

SAFETY ALERT



Contact with an Electrical Arc Flash

Document No: PS-HSQE-SA-67

Revision: 1.00

Approved By: Maura Kilcommons

1. What Happened?

An electrician was exposed to an electrical arc flash while completing MV electrical works at the main intake substation causing serious injury.

Two (Medium Voltage) electrical contractors (Person in Charge of the Works (PICW) and an Apprentice) were progressing electrical works at the main intake substation at a Waste Water Treatment Plant.

The Electrician acting as the Person in Charge of the Works (PICW) removed the rear panel on a 10 kV MCC prior to fully isolating and earthing the supply. The electrician then placed their hand in the vicinity of the live supply causing an electrical arc. The electric current entered the electrician and exited through the electrician's elbow causing electrocution and significant burns to the arm.



Picture 1: Main intake substation



Picture 2: Suspected location of Arc

2. Immediate Actions

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The IP was brought directly for first aid and Emergency Services were contacted and the IP was transferred to hospital.

An assessment of the MV Switch Gear was carried out once de-energisation was confirmed and no material issues or failed infrastructure was noted.

The apprentice electrician was attended to by staff.

An assessment of the Wastewater plant was carried out to ensure there was no damage to the installation. Following the confirmation of this, the plan was developed to return the plant to service.

After a few hours, the plant was returned to service and all MV Upgrade Works was suspended until the incident investigation was completed.

3. Further Actions

Following investigation, several improvement actions were implemented including:

The plant decided to add a requirement for secondary sign off from a second competent electrician on all MV switching plans to prevent a future incident of this nature from occurring again.

Reviewed procedures and associated H&S documentation associated with working on MV work to ensure all risks associated with the task have been assessed.

Reviewed and arranged additional training to remind individuals of their responsibilities in relation to following agreed method statements, risk assessments, and instructions to ensure their safety and that of those around them.

Established a requirement for detailed designated works area (DWA) to limit the access to high voltage equipment and integrate this information into the H&S Documentation.

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Preventative Actions:

- Only competent electrical contractors to carry out work on electrical systems.
- Access to MV rooms should be restricted and controlled, all work within such rooms should be strictly permitted, and only qualified MV electricians should be opening panels.
- Ensure all electrical works are properly planned and reviewed ahead of works commencing.
- Relevant parties, operators and contractors must ensure full isolation, Lock Tag Out is in place before working on panels. Good Lock and Tag Out practice must include the following steps:
 - Preparation for shutdown
 - Shutdown
 - Isolation
 - Lock out/Tag out and try to verify the isolation
 - Release of any stored energy from any capacitors, accumulators etc.
 - Verification of effective isolation
- The hazard of Arc Flash must be taken into account when working near MV switching panels or live open panels and appropriate risk assessments and controls put in place to avoid or mitigate the risk.
- Ensure that all necessary H&S documentation is in place and fully completed including required signatures ahead of starting works.
- PPE requirements must be reviewed, and in particular, the need for arc flash protective equipment where adjacent panels in a switch room may still be live.
- If Low Voltage panels at your Water Services Area place of work must be opened for visual inspection or manual reset, this must only be completed

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if appropriate risk assessment has been completed and it is deemed safe to do so.

4. Further Information

For further information on this safety alert please contact hsqe@water.ie

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5. Distribution list

Internal		
Asset Operations <input checked="" type="checkbox"/>	Asset Delivery <input checked="" type="checkbox"/>	Asset Management <input checked="" type="checkbox"/>
All IW Staff <input type="checkbox"/>		
Other Please Specify _____ Facilities _____		

External		
Local Authority <input checked="" type="checkbox"/>	DBO <input checked="" type="checkbox"/>	Resident Engineers <input type="checkbox"/>
All Asset Delivery Contractors <input checked="" type="checkbox"/>		
Other Please Specify _____		