

How to better meet safety requirements using IR windows and thermal imaging

Application Note

Infrared windows are starting to get a lot of attention. NFPA 70E has been for a while. A new whitepaper will help technicians better understand the technology and related safety requirements.

By installing IR (infrared) windows, panes, or ports, technicians using thermal imagers can inspect live electrical equipment without removing protective covers. An arc-resistant window, unlike a port or pane, provides additional protection in the event of an arc flash resulting from unexpected component failures or work on other parts of the system. This substantially reduces hazard ratings and, in most cases, allows the thermographer to work more safely, minimizing the need for excessively bulky and cumbersome protective clothing.

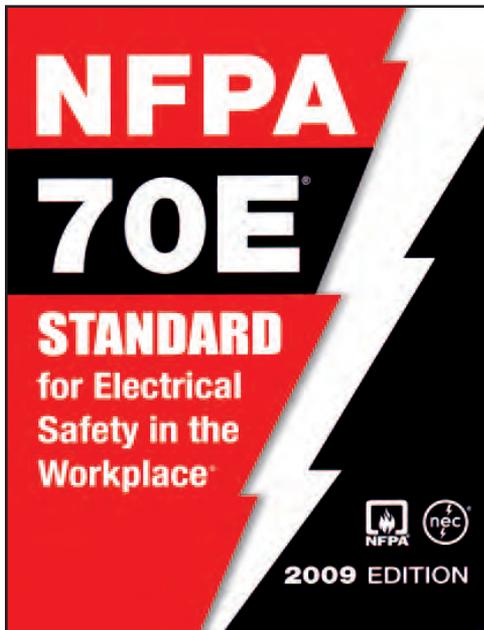
The additional protection afforded by IR windows comes from their crystal optic construction, which is designed to better protect technicians under arc-flash conditions.

Revised safety standard published

In 2009, the Standard for Electrical Safety in the Workplace NFPA 70E was updated to recognize new hazards, address other safety gaps, and improve protection for electrical workers, while helping companies comply with OSHA standards.

NFPA 70E defines the safety requirements for personnel working on electrical equipment. To comply, employers must carry out a hazard risk assessment and ensure that all employees working in a potential arc-flash hazard zone use appropriate equipment and wear the right protective clothing.

Among other things, the guidelines recommend a thorough arc-flash hazard analysis to establish the nature and



Shock, electrocution, arc flashes, and arc blasts are responsible for one fatality every workday in the U.S. 8,000 workers are treated in emergency rooms for electrical contact injuries each year.

magnitude of the hazard, calculate the shock and flash protection boundaries, and identify the appropriate protective clothing and personal protective equipment (PPE) required for live work.

New white paper goes in-depth

While essential for electrical measurement safety, the standard isn't exactly light reading. To help out, Hawk IR International (a Fluke company) has produced a whitepaper on the updates to 70E and the role of IR windows.

Titled *Concerned About Arc-Flash and Electric Shock?* The white paper explains different types of arc flash, how they occur, and the relative safety hazards associated with both.

Electricians and other technicians using thermal imagers must often work closely to live energized equipment in order to view components under load. In addition to the obvious hazard of electrocution, thermographers must be particularly aware of the dangers of arc flashes and arc blasts. Up to 77 percent of all electrical injuries are caused by arc flash incidents.

An arc flash is an explosive discharge resulting from a compromise of the insulation between two conductors or a conductor and ground. The flash's high temperature plasma can cause serious burns and other injuries to an unprotected worker, even several feet from the equipment.

In addition to its detailed summary of the safety standard, the white paper describes how the use of IR windows can limit the

exposure of a thermographer to energized equipment, reduce the hazards of both electrocution and arc flash, and significantly reduce the need for bulky PPE, as well as how to choose the right PPE. It also covers shock hazard analysis and flash protection, and suggests information to include on warning signs and ways to create safe access points.

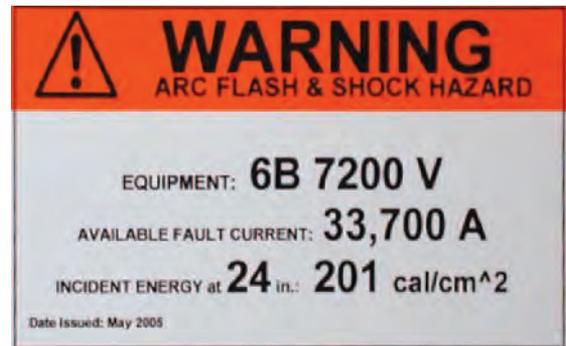
The paper also talks about how IR windows can provide a solid barrier between the technician and the live conductors. By careful design, it says, it is possible to not only to reduce the trigger effects of an arc but also provide the technician with a far safer working environment.

Further topics explain transmission issues in the IR context, and describe the various types of IR windows now available (including the relevant standards).

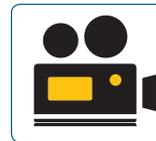
Finally, the paper lays to rest some common myths about arc flashes.

With the adoption of NFPA 70E and the industry's focus on arc-flash safety, installing a product that can withstand arc flash should be a primary concern for any end-user.

Contractors, risk managers, and engineers, plus apartment, commercial, and retail building managers and owners all have a stake in ending electrical-related accidents, liability, and loss. IR windows, the new NFPA 70E standard and this new white paper should prove to be valuable resources for achieving that goal.



Energy level of 201 cal/cm² @7.2K V.



See how IR windows work

Watch the documentary at www.fluke.com/irwindowsvideo

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Fluke Corporation
PO Box 9090, Everett, WA 98206 U.S.A.

Fluke Europe B.V.
PO Box 1186, 5602 BD
Eindhoven, The Netherlands

For more information call:
In the U.S.A. (800) 443-5853 or
Fax (425) 446-5116
In Europe/M-East/Africa +31 (0) 40 2675 200 or
Fax +31 (0) 40 2675 222
In Canada (800)-36-FLUKE or
Fax (905) 890-6866
From other countries +1 (425) 446-5500 or
Fax +1 (425) 446-5116
Web access: <http://www.fluke.com>

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