

Electrical Safety Sense: LOTO Issues

Written by Phil Allen, President, Grace Engineered Products
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Many maintenance workers carry Non-Contact Voltage Detector pens (NCVD) in their tool belts. These devices allow personnel to quickly check electrical conductors for live voltage without actually touching bare wires. The NCVD is unique in that it can sense voltage when positioned close to the live conductor without making a hard-wired electrical connection. Some people, however, have incorrectly concluded the NCVD to be second-class in its reliability when it comes to verifying electrical isolation. Let's explore how using the NCVD with voltage portals enhances NCVD reliability and how this can help make mechanical lock-out tag-out (LOTO) safer and more productive.



Reliable operation of the NCVD depends upon its ability to complete a capacitive circuit between the tested wire and ground. Without a good path to the power-source ground, the device will not operate reliably. To avoid this pitfall, a voltage portal should only be used on electrical systems where the power source has the ground or neutral connected to earth ground.

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A voltage portal extends each voltage source to the outside of an enclosure into an encapsulated non-conductive housing. Its design ensures that when voltage is present, the NCVD can be positioned close enough to the voltage to sense it. Additionally, its design ensures that the voltage point is safely secured while still detectable by a worker using an NCVD. This enhances safety and increases productivity when performing mechanical lock-out tag-out procedures.

Voltage portals installed into an electrical enclosure provide a superior environment for reliable operation of an NCVD. The position of the voltage portal and its wiring within the electrical enclosure eliminates most of the factors that would make an NCVD provide unreliable voltage tests.

A voltage portal becomes a means of validating the operation of an NCVD before and after each voltage test. If the device detects voltage with a closed disconnect, the circuit path (voltage portal-worker-ground) is validated. Furthermore, a 3-phase system provides three independent validation paths.

Note that a voltage portal allows workers to check voltage inside an enclosure without being exposed to voltage. When performing mechanical LOTO, 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 to NFPA 70E, it also increases employee productivity. **MT**

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philallen@grace-eng.com

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