

Storing Lithium-ion batteries in the workplace

In 2022, the global battery market was estimated to be worth \$104 billion¹ dollars (USD), powering everything from wristwatches and mobile phones to electric vehicles and plant machinery. It is not hyperbole to say that the battery really does power the modern world, and with a global shift to net zero and low (or no) carbon alternatives, the use of the battery is only set to increase.

It is estimated that around 1 in every 20 people, in the UK, own an e-bike or e-scooter² – with a far greater number renting e-bikes and e-scooters, as part of sharing services, in major cities across the UK³.

From 2018, the sale of e-bikes had increased year-on-year, before reaching a plateau in 2023. The most recent consumer figures estimate that UK sales, in 2022, topped £310 million⁴. Globally, the e-bike market is estimated to grow to some £34.7 billion by 2028, with approximately 130 million new bikes being manufactured and sold in every three-years⁵.

E-bikes have been billed by many international sources as the future of green transport⁶, providing sustainable alternatives to the use of cars and motorcycles – helping to reduce emissions and improve localised air quality.



New challenges

As with all new and developing technologies, the prevalence of e-bikes and scooters has prompted a wave of new questions, considerations, and challenges – not least for employers, as e-bikes and scooters have entered the workplace; and are routinely charged at (or under) our desks.

In a recent, UK-based survey⁷ of users (and potential users) of e-bikes, 40% of current users commuted to (and from) a place of work, with 20% having used them for business travel.

Questions arise around how we use, charge, and store e-bikes in the workplace – and the additional hazards and risks that this may bring.

Since 2020, 10 people have died from fires linked to Lithium-ion batteries, and 190 people have been injured⁸. In 2023, firefighters in London fought over 87 e-bike and 29 e-scooter blazes, a record for the Nation's capital⁹.

This risk of fire and how we effectively respond to it is a new challenge for those working in facilities management, HR, and operations.

Li-ion: the future?

Most e-bikes are powered by Li-ion batteries, bigger versions of the kind we might find in our smartphones, tablets, and some laptops. They provide an optimal balance between portability and energy capacity, making them ideal as portable sources of power.

As with all things, there are downsides too, including their sensitivity to temperatures, problems when charging and discharging, and poor manufacturing and quality control measures, resulting in heightened risk of fire or explosion.

1. Battery Market Size, Share, Growth & Trends Report, 2030 (grandviewresearch.com)
2. Electric Bike Statistics 2022 - How Popular are E-Bikes? | Tredz Bikes
3. E-bike numbers to increase in London by more than 200% - BBC News
4. UK E-bike sales slow due to cost of living crisis with lack of subsidies a barrier | electric bike reviews, buying advice and news - ebiketips (road.cc)
5. Electric Bike Statistics 2022 - How Popular are E-Bikes? | Tredz Bikes
6. Are electric bikes the future of green transportation? (nationalgeographic.com)
7. Full article: Who uses e-bikes in the UK and why? (tandfonline.com)
8. Stark warning on safety measures for e-bikes and scooters as battery fires rise | NELC (nelincs.gov.uk)
9. New record high of e-bike and e-scooter fires in London | London Fire Brigade (london-fire.gov.uk)

5 things to consider

1. Effectively assess the risks:

It's widely known that any potential hazard introduced into the workplace could present a risk to employees and visitors and should be assessed for risk potential. As a starting point, we recommend using the simple framework below to assess hazards and introduce control measures to reduce risks.

Risk Assessment in 5 Steps

- 1 Identify the hazards
- 2 Decide who might be harmed and how
- 3 Evaluate the risks and decide on control measures
- 4 Record your findings and implement them
- 5 Review your findings and update them routinely

You can find more guidance about risk assessments [here](#).

2. Risk of fire?

Due to the heightened risk of fire and explosion presented by Li-ion batteries, questions arise around planning for evacuation, in the case of fire, to ensure that employees (and others to whom a duty of care is owed) can be evacuated safely.

Ensuring that walkways are kept clear (particularly in the context of e-bike and scooter charging cables), that fire doors are not propped open, and that additional considerations have been put in place for employees who may require additional support is essential.

If e-bike charging has become the norm in your office, but hasn't been included within a fire evacuation plan, use National Battery Day as a timely opportunity to revisit this and prepare properly.

To find further guidance around fire evacuation compliance, click [here](#).

3. Cable compliance

To reduce the risk of fire or explosion, it's important that the right cables are used to charge the right batteries, ideally those provided by the manufacturer when the bike or scooter was purchased.

Where it isn't possible to source replacement cables from the manufacturer, consideration should be given to whether cables are mechanically and electronically coded (allowing for two-way communication between the battery and the charging cable as to voltage, charge, and battery capacity) as this reduces the risk of overheating, overcharging, and thus fire and explosion.

4. Policies and procedures

It's important that employers revisit existing policies – or write new ones – to deal with the new challenges presented by Li-ion batteries in the workplace. It's widely known that damaged cabling presents a risk of fire and electrocution, so it's important that new policies should seek to mirror those already widely used for the replacement of other workplace cables.

If chargers are brought into the workplace by employees, this should be agreed by those responsible for maintenance, and all cables should be PAT tested before use.

With the risk of fire and explosion, policies should seek to prevent unmanned or unmonitored charging and leaving devices charging overnight should be prohibited.

Further, care should be taken around socket capacity and overloading, as this also presents a fire risk.

5. Provide a designated charging facility

If the growth in the usage of e-bikes and e-scooters follows its expected trajectory, the need for end-of-trip facilities (for storage and charging) will come to replace traditional bike facilities (whether they be in workplaces, on trains, or in residential buildings). For this reason, access to safe and secure charging facilities will become an important part of what a workplace can offer its employees.

Bringing the management of end-of-trip charging facilities in-house offers employers the ability to reduce risk by having oversight over monitoring, quality control, compliance with PAT testing and regulatory changes, overseen by a responsible person.

Innovative solutions are already being deployed, around the globe, to provide secure storage during the working day. From indoor facilities that allow for the stowage and charging of batteries within a locker, to solar powered which take their inspiration from traditional municipal bike racks.