

Electrical-Safety Sense: Confusing Fusing Issue

Written by Phil Allen, President, Grace Engineered Products
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Fusing a panel-mount voltage indicator ensures an electrically secure installation as per NEC, but it simultaneously decreases electrical safety as per NFPA 70E. The reason for this is the propensity of false negative readings from the voltage detector as a result of the over-current protection.

What's an electrical-safety-conscious company using a voltage indicator to do when it's confronted with the "to-fuse-or-not-to-fuse" question? Even Shakespeare's Hamlet would rightly conclude that the only safe course of action would be "not to fuse."

A permanent electrical-safety device like a voltage indicator has one full-time job: to indicate voltage. A blown fuse on its input creates a false negative indication of voltage which, if trusted, is a hazard.

A fuse also adds four connection points of failure for each phase. In electrical safety, once you touch a live conduction, there's always an electric incident—*because electrical energy is, after all, instantaneous*. Thus, it's crucial to avoid any chance of potentially precarious false negative readings.

NFPA 70E—as well as the logic of safety—recognized that there are varying degrees between "a risk" and a "greater risk," so it astutely included a "Hazard Risk Procedure" in Annex F. The same principle, as stated below, allows for energized work, which is a risk if de-energizing the system is a greater risk.

"Greater Hazard. Energized work shall be permitted where the employer can demonstrate that de-energizing introduces additional or increased hazards." ...NFPA 70E 130.1(A)(1)

Similar statements exist in the NEC, which allows for un-fused conductors if a blown fuse creates a greater hazard:

"...for example, the control circuit of a fire-pump motor and the like." ...NEC 430.72

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Including over-current protection for a voltage indicator installation increases the opportunity for a false negative reading, thereby creating a greater hazard than the risk posed by an un-fused conductor. **MT**

To learn more about specific recommendations and practices, visit: info.graceport.com/fusing ; or email

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