

Independent Guide

EV thermal runaway – what do you need to know?



Independent workplace compliance

Introduction

Lithium-ion batteries/cells are a common part 21st century life, being used in equipment from smartphones and pacemakers to UPS (uninterrupted power supplies) and solar energy storage. They can also be found in electric vehicles, e-bikes and e-scooters. While failures of these batteries are relatively rare, they can, if malfunctioning or damaged (e.g. crushed, punctured, overcharged, overheated, etc.) represent a fire hazard.

What is this process called?

The process in question is called “thermal runaway” and is caused when a lithium-ion battery/cell becomes unstable and very rapidly (and self-sustainingly) heats up (to potentially over 400°C). This in turn leads to the breakdown of the components within the battery/cell and possible fire, explosion and the production of toxic/flammable gases.

What do the figures say?

Figures from GOV.UK identify 121 fires occurred between January 2017 and December 2021, involving an e-bike or e-scooter:

- “The majority (119) were from the London Fire Brigade (LFB) and two were from other fire and rescue services (FRSs).
- Forty-eight fires involved e-scooters, 32 involved converted e-bikes, 16 manufactured e-bikes, and the remaining 25 were e-bikes with unknown build.
- A quarter of the fires (27) involved casualties, with a total of 57 non-fatal casualties. No fatalities were reported.”

In 2022, the number of e-bike or e-scooter fires reported was 93. In 2023, research carried out by business insurer QBE, identified fire and rescue services attended 921 incidents linked to lithium-ion battery/cell fires.

Summary

Consequently, it is not surprising to see responsible employers, insurers and others taking a close look at the possible hazards around EV charging provision.

Have you had your EV charging provision risk assessed?

This guide is of a general nature; specific advice can be obtained from Assurity Consulting.

Assurity Consulting is the UK's leading independent compliance consultancy specialising in workplace health, safety and environmental solutions. We have over 35 years' experience of helping customers of all sizes, from across all sectors, manage their compliance responsibilities, making sure that their organisation is compliant, their employees are safe, their processes are cost effective and their management team is in control.



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