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What is an arc flash? What is the purpose of warning labels? - by John Sloane

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John Sloane,
Interstate Electrical Services

Ask the Electrician: What is an arc flash, and what is the purpose of an arc flash warning label?

You've probably seen warning labels about arc flashes on electrical equipment, but do you know what an arc flash actually is?

First off, the word "arc" is used to describe electricity moving through the air between two points. That shock you get when you touch a metal door knob? That's an arc. Lightning is an arc too–just on a much, much larger scale.

When dealing with high-energy electrical equipment, an unexpected arc causes the release of electrical energy in the form of heat and pressure –essentially, an explosion–known as an arc flash. Arc flashes are generally caused by equipment failure, a fault or surge somewhere else in the system, or human error. Because none of these factors are inherently predictable, anyone working on electrical equipment has to be aware of the risks at all times–even when equipment is contained in fire-proof electric rooms and electricians are following NFPA guidelines to avoid working on live equipment (a guideline that the teams at Interstate Electric Services always follow). That risk awareness is where arc flash warning labels come in.

These warning labels give key information about that particular piece of electrical equipment, usually including voltage, various safety boundaries, and guidance on safety gear required. With this information, an electrician or a qualified worker is able to determine the appropriate level of protection and precaution necessary to begin working on that piece of equipment.

But gathering the necessary information to calculate arc flash risk is no easy task. In theory, if a building has up-to-date schematics and design documents, those would give some guidance. But in a lot of cases–especially in New England with all of our older buildings–that documentation doesn't exist or hasn't been properly updated. Once the data has been updated, engineers assess the

information and use advanced software to calculate risk, voltage, etc.

Traditionally, electrical contractors outsource their engineering needs to a third party. But with the amount of information that gets passed back and forth, some details can get lost in translation. Early on at Interstate, we identified the need for close interactions between our electricians in the field and the engineers manipulating the data. We created an in-house triumvirate by establishing an internal electrical engineering team to work hand-in-hand with our electricians and our safety personnel. This allows us to reduce our reliance on outside engineering groups and streamline our processes to complete projects more efficiently. While not every electrical contract team can have an in-house engineering staff, it is absolutely imperative that they work in tandem with electricians and safety teams to ensure the utmost attention to detail.

Next month, we'll discuss how an accurate arc flash study can reduce safety risks and liability.

John Sloane is regional vice president at Interstate Electrical Services, North Billerica, Mass.