



## **NFPA 70E: Electrical Safety — Lockout/ Tagout and Circuit Interlocks**

*When performing lockout/tagout, what must you know about circuit interlocks?*

By Mark Lamendola



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NFPA 70E requires that those performing the lockout/tagout (LOTO) review documentation (including up-to-date drawings and diagrams) to ensure that no electrical circuit interlock operation can result in re-energizing the circuit being worked on [120.2(D)].

This sounds straightforward, but in practice, it might be a real headscratcher. The main issue is determining whether you have up-to-date drawings and diagrams. In a facility with a controlled drawing program, you may address this issue by simply printing the drawings from the central drawing repository. Many times, controlled drawings bear a stamp with the date and revision and/or that information is in the title block; you'd then refer to the date and revision in the drawing index.

But what if you don't have a controlled drawing system at that facility? Or what if the only drawings are from the manufacturer, but modifications have possibly been made? In this situation, the project manager will have to decide whether to add the cost of an in-place drawing verification. Only after you have current drawings and diagrams can you proceed.

Let's say you have the current drawings and diagrams. How do you verify there's not going to be an interlock problem? First, understand what an interlock is. It's not a permissive (a condition that must be present for an action to occur). It is something that will happen when another action happens.

Ladder logic diagrams are great for spotting these, because not only can you see (for example) the coil pick up to bring power to another rung, you will often see the word "Interlock". Or there may be an Interlock symbol (look at the diagram legend for such a thing). In other cases, you may simply need to "walk through" the drawings or read a document that provides the "theory of operation". If there's an interlock, some documentation will identify it somehow.

Not every interlock is going to matter, in this context. Look for one that will bring another source of power to

the circuit you intend to lock out. One clue that you may have one is if there's some kind of secondary power source or backup power for this equipment or system.

Don't forget to verify the absence of energy to the circuit you're working on, once the lockout of the interlocked circuit is complete. Use the three step method, so that you don't merely think there's no energy. When your meter shows a circuit has no voltage, check your meter against a known voltage source to make sure your meter is measuring properly. Then check the circuit again.

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***Mark is an expert in maintenance management, having racked up an impressive track record during his time working in the field. He also has extensive knowledge of, and practical expertise with, the National Electrical Code (NEC). Through his consulting business, he provides articles and training materials on electrical topics, specializing in making difficult subjects easy to understand and focusing on the practical aspects of electrical work.***

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