



TEDDER'S TECHNICAL FACTS

Vol. 2, No. 2

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WHY ALL THIS ARC FLASH RUCKUS??

We decided to extend last issue's Arc Flash Hazard topic to this issue because assessment and compliance has become so important in such a fast-changing field. Knowledge prevents many nasty surprises; from a possible injury or fatality to your company falling into the quicksand of a regulatory problem. General understanding of the National Fire Protection Association's NFPA 70E standard and the appropriate areas of 2002 NEC is the first step toward compliance.

An electrical flash is instantaneous, almost too fast for the eye to comprehend. However, end results of this incident can exceed \$15 million in direct and indirect costs to a company. So safety issues surrounding arc flash explosions cannot be ignored, as the Occupational Safety & Health Administration (OSHA) begins enforcing new standards for employee safety protection in potential arc flash situations.



It's best summed up by answering a question we recently heard:

Q: I am a veteran electrician with 35 years in a foundry. Arc Flash Hazard, Arc Flash Hazard Analysis, PPE, Personal Protective Equipment, NFPA 70E, Hazard Risk Category Classifications. I hear all this stuff. They say I have to wear flame resistant clothing and get electrical arc flash safety training. Can somebody just tell me what this is about without an engineering lecture? I simply want to know why, after 35 years, this arc flash hazard stuff is suddenly so important.

A: *The most basic answer is that*, in the past, electricians were just careful not to get a shock. Now, you have to be careful not to get burned or blasted. That's it...basically. But there is much more. Who started all this? OSHA says *"Safety-related work practices shall be employed to prevent electrical shock or other injuries..."* Well, we're into the "other injuries." Why? Because the number of people injured by electrical burns each year and the extent of the injuries is horrific and no longer considered tolerable.

OSHA is the enforcer of workplace safety practices. Its 29 CFR Part 1910.333 states, in part, *"Safety related work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts."* Although several related requirements are included in OSHA standards, the administration's field inspectors carry with them a copy of NFPA 70E and use it to enforce arc flash related safety procedures. Think of NFPA 70E as a "how to" standard. It provides guidance on specific steps that must be taken to comply with the more general statements made in the OSHA standards.



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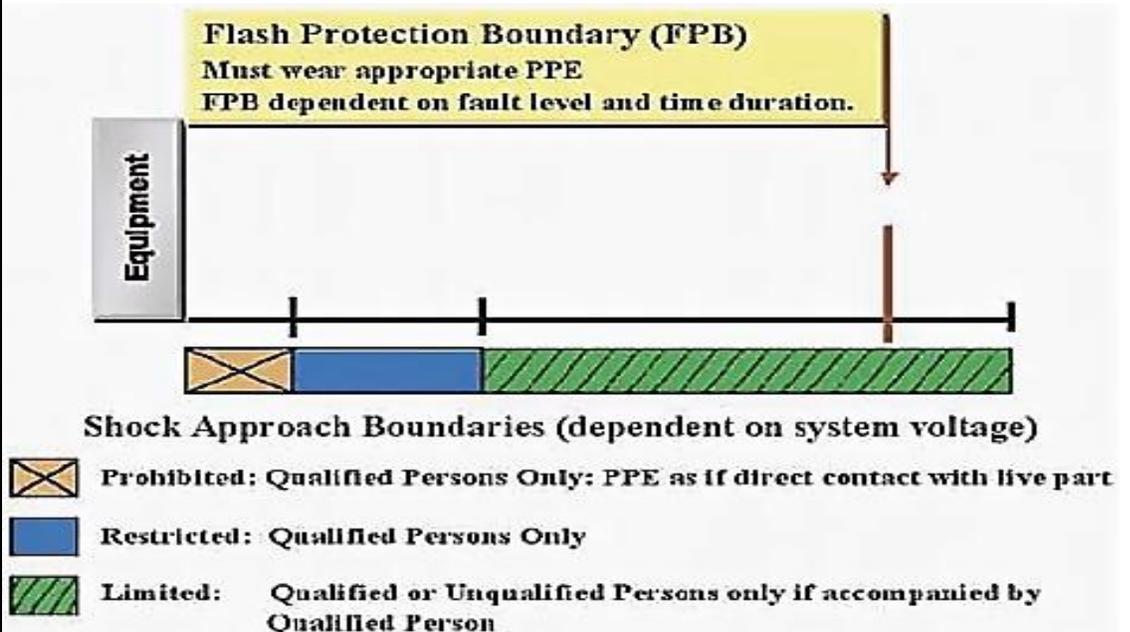
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Regulations require calculation of the **flash protection boundary** (see below figure), inside which qualified workers must be protected when working. This boundary is an imaginary distance surrounding a potential arc point described as, *“within which a person could receive a second-degree burn if an electrical arc flash were to occur,”* according to NFPA70E. This standard defines incident energy as *“the amount of energy impressed on a surface, a certain distance from the source, generated during an electrical arc event.”* That surface could be a person.



Both the NFPA 70E and the 2002 NEC state that facilities must provide the following:

- A safety program with defined responsibilities.
- Calculations for the degree of arc flash hazard.
- Personal protective equipment (PPE) for workers.
- Training for workers and tools for safe work.
- Warning labels on equipment.

A new requirement in the 2002 NEC (110.16) states, *“Switchboards, Panelboards, industrial control panels, and motor control centers that are in other than dwelling occupancies and are likely to require examination, adjustment, servicing or maintenance while energized shall be field marked to warn qualified persons of potential arc flash hazards.”* (see Tedder’s Technical Facts V2, N1).

Your familiarity with all of these requirements can be greatly expanded by attending one of our classes. We offer both half-day and full-day training, either at your facility or elsewhere, and we can tailor it to your needs. Email your request for our training flyer to james.petroff@hamptontedder.com or contact our Sales Manager, Dustin Ashliegh, at 909-628-1256, x-259, to discuss a specific situation.

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