Lithium-Ion Battery Powered Work Equipment - Plant Use and Storage

WLD.042

Description of Event

Use of Lithium-Ion Battery Powered equipment within construction bring new issues and safety concerns.

Population at Risk

Construction and Maintenance Workers, Inspectors and Operators

Hazardous Activity and Residual Risk Description

- Lithium-Ion battery-powered tools, drones and plant are being adopted widely within the construction industry. This has obvious positive advantages as Lithium-Ion batteries eliminate the need for bulky 110V power supplies and reduce hazards from trailing cables, etc. However, new safety concerns have emerged, requiring advanced control measures.
- The lack of established guidelines for on-site usage, charging, and storage of lithium-ion battery-powered equipment creates a potential health and safety risk due to the significant risk of battery fire.

Potential consequences of this event

- While lithium-ion batteries are generally safe, improper use, charging, or storage can lead to overheating, fire, or explosion.
- A high likelihood of serious injury to the operator may result from battery failure due to fire or explosion.
- Lithium-ion battery failure in Electric Construction Machines such as excavators, and loaders can result in high potential incidents.

Safety Hub Alert Database

- Three incidents have been reported by Galliford Try Group in the last few months. (March 2024)
- Filtering by text “lithium-ion” in the subject description has 10 alerts including 1 with injury.

Photo of a Lithium Ion Batteries Powered Tools explode

Potential Mitigation Measures

Workplace Design

- Design risk should consider the use of electrical charging to ensure safe, suitable storage, accommodation and access including in the event of an emergency.
- Designers must ensure the specification includes appropriate provision for storage and charging of electrical equipment required to construct the works.

Construction

- Batteries used must be compatible with the tool and manufacturer-approved.
- Pre-use visual inspections include both the tool and the battery.
- Ensure the fire risk assessment is suitable for lithium-ion equipment.
- Make sure all lithium-ion equipment, including the type, quantity, and condition of batteries, is part of an asset management plan (including personal equipment).
- Stay informed about regulations and Electrical Safety Procedures regarding lithium-ion battery disposal, transportation, and storage to ensure compliance.
- Any tools that are not supplied by the main contractor should be regularly inspected to ensure they are safe and fit for purpose

Maintenance / Operations

- Always be aware of the conditions of the tools. Report to the H&S team if there are any defects.
- Follow the manufacturer guidelines for parts, charging time, storage conditions and any instructions for different types of Lithium-ion equipment.

Further Guidance and Reading

- RtB 26 – Safety by Design
- PUWER Regulations – Equipment and Machinery regulations
- GG104 – Requirements for safety risk assessment
- Recovery operators: working with electric vehicles - DfT Guidance

Please send ideas for Whole Life Design safety shares to wellbeing@nationalhighways.co.uk

LEAN								Improved end user benefits			Reduced Reportable Accidents