



Electric Vehicle Charging – Compliance, Fire Risk and Operational Management

Introduction

The rapid expansion of electric vehicle (EV) charging across commercial, residential and mixed-use premises is creating new compliance obligations and risk considerations for those responsible for building safety. EV infrastructure is no longer simply an operational enhancement or sustainability initiative; it is now embedded within statutory building regulations, electrical safety requirements and fire risk management duties. As such, it must be considered as part of an organisation's wider compliance and governance framework.

Legislation

At a regulatory level, EV charging is governed by a combination of building, electrical and fire safety legislation. Building Regulations Part S (Approved Document S) made under the Building Regulations 2010, establishes requirements for EV chargepoint provision in new developments and major refurbishments, reflecting the expectation that EV infrastructure is now a standard feature of modern buildings.

Alongside this, the Electric Vehicles (Smart Charge Points) Regulations 2021 introduce requirements for safety, functionality and energy management, while broader electrical legislation requires that all installations meet nationally recognised safety standards. Crucially, the Regulatory Reform (Fire Safety) Order 2005 places a legal duty on responsible persons to assess and manage the fire risks associated with EV charging as part of the overall fire risk assessment.

Installation

From a technical perspective, EV charging installations must be designed and delivered in line with established engineering standards. This includes BS 7671 (IET Wiring Regulations), particularly Section 722, which governs the design, installation and protection of EV systems, as well as BS EN 61851, which defines the performance requirements of charging equipment. The IET Code of Practice for Electric Vehicle Charging Equipment Installation provides the recognised benchmark for safe installation and commissioning. In practice, this means that EV chargepoints must be installed by competent, accredited contractors, with appropriate certification and oversight, ensuring that both the installation and ongoing inspection regimes meet regulatory expectations.

Fire Risk Controls

However, compliance alone does not address the full risk profile. The introduction of EV charging brings a distinct set of fire and operational risks, primarily associated with lithium-ion battery technology. Fires involving lithium-ion batteries present unique challenges, including the potential for rapid escalation, high heat release, toxic emissions and, importantly, the ability to reignite after initial extinguishment.

For this reason, responsible persons must take a more detailed and structured approach to risk management, ensuring that EV charging is explicitly considered within fire risk assessments, rather than treated as a standalone installation.

A summary of fire risk controls are detailed below:

- **Location, Layout and Physical Design Controls (Passive)**

The location and layout of EV chargepoints are critical to risk management. They should be sited in lower-risk, well ventilated areas with adequate separation from buildings and combustibles to limit fire spread. Installations must not obstruct escape routes or access, and sufficient space should be maintained to prevent cable damage and congestion. Mechanical protection (e.g. bollards) should be provided, and layouts should enable safe access for emergency services.

- **Electrical and Equipment Controls (Prevention of Ignition)**

Fire risk is reduced through robust electrical design and quality equipment. Only certified systems should be installed on dedicated circuits sized for the load, with protective devices (e.g. RCDs and isolation) to shut down faults. Installations must be completed by competent contractors in line with BS 7671 and BS EN 61851. Effective cable routing and protection are also essential to prevent damage and overheating.

- **Fire Detection, Suppression and Emergency Systems (Active)**

Given the nature of EV fires, enhanced protection measures are often required. Charging areas should be covered by appropriate detection and alarm systems, particularly in enclosed or higher-risk environments, with monitoring where rapid response is needed. In higher-risk settings, fixed suppression systems should be considered, alongside emergency isolation points to safely disconnect power during an incident.

- **Unattended Charging and High-Risk Scenarios**

Unattended charging increases risk exposure and should be avoided where possible, particularly in enclosed or residential settings. Where it cannot be avoided, additional controls should be implemented, including enhanced detection and alarm systems, remote monitoring, and accessible isolation points. Insurance requirements should also be reviewed, as unattended charging may be restricted or prohibited.

General Operational and Management Controls

- Incorporate EV charging into the Fire Risk Assessment, identifying hazards, ignition sources and mitigation measures.
- Implement routine inspection and maintenance programmes for chargers, cabling and associated systems.

- Establish clear operating procedures, including:
 - o Use of approved cables only
 - o Prohibition of extension leads
 - o Visual checks before use
- Train staff and users on safe charging practices and emergency response.
- Provide clear signage and marking of EV bays, including safe usage instructions.

Emergency Planning

Emergency planning should also be adapted to reflect the nature of EV-related incidents. Procedures must address electrical faults, equipment damage and battery-related risks. Charging systems should be capable of being safely isolated in the event of a fault, and defective equipment must be taken out of service until repaired by a competent contractor.

Where a vehicle battery is damaged or shows signs of off gassing, clear procedures should be in place to isolate the risk, including moving the vehicle to a safe external location where possible and contacting the Fire and Rescue Service where appropriate. Consideration should also be given to ventilation, exclusion zones and safe handling practices to protect both people and the environment.

A summary of the emergency planning and incident response considerations are detailed below:

- Define clear emergency procedures for EV fires and electrical faults
- Ensure ability to isolate faulty equipment immediately
- Establish protocols for damaged batteries (off-gassing, overheating) including:
 - o Isolation of vehicle and equipment
 - o Relocation to external safe area where possible
 - o Engagement with Fire & Rescue Service
- Provide information for emergency services, including charger layouts and isolation

In Conclusion

EV charging must be treated as an integrated part of building safety and operational risk management, not a standalone installation. The combined impact of regulation, technical standards and emerging fire risks requires a coordinated, risk-based approach embedded within fire risk assessments, asset management and governance frameworks.

As EV charging becomes a regulated compliance issue with no single prescriptive solution, responsibility rests with dutyholders to interpret requirements and implement proportionate controls. For clients, the priority is ensuring infrastructure is not only compliant at installation, but fully embedded within ongoing maintenance and operational processes, particularly in higher-risk environments such as residential buildings, enclosed car parks and mixed-use sites.

Adopting this integrated approach enables organisations to move beyond compliance, demonstrating effective risk control, supporting insurer confidence and maintaining operational resilience as EV adoption increases.

How Vantify Can Help

Vantify supports clients by delivering dedicated Electric Vehicle (EV) Fire Risk Assessments that sit alongside, and enhance, existing fire risk assessments, ensuring that the specific risks associated with vehicle charging are properly understood and controlled.

Our assessments take a holistic, risk-based approach, reviewing charger locations, layout, ignition sources, fire spread potential, detection and suppression measures, isolation arrangements and emergency response capability. We translate these findings into clear, prioritised actions aligned to current legislation, standards and best practice, providing clients with practical improvement plans and full compliance visibility.

By integrating EV charging into wider fire safety governance, Vantify enables organisations to strengthen assurance, maintain insurer confidence and ensure they are operationally prepared to manage this emerging and evolving risk.

The Vantify Ecosystem



The Vantify Ecosystem spans seven connected products:

Risk Manager - Compliance and risk management software

Supply Chain - Supply chain management and contractor assurance

CAFM - Facilities and asset management with a 24/7 Service Desk

Facilities Services - Managed building maintenance delivery

eLearning - Compliance training built to change behaviour, not just tick boxes

Intelligence - Legislation tracking and regulatory guidance

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