



Within less than a second a very dangerous phenomenon unfolds entailing harmful effects due to the release of energy generated. Disastrous even deadly injuries ensue when electric fault arcs occur as temperatures rise to approximately 20,000° Celsius. This document will contribute in a better insight with respect to the possibilities to protect the health, safety and wellbeing of your staff in the best possible manner against the thermal hazards of electric arc.

1.

What's an arc flash?

An electric arc is a brief, but lethal hazard which expels large amounts of deadly energy. In jargon, such incident causes an ionization of the air that will cause serious harm to equipment and people. Damage is caused by both the explosion and the heat radiating from the blast of vaporized materials. The duration of an electric arc is relatively short, often not longer than 0,5 second with noise levels that could go up to 165dB – as an exemplification: a fighter jet that passes you at close range produces about 170dB.



2.

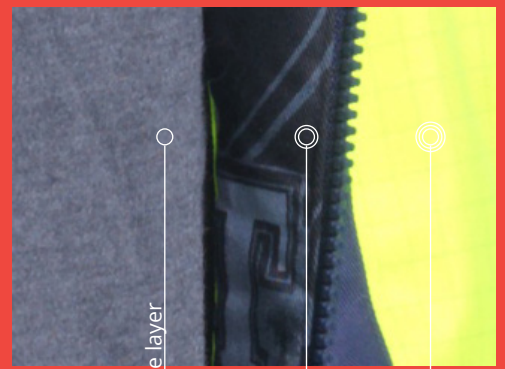
Intense explosion expelling heat 4x hotter than the sun!

Within fractions of a second, the explosion of an electric arc may reach temperatures exceeding 19,000 degrees Celsius. This is roughly 4 times hotter than the surface of the sun. This heat can cause serious, even fatal burns, as well as ignite clothing and other nearby material and objects. Such high temperatures vaporize all materials like water (present in the air as humidity) and liquefies metal parts in the vicinity of the incident, such as copper and aluminium. This in turn means a massive volume expansion that results in explosive pressures and sound waves which form one of the biggest dangers of an arc flash incident.

3.

Why you should consider the right protection?

Taking the right precautions and getting workers into proper flame retardant clothing advances the chance of walking away from a possibly devastating event. Within less than a second, in which an electric arc occurs, harmful physical effects of an arc flash unfolds. These may include; burns, partial or total hearing and/or eye-sight impairment, inhalation of toxic gases, and injuries due to ejected materials.



4.

Protection through layers?

The aim is to protect against thermal hazards that could result in a 2nd degree burn wound or worse. To offer better protection a layered combination of specialised Arc Flash protective garments can be worn to boost the overall protection level. The air gap between each layer of fabric is causing this result because it acts as an insulator. Therefore, wearing a multi-layered system yields better chances of surviving an electric arc incident. The difference between the level of protection between the 2-layer solution (e.g. ATPV 26,8 cal/cm²) and the 3-layer solution (e.g. ATPV 51.9 cal/cm²) can be best described as remarkable!

Base layer
Mid layer
Top layer

5.

Electric arc awareness is vital

Electrical accidents often occur due to human error. It mostly happens during routine maintenance or troubleshooting of power systems. Hence, it is essential to increase awareness of the dangers of an electric arc amongst workers. Aspects such as wearing the right protection is vital. This complicated topic needs to be common knowledge to safeguard the health, safety and well-being of electrical workers. This should ultimately result in a safer workplace for the users of specialised arc flash protection.

6.

Why you should consider arc flash rated underwear

There are several benefits to providing arc rated t-shirts to your workforce. It eliminates the risk of melting fibers in undergarments and the risk of ignition of an undergarment in unexpected arc flashes or arc flashes having greater energy than predicted by the arc flash study. More importantly, it enhances protection of the worker in the field with little additional PPE requirements. An extra layer of protection can double or triple the arc rating of the garment system!



7.

Electric arc risk assessments

To adequately protect your electrical workers and ensure their safety the actual risk of an arc flash should have been determined through a comprehensive arc flash study. Such assessment will provide valuable information to the potential severity of the arc hazard. It allows you to select proper ppe in accordance to the designated risk. Therefore providing better understanding on the level of protective clothing your workers need.



HAVE A BUZZING ARC FLASH QUESTION?
CALL THE HOTLINE: +31 (0)10 2 955 955