

Arc Flash Labels — Why Bother?

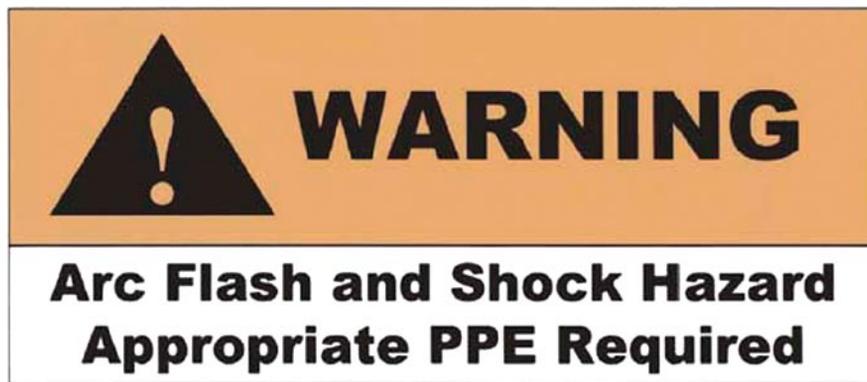


Ron Widup



Jim White
Shermco Industries

Often times the question comes up, “Do we have to put arc-flash labels on our equipment?” This is a fair question. To answer it is helpful to know how the wording for Article 110.16 of the National Electrical Code (NEC) came about. The NFPA 70E Committee introduced a proposal to the NFPA 70 Committee (NEC) to require arc flash hazard labels on all newly-installed electrical equipment that may require servicing or maintenance while energized. After much deliberation, the NEC Committee decided that the information pertaining to the circuits could change over time, leaving the technician underprotected and relying on outdated information. A requirement was accepted that all new (2002 and later) equipment must be field-marked warning a qualified worker about the hazards of arc flash and shock if covers are removed. Field-marked indicates that the installer must ensure the labels are applied and correctly oriented so they are clearly visible to anyone who may be involved in servicing or maintenance. Figure 1 shows such a label. It is basically a hazard reminder, without giving the worker specific information to help him assess the electrical hazards involved.



Courtesy E.I. du Pont de Nemours & Co.

Figure 1 — Mandated Warning Label

Quite often we have seen an approach to hazard identification by labeling all of the electrical power devices, whether they were recently installed or had been in place for several years, without verifying the actual data associated with a particular piece of equipment or providing equipment specific data. When the facility has hundreds, or even thousands, of generic warning labels, the effectiveness of those labels is very low.

At the recent PowerTest Conference, one of the participants in the electrical safety panel discussions asked, “I’ve done the Arc Flash Study – why have the need to label?” The answer can be summed up in two words, liability and responsibility. OSHA’s Multi-Employer Worksite Policy (CPL2-0.124) ensures that whether a worker is contracted or a permanent employee, the host employer is responsible, at least in part, for the worker’s safety.

The best reason to label is responsibility. OSHA 29 CFR 1910.132(d)(1) states, “The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the employer shall:

NEC Article 110.16 Flash Protection

Switchboards, panelboards, industrial control panels, meter socket enclosures, 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 electric arc flash hazards. The marking shall be located so as to be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment.

FPN No. 1: NFPA 70E-2004, *Standard for Electrical Safety in the Workplace*, provides assistance in determining severity of potential exposure, planning safe work practices, and selecting personal protective equipment.

FPN No. 2: ANSI Z535.4-1998, *Product Safety Signs and Labels*, provides guidelines for the design of safety signs and labels for application to products.

Select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment;" [29 CFR 1910.132(d)(1)(i)].

If you employ qualified workers engaged in the servicing and maintenance of energized electrical equipment you have the responsibility to assess the hazard, select the correct PPE to protect them based on the hazard, supply that PPE to the employees and ensure it is used properly. Due to the above-referenced OSHA policy, you also have the responsibility to see that contracted employees select and use the proper PPE. If you conduct an Arc Flash Study and don't install the labels, you haven't really discharged the responsibility to the employees or contracted employees.

