Technical Articles SureTest®
A DAY IN THE LIFE OF A COPIER REPAIRMAN

When Ismael Ramirez, service manager for Lamb Management, got the call from his customer, a real estate dealer, he thought for sure he had lost this customer. This had to be at least the sixth (or was it the tenth) time that the customer had called for service on a Panasonic Copier that Lamb Management had supplied. The first model, a 20 copy/minute unit, kept giving erratic and false error codes. The customer wanted the unit “out”, because it was considered unreliable, however he agreed to upgrade to a Panasonic Model #3280, and shortly after its installation, Ramirez was again called on the scene, first to replace a microprocessor board, and then a couple of sensors. This was crazy - the first unit had been resold - and that customer had no problem with the unit...... Could there be something wrong with the power, he mused?

Ismael tested the outlet with his recently-purchased SureTest ST-1D branch circuit wire analyzer. The voltage on the line was nominally correct - under no load. However, the SureTest showed - under its patented **15-amp load test** - that there was a voltage drop on the line greater than 10% (the National Electrical Code recommends 5% maximum at the furthest outlet). In addition, the SureTest indicated presence of a **faulty ground**, a **common mode voltage** of >3 volts between Ground and Neutral, and an existing **load on the branch circuit of 5 amps!** No wonder they had problems. Both Panasonic Models require 15 ampere availability - they obviously didn't have it.

The customer's electrician couldn't find these problems with his multi-meter, because he didn't test the circuit under load. Further investigation showed that the circuit served two other offices with computer loads. The customer installed a dedicated line to the copier......... and they lived happier ever after.

Ismael didn't estimate what all the call-backs cost him in service time and parts - that hurt enough. More important - when there was a problem with power quality (which wasn't often) - he never knew about it until there were so many call-backs that **the customer lost confidence** in his product. Now Ismael is a confirmed user of the SureTest analyzer. The SureTest is simple to use - just plug it in.

Determine:

1. Proper wiring and grounding - detect false grounds.

2. Line voltage - Identifies circuits that are under powered or have excessive voltage

3. Voltage Drop - from power source to the outlet (line impedance) - under a 15 amp load, This test determines whether the outlet has the capability to carry the current needed. Excessive voltage drops starve equipment of needed power, and in extreme cases, will cause fires. A maximum 5% voltage drop is recommended by N.E.C.

4. Voltage between Ground and Neutral - Cumulative test of common mode voltage displays the peak "noise" or distortion on the circuit caused by other equipment during the test period. Excessive distortion can cause computer, copy and fax machines to malfunction and lose data. Four volts is excessive and not acceptable for sensitive equipment.

5. Load-on-line - Cumulative test - verifies a dedicated outlet, and measures how much power is being used for other equipment on the branch. Leave it plugged in and it will display the peak load (amps) caused by soda machines, floor buffers, or other equipment using that branch during the test period. Some service contracts and warranties require a dedicated outlet to assure that a full 15 amps will always be available, and that there is no other noise-generating equipment on the circuit.

6. Ground Impedance - Proper grounding is critical to proper operation (and protection) of most microprocessor-driven equipment. An impedance at the outlet > 1 ohm is usually not acceptable.

7. Exact GFCI trip point - Digital readout of exact trip point in True RMS Milliamps regardless of line voltage. N.E.C. code requires GFCI trip between 4-6 ma current.

SureTest® - DON'T PLUG IN WITHOUT IT !