18TH ROAD SAFETY CONFERENCE

9th March 2026, Chambéry

Managing EV Fire Risks in the Age of Electromobility

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Hosted by ASFA AUTOROUTES & OUVRAGES CONCÉDÉS

INTRODUCTION

- Increasing number of electric vehicles
- Complexity lies in the characteristics of lithium-ion batteries
- Serious risks to people, infrastructures, and the environment
- EV growth outpaces institutional investment and training
- EV fire risk adaptation needs major funds and time

Data sensitivity - Internal

Identification of Electric Vehicles

- Proper identification of the vehicle type and brand is critical during emergency response operations
- Different manufacturers use different vehicle designs
- Strong need for regulation to require manufacturers to regularly update safety data sheets

Data sensitivity - Internal

Examples of vehicle identification

- QR codes placed on vehicles that provide manufacturer-defined safety instructions for electric vehicles
- Digital access to emergency response information to support firefighters during interventions

QR codes with instructions for electrical safety vehicles defined by the manufacturer

Euro Rescue (App)

RescueCode (App)

Data sensitivity - Internal

Fire Suppression Agents and Techniques

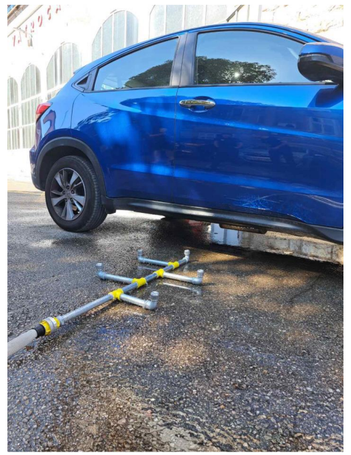
Fire suppression agents

Targeted water application

Fire blanket

Immersion container

- Water remains the primary firefighting agent for electric vehicle fires
- Cooling is essential to prevent the spread of thermal runaway within the battery pack
- A single firefighting intervention may require tens of thousands of litres of water
- F-500 additives may be mixed with water
- Foams, dry chemical powders, and carbon dioxide can be used to suppress secondary fires or limit fire spread



Data sensitivity - Internal

Targeted water application and battery casing penetration

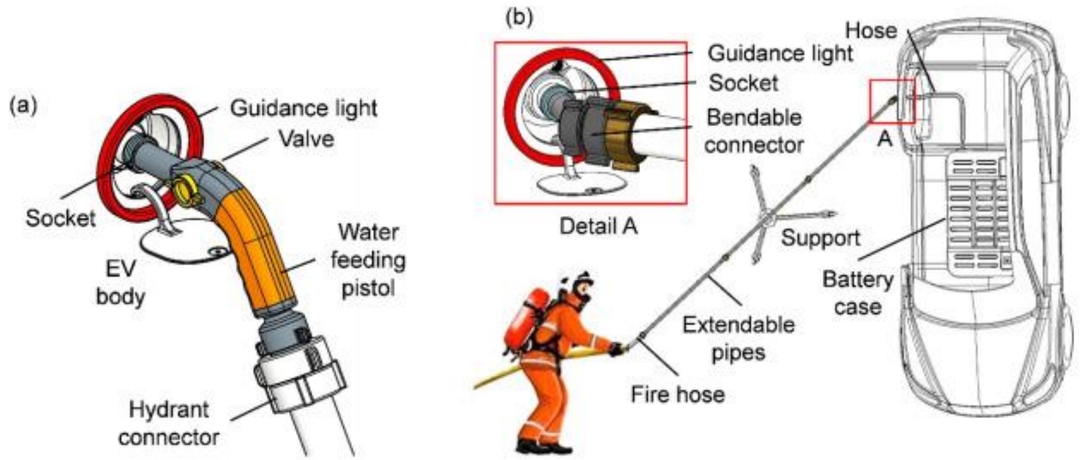
Fire suppression agents

Targeted water application

Fire blanket

Immersion container

- Water is applied directly to critical battery cells to improve cooling efficiency
- Targeted application requires specialized training
- Some vehicle manufacturers have begun marking designated access points or structurally weaker areas



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Data sensitivity - Internal

Vehicle fire blankets

Fire suppression agents

Targeted water application

Fire blanket

Immersion container

- Vehicle fire blankets do not extinguish the chemical reactions
- They are particularly useful in tunnels or close to infrastructure (toll canopy, bridges…)
- Firefighting exercises conducted in tunnel environments have demonstrated that vehicle fire blankets can be an effective protective measure when used correctly

Data sensitivity - Internal

Vehicle immersion containers

Fire suppression agents

Targeted water application

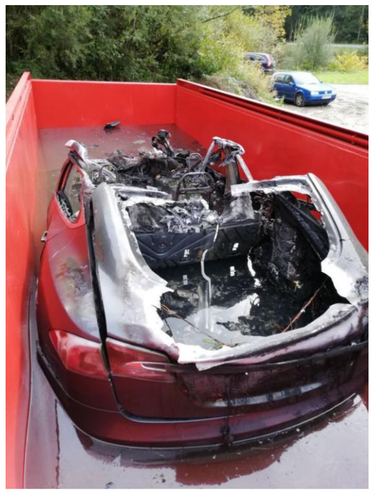
Fire blanket

Immersion container

• Submerging the entire vehicle in water to achieve complete cooling of the battery system

• The method requires extensive logistical support, specialized containers, and sufficient space

• Due to these requirements, vehicle immersion is often impractical in urban areas, parking garages, tunnels, and other confined environments



Data sensitivity - Internal

Conclusion

- Rapid adoption brings new and specific challenges
- Strategic investments will ensure that the electric era of transportation is safe for everyone

Data sensitivity - Internal

THANK YOU

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