Performing the assessment required by 1910.132(d) is important, but communicating that information to employees, both in-house and contracted, is equally important. Having the information safely tucked away in a file cabinet somewhere on site is not going to prevent one from being injured or killed. Arc Flash labels ensure that all persons who need that information have it available to them. Will it prevent someone from ignoring the labels and injuring themselves? Of course not! There will always be a segment of the population that does not follow procedure and ignores warnings, but when the equipment is properly labeled (in addition to a properly administered safety program) and a good-faith-effort is shown, it not only puts your company in a legally-defensible position but more importantly, it helps establish a culture of electrical safety and communication which ultimately should help reduce electrical injuries and incidents. This works much better than saying, "They should have been qualified; that's why I contracted them." OSHA wants you to be proactive, not reactive.

There are various styles of labels and the information on them can be customized to meet a company's specific needs. Figures 2 and 3 show different approaches that are being used for labeling of equipment.

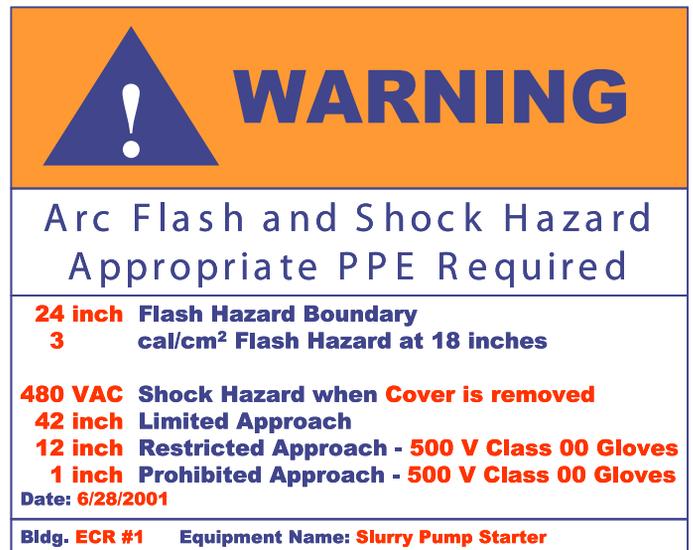


Figure 2 — Arc Flash Hazard Label

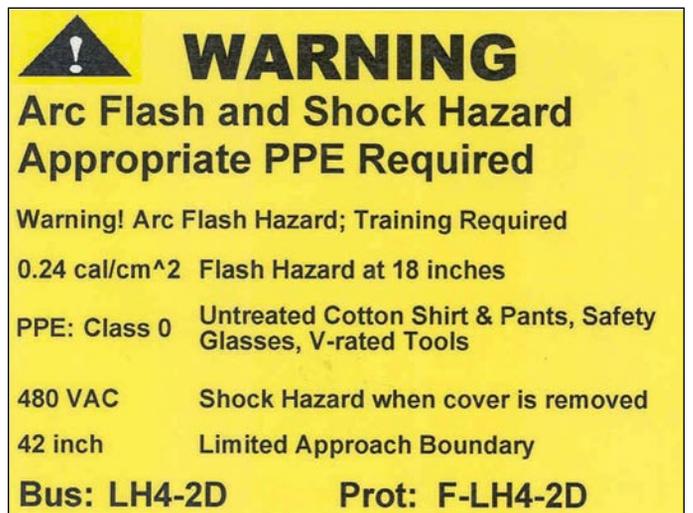


Figure 3 — Arc Flash Hazard Label

Don't forget that once these labels are placed on the equipment they must be updated when needed. Significant changes to your power system such as up-sizing transformers or cables, changes in relay settings, and utility fault-current contribution changes, can drastically change the amount of short-circuit current that may be available in segments of your electrical power distribution system. The physical properties of the Arc Flash labels must be monitored as well. They fade, especially when used outdoors. They peel and they are damaged by wear or accident. Replace them when they no longer convey the needed information or cannot be easily identified.

Summary

In today's litigious society, people are quick to seek redress for any accident and are reluctant to accept responsibility for their actions (or mistakes). The owners of electrical equipment must do all they can to show good-faith effort and protect their workers. Even if you win a lawsuit, you still lose. Time, money and resource are diverted from the goals of the company and everyone suffers. 

Ron A. Widup and James R. White are NETA's representatives to NFPA Technical Committee 70E (Electrical Safety Requirements for Employee Workplaces). James R. White is nationally recognized for technical skills and safety training in the electrical power systems industry. He is currently the Training Director for Shermco Industries, a NETA Full Member company. Jim has spent the last twenty years directly involved in technical skills and safety training for electrical power system technicians.