

35-2024 Lessons learned: Lithium Ion Battery Fire

Type of incident

Fire/explosion (no injuries)

Location of incident

Bristol, UK

Date and time

May 2024

Brief account of incident

A lithium ion battery fitted to a window sample drilling rig started to emit smoke whilst undertaking probing operations, the battery exploded, with part of the internal structure of the battery being ejected out of the external housing.

The fire was put out immediately with a dry powder fire extinguisher by the lead driller



Figure 1: The rig after the incident

What went right?

- The rig fire extinguisher was rapidly and successfully deployed to put out the fire
- The incident was reported immediately and the residual fire extinguisher dry powder was cleared up and removed from site to prevent it being washed into the watercourse behind the rig position
- A Tool Box Talk on the hazards or storage, use, charging and transport of lithium ion batteries had been rolled out a few weeks prior to the incident

- The battery was left to cool, bagged up and brought back to the warehouse, and placed in the lithium battery waste storage area for disposal

What went wrong?

- The lithium ion battery had been jump started using car jump leads from a company vehicle whilst the vehicle engine was running, approximately an hour before the incident
- No type approved lithium ion battery jump pack was available on site
- The fitting a lithium ion battery to reduce the weight of the rig, had not identified the relevant hazards

Lessons learned

- Lithium ion batteries have specific guidelines and equipment requirements for when a jump start is required for a flat battery
- Reference to lithium ion battery breakdowns and hazards must be included in all relevant site RAMS
- Training in the risks of lithium ion battery handling, use and transport is required
- Lithium ion batteries that require regular jump starting must be replaced. During jump starting, or charging with unsuitable devices, damage can occur to the internal structure of the battery that can fail at a later point in time creating a fire/explosion
- Only manufacturer approved charging units and jumper packs must be used whenever lithium ion batteries are fitted on site plant
- Lithium ion battery arrangements for charging, storage and waste disposal must be added to the RSK Fire Risk Assessment template including each premises where electric vehicles are located and charged

- [Where can I get more information?](#)
- <https://www.hse.gov.uk/mvr/topics/electric-hybrid.htm>
- HSE INDG 139 <https://www.hse.gov.uk/waste/information.htm>
- Manufacturer manuals for each piece of equipment
- RSK PUWER assessment

How is the item to be cascaded and implemented?

Toolbox talk Team briefing SHEQ notice board Process change Supply chain
 SHE induction Other Date of issue: 07-06-2024 Author/reviewer: AR/