a fault and tripped our 2,000 amp 345 KV breaker to load shed. We responded to our substation not knowing what the problem was. Calling the power company revealed that it was caused by them. When they gave back control to our breaker we tried to close it. Nothing



happened. We soon had a dozen engineers at the station pouring over the drawings. I finally asked to troubleshoot the breaker, it has a very long fault chain and timing relays to allow closure. I got my Fluke 179 out of my truck, isolated the breaker from the 345 KV systems, and asked one of the PE's to read the breaker print for me. My first point to test with the DC applied—I had them try to close. I saw the voltage across the chain go from the 130 vdc to about 20 telling us that we had a high-resistance contact. Within about 10

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minutes we found the culprit. It was the 20-cycle timing Agastat relay. I then powered off all the DC to allow the relay to return to the normal state and tried to close. All was fine; the relay was replaced at a later date.

We had some sensors that were not working correctly. We used the Fluke 289 True-rms multimeter to troubleshoot. We finally were able to find some cable that was damaged by rigging continuity with the wire pairs.

Wind park

Working in a wind park doing trouble shooting can be quite challenging sometimes. We installed a new meteorological tower with advance sensors up at 350 feet in the cold New-Brunswick mountains area. We needed a crane platform that costs over \$10,000 per day, not counting all of the ground support team. We had some sensors that were not working correctly. We used the Fluke 289 true RMS multimeter to troubleshoot. Using the Fluke 289, including the wire pares and the low impedance and the diode check functions we were able to find damaged cables and bad sensors during the installation process rather than after (and having to reinstall equipment), saving a lot of time and money. As the new meterological tower is important to the operation of wind turbines that control icing mitigation equipment and if not working or calibrated properly, it would affect millions of dollars in production costs. During the cold winter months, its calibration is critically important. If the calibration is off, it could impact the operation of the wind turbines and energy production. The data logging function of the Fluke 289 true RMS multimeter and the ability to push all of the trends were essential in the commissioning process and our ability to verify proper instillation. The Fluke 289 permitted us to troubleshoot bad wiring, bad sensors and helped us in our commissioning report all in one compact instrument. Not forgetting also that it saved us tens of thousands of dollars in additional installation charges and millions of dollars in potential lost production.

Paper mill

Time is money in a paper mill so when a machine goes down the pressure is on to get it up and running as quickly as possible. I was called in one night when a motor controlled by a VFD kept tripping out and there were concerns we'd need to replace the motor. It's a minimum of 8 hours to change this motor out and another two hours to get the machine back up and running. Using my trusty Fluke 87 I was not only able to determine that the motor was fine but that the real issue was a 5 V instrument supply module. These older drives have a very low tolerance for these modules and the Fluke was reading 4.77 Volts. The lowest possible voltage this drive can handle from the supply is 4.8 V. A \$300 part and 15 minute change out had us back up and running in no time. Had it not been for the accuracy of the Fluke meter we probably would have changed the motor and still been stumbling around trying to find the problem. It's a real testament to the accuracy of these meters and the trust we place in them every day.

I used my Fluke 87V to check the power, and that's when I found there was voltage bleeding to the ground wire due to an improperly wired disconnect, electrifying the ground wire and the housing of the motor I was going to replace.



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