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WHAT PPE DO YOU NEED TO PROTECT YOU AGAINST A CABLE STRIKE WHEN BREAKING GROUND?

Nobody plans to hit a cable when doing groundworks, but even when all of the relevant checks have been carried out the risk is always present. What PPE do you need to protect against cable strikes when breaking ground?

The risks and potential injuries from cable strikes

In the HSE's guidance, Avoiding danger from underground services, stark warnings are given about what can happen to someone if they accidentally hit an underground cable.

"Injuries are usually caused by the explosive effects of arcing current, and by any associated fire or flames that may result when a live cable is penetrated by a sharp object such as the point of a tool... Typically, injuries are severe – potentially fatal – burns to the hands, face and body; electric shock is possible but less likely."

Striking an electrical cable with a metal tool – whether a hand or power tool – will most likely result in an Arc Flash incident. The current arcs through the air looking for the fastest way back to earth, causing an explosive blast.

As the HSE guidance says, injuries are usually caused by exposure to the Arc Flash, which means that FR garments aren't enough to keep your team protected.

Between 2012 and 2017 the HSE reported 318 injuries and fatalities caused by underground cable strikes. Potential injuries caused by cable strikes include:

- Internal burns from the Arc Flash
- External burns caused by fires ignited by the Arc Flash, including clothing being set alight
- Injuries caused by the blast, including those from flying shrapnel, but also impact injuries if people are thrown by the explosion
- Hearing damage from the sound of the explosion
- Temporary or permanent damage to eyesight caused by the bright light emitted by the flash

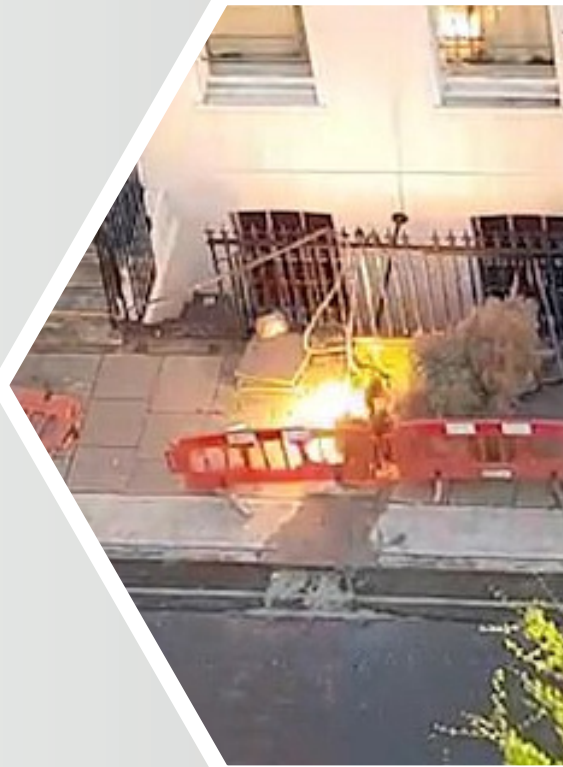
Appropriate ppe to protect against cable strikes

It's clear that the HSE believes the main risk of injury from cable strikes is from an Arc Flash. Its guidance even says:

"Where electricity cables may be encountered during excavation work, employers should consider whether the work justifies wearing clothing designed to protect against electric arc, or flame-retardant clothing."

So only wearing FR clothing, even if it complies with the limited flame spread standard ISO14116:2015, will not provide the right amount of protection against cable strikes when breaking ground.

In order to get the right protection against Arc Flash incidents, workers need to be wearing arc-rated clothing for every layer. You can see the devastating effects of wearing an FR, but non-Arc Flash-rated, fluorescent vest over arc rated clothing in this video.





The utilities sector is making progress

We have many clients in the utilities sector which have heeded the words of the HSE and now wear Arc Flash PPE garments as standard when breaking ground to protect their team against the risk of cable strikes.

One main contractor employee, Eddie Smith, owes his life to the decision by his employer – Clancy Docwra – to include Arc Flash PPE as standard. Watch the video to hear Eddie's story of being caught in an Arc Flash and how his PPE prevented serious, potentially life-changing or even life-ending, injuries. This video is now used by Clancy Docwra to educate their teams and others on the risks of Arc Flash incidents, especially when breaking ground, and the importance of not compromising the last line of defence.

