Written by Phil Allen, President, Grace Engineered Products
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Maintenance workers carry Non-Contact Voltage Detector (NCVD) pens. This portable device allows them to check electrical conductors for live voltage without touching bare wires. The NCVD is unique because it senses voltage when positioned without making an electrical connection.

How Does an NCVD Work?
The NCVD detects an energized wire by measuring the voltage across two variable capacitors: 1) between the NCVD to the energized wire; 2) between the NCVD to ground (through the worker). The reliability of an NCVD actually improves when it's used with a voltage portal because it provides a fixed "known" capacitance from the wire to the NCVD. Less variability means more reliability.

What is a Voltage Portal?
A voltage portal is an encapsulated non-conductive point that extends each voltage source to the outside of an enclosure. The portal's design ensures that when voltage is present, the NCVD can be positioned close enough to the voltage in order to sense it. A voltage portal design ensures that the voltage point is safely secured while still detectable by a worker using an NCVD.

Improved Panel Design = Electrical Safety

Voltage portals installed into an electrical enclosure provide the best environment for reliable operation of an NCVD. Here are specific recommendations and practices:

 Voltage portals should be mounted on the enclosure side or flange closest to the main disconnect, thereby avoiding 480V on the enclosure door.

 When installing voltage portals into the enclosure, route the lead wires away from high-power switching devices (AC drives or other) that may interfere with and, thus, change the capacitance and affect operation of the NCVD.

 Grounded metal enclosures tend to keep stray electrical energy within the enclosure, so the NCVD only senses voltage at the voltage portal. Likewise, when an NCVD is used on a non-metallic enclosure, it will detect stray voltages that may not be associated with the voltage on the voltage portal. For example, the NCVD may sense voltage with an open disconnect by detecting the stray voltage on the line side of the disconnect.

Using NCVD pens and voltage portals to verify isolation of electrical energy is a reliable, thru-panel voltage-detection system. Not only does this method enhance compliance with NFPA 70E, it increases employee productivity. **MT**

To learn more about specific recommendations and practices, visit: info.graceport.com/MT4 ; or email the author:
philallen@grace-eng.com
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