

A NEW SYMBOL FOR ADDED SAFETY: ARC FLASH

By Erin Earley

A new symbol is being standardized for arc flash – and it's an important step forward for safety.

An arc flash, according to OSHA, is “a phenomenon where a flashover of electric current leaves its intended path and travels through the air from one conductor to another, or to ground. The results are often violent and when a human is in close proximity to the arc flash, serious injury and even death can occur.”¹ With temperatures potentially reaching and exceeding 35,000°F, it’s no wonder that electrical events like this can severely injure – and even kill – workers. Along with understanding an arc flash’s potential hazards and calculating risk, using proper labeling on

electrical equipment is critical. Proper safety labels allow workers to be more informed about the risks at hand and important precautions to take to avoid arc flash incidents. Using the right graphical symbols on your safety labels and workplace safety signs is critical to effectively communicating safety messages. Not only do symbols bring added noticeability to the safety label or sign, but they help to communicate the message across language barriers. Until very recently, though, there was no internationally standardized graphical symbol available for indicating arc flash explosion hazards. That’s now changing.

¹ https://www.osha.gov/dte/grant_materials/fy07/sh-16615-07/train-the-trainer_manual2.pdf



Figure 1: Past symbols used to warn of arc flash. At left, an ISO 7010 symbol meaning "To warn of electricity" and at right, another symbol to warn of explosion/pressure hazards.

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*Angela Lambert
Director of Standards Compliance*

ARC FLASH-RELATED STANDARDS

The primary standards that product safety engineers and facility owners use to determine their need to warn about arc flash hazards are *NFPA 70 National Electrical Code* and *NFPA 70E Standard for Electrical Safety in the Workplace*. These two standards, in addition to OSHA's requirement to warn about electrical hazards, create the need to provide arc flash hazard warnings. In terms of design and content, in Article 130.7(E)(1), NFPA 70E states that these warnings "shall meet the requirements of ANSI Z535, Series of Standards for Safety Signs and Tags." The ANSI Z535 standards define the best practice use of signal words, colors, symbols and formats for safety signs, labels and tags to be used in the United States.

REGISTRATION OF A NEW SYMBOL

When considering the symbol to use on your labels and signs, choosing a standardized one has many benefits. International use of the same symbol for a given meaning helps to assure consistency. This, in turn, leads to a more efficient understanding of the warning's meaning by reducing the possibility of unnecessary confusion that could result from the use of varying symbols. For years, the ISO 7010 symbol for "Warning; Electricity" has commonly been used for arc flash. In addition to the 7010 symbol, at Clarion, we've also used a symbol to indicate explosion/pressure hazards. See Figure 1. The reason we used two symbols is because there wasn't a standardized symbol meaning "arc flash explosion hazard" – until now. ISO is in the process of registering a symbol meaning



Figure 2: The new ISO 7010 symbol to warn of arc flash that is in the process of being registered

"To warn of an arc flash." See Figure 2. This new, standardized arc flash symbol was approved by ISO in December 2016 and will appear in an amendment to *ISO 7010 Graphical symbols – Safety colours and safety signs – Registered safety signs*.

THE PRACTICAL IMPACT ON SAFETY COMMUNICATION

The goal of safety symbols, whether they appear on your product safety labels or on your facility's safety signs, is to effectively communicate their messages so people are better protected from harm. The more specific to the situation the symbol can be, the better the chance is you will communicate your intended message to your intended audience. "The new arc flash symbol better communicates the hazard at hand than the symbol for electricity or other similar symbols. It provides a clear distinction for arc flash hazards," says Angela Lambert, Director of Standards Compliance at Clarion.

When it comes to practically applying the new symbol, there are a few scenarios to consider:

- **If your arc flash labels and signs don't utilize symbols,** this will be the time to replace them with labels and signs that incorporate the new ISO symbol in their design.
- **For labels and signs that use the ISO 7010 symbol to warn of electricity, or other symbols,** this will be the time to replace existing warnings with ones that use

the new symbol. If your design uses two symbols (such as a combination of the symbol for electricity hazards with the symbol for explosion/pressure hazards) you can now simply use the new symbol. Another option for labels is to retrofit your equipment by placing a symbol-only label with the new symbol next to the equipment's existing label. See the example in Figure 3 .

"At Clarion, we've updated our label and sign designs to use the newly standardized arc flash symbol. We strongly

encourage our clients to replace existing labels and signs with ones that incorporate the new ISO symbol and to use only the new designs moving forward. This will aid global acceptance and understanding of the new symbol, causing heightened awareness of potential arc flash hazards in the workplace," Lambert says. And that's a worthwhile result!

Stay tuned for our next discussion in this year's *On Your Mark* series. Do you have a suggestion for a topic you'd like to see covered? Contact the author at earley@clarionsafety.com. 



Figure 3: Example of a symbol-only label with the new arc flash symbol placed next to an arc flash safety label
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Erin Earley, head of communications at Clarion Safety Systems and a journalist by trade, has researched and written extensively about workplace safety and product safety label trends. Clarion is an active member of the ANSI and ISO standards committees. The company's CEO, Geoffrey Peckham, is chair of the ANSI Z535 Committee for Safety Signs and Colors and of ANSI's U.S. TAG to the ISO standards committee responsible for safety signs, labels, colors and symbols (ISO/TC 145). With over 50 million safety signs and labels in use in over 180 industries worldwide, their goal of making the world a safer place is taking shape. Erin can be reached at earley@clarionsafety.com.