We were fortunate enough to meet with Eddie Smith, a Team Leader for construction firm, Clancy Docwra, and his colleagues to speak to them about the day, the incident itself and the importance of keeping people safe while at work.

The video that we created in partnership with Clancy Docwra is to be used as part of internal training for their operatives and to better educate those working around live electricity of the realities of the risks involved and also the importance of not compromising on their last line of defence.

We thought it was too important not to show you too, so please watch Eddie's story above and feel free to share.

Thankfully, Eddie made a full recovery in the end and is now back at work. Make sure that your team can do the same.



Deciding about the right PPE for breaking ground

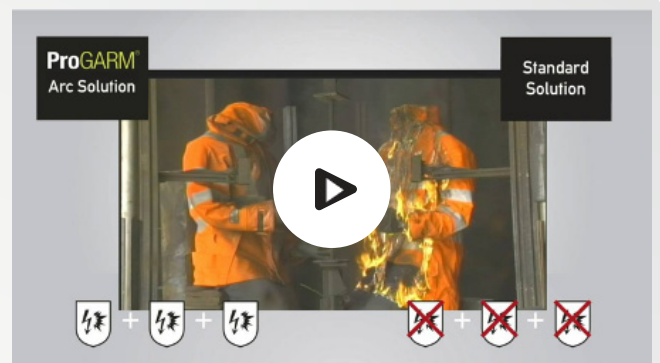
Eddie's story is a stark reminder that FR (fire/flame resistant) PPE isn't enough to keep people safe from the risks caused by cable strikes.

Our friendly team are always on hand to advise about the right PPE for your circumstances, so if you need to protect your team from the risks of cable strikes when breaking ground, give us a call on **+44 (0) 1482 679600** to discuss your needs.

Arc Flash Protective vs. Cotton Baselayer Garments (even when worn underneath an Arc Flash layer):



Arc Flash Protective vs. Non-Arc Flash Waterproof Garments:



THE RISK OF NONE COMPLIANT BASE LAYERS

- An operative injured in an Arc Flash incident wearing non-compliant clothing (including non-complaint base layers or outer layers) is likely to result in the company facing investigation and possible prosecution, from the HSE under the Enforcement Management Model.
- Non-Compliant base layers can melt or ignite in an exposure of an Arc Flash or Flash Fire even when worn underneath a compliant Arc Flash outer layer.
- Without Arc Flash specified layers operatives risk routinely wearing non-compliant base layers. Increasing your risk of prosecution and their risk of injury.

RISKS FROM COMPLACENCY

- Operatives without Arc Flash specified layers are likely choosing to layering up against the cold and wet weather in non compliant items. This complacency through lack of education increases the risk of life alerting injury should a utility strike occur. This in turn increases down time, inefficacy and the risk of prosecution.

IEC 61482-2 ARC FLASH STANDARD EXTRACT ON FULL BODY PROTECTION

- For full body protection, the protective clothing shall be worn in the closed state and other suitable protective equipment (e.g. helmet with protective face screen, protective gloves and footwear) shall be used. **No garments such as shirts, undergarments or underwear should be used which melt under Arc exposures** –e.g. made of polyamide, polyester or acryl fibres. For **maximum protection against Arc Flash Exposure** garments should be worn as part of a layering system i.e. in conjunction with a shirt or other undergarment.

WHAT DO UTILITY STRIKES REALLY COST?

Direct costs associated with a utility strike are estimated to be **£3,600 per strike** (gathered from previous reports).

However **indirect** costs including project overrun, traffic delays, downtime, back-office time and social costs such as loss of productivity to businesses increase the true cost of a utility strike significantly.

A recent report entitled “What do Utility Strikes Really Cost?”*, showed for every £1 spend on the **direct** cost, £29 is spent on the **indirect** and social costs. This results in the average true cost of each utility strike of over **£100,000**.

Based on this report five service strikes per week could incur the following costs:

Direct Costs: £18,000 per week, **£954,000** per annum

Indirect Costs: £522,000 per week, **£27,666,000** per annum

*Reference: Makana L, Metje N, Jefferson I & Rogers CDF (2018). What Do Utility Strikes Really Cost? Report prepared for Transport for London, School of Engineering, University of Birmingham, Birmingham, UK

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FOR THE COMPLETE RANGE
OF ARC FLASH & FLAME
RESISTANT GARMENTS**

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