Electrical Safety First

The UK's electrical safety experts

Battery Breakdown

Why are e-scooter and e-bike batteries exploding in people's homes and what can be done about it?

A report into the increase in lithium-ion battery fires and recommendations for addressing the problem

E-bike and e-scooter fires pose a significant risk due to their use of lithium-ion batteries. A fully charged e-bike battery contains a similar amount of energy to six hand grenades. When a battery fails this can lead to thermal runaway. Thermal runaway causes a prolonged release of energy, resembling an uncontrollable explosive firework and results in fires with temperatures exceeding 600 degrees Celsius, which spread rapidly, release toxic gases and are almost impossible to control.

Our Asks

Electrical Safety First asks the Scottish Government to pursue a public awareness campaign, to ensure that the public is adequately educated on the risks from lithium-ion batteries used to power e-bikes and e-scooters.

We also ask that the Scottish Government expand its current requirements around fire data collection, to enable the categorisation of fires specifically to the lithium-ion batteries used in electric micromobility devices.

Summary

Concerns are mounting over the risks to personal health and property posed by electrified micromobility (e-micromobility) such as e-bikes and e-scooters. Since the start of 2023 fires from the lithium-ion batteries used to power these devices have been linked to eight deaths in the UK, and left others hospitalised or seriously injured, with significant damage also to property.

The growing popularity of e-micromobility – with Mintel estimates placing the market value of e-bikes at £300 million in 2022, and double-digit volume growth forecasted for 2024 onwards - means that, unless action is taken, these risks will continue to grow.

The increasing number of fatalities, injuries and fires caused by malfunctioning e-bikes and e-scooters is a grave matter of concern, not just within Scotland, but across the globe. However, due to the potential benefits of e-micromobility compared to traditional transport – fewer emissions and lower cost – their popularity is expected to grow.

The potential for popularised e-micromobility is especially poignant for Scotland considering Holyrood's commitment to 2045 as the deadline for net-zero carbon emissions – an ambitious target that is five years in advance of the rest of the UK. The transition towards alternative means of travel forms a substantial part of this strategy, with strategic cycle routes, cycle storage, and other active travel networks being introduced through the '20 Minute Neighbourhood' initiatives. Electrified micromobility is considered by many to be an economic and environmentally friendly alternative to traditional forms of transport.

While these initiatives hold considerable potential for the environment, they do merit special consideration of the challenges from growing numbers of e-bikes and e-scooters, and the role that data and public awareness may hold in future-proofing any travel strategies that encourage e-micromobility use.

As recently as 2022, a home in Elgin was destroyed in an inferno caused by a neighbour's e-bike conversion kit. It is vital to ensure that the public is adequately educated on the risks from lithium-ion batteries, and how to buy and use e-micromobility products safely. This is especially so in Scotland, considering the aforementioned green initiatives and the move to more sustainable forms of transport.

Unfortunately, regional fire data collection practices vary considerably, with different levels of detail and types of information being recorded. If we are to ensure the safety of consumers as the popularity of e-micromobility transport grows, it is imperative that fire data collection practices are improved to accommodate the growing risks from lithium-ion batteries.

Enhanced data collection practices, particularly for fire and rescue data, would provide legislators with information on which to base future policy positions, and facilitate targeted intervention where necessary if locational data of fires is collected.

We therefore call upon the Scottish Government to mitigate the risks from e-micromobility products by pursuing a consumer awareness campaign to ensure that the public is adequately educated on best practice when handling these products, and to improve fire data collection practices to include specific references to lithium-ion batteries.

For a more comprehensive overview of ESF's policy asks, please see our full report at: https://www.electricalsafetyfirst.org.uk/battery-breakdown

Electrical Safety First

Electrical Safety First is the campaigning charity dedicated to preventing fires, injuries, and damage, caused by electricity.

For more information about our work, visit: https://www.electricalsafetyfirst.org.uk/scotland/

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