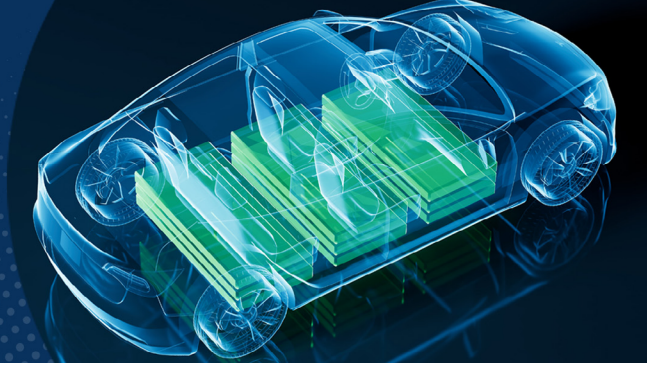
EMERGING ISSUES

ELECTRIC VEHICLE BATTERY FIRES

As electric vehicles take off in the U.S., the risk of battery fires poses a special concern to insurers.



Fires involving electric vehicles (EVs) are rare – according to one estimate, they occur at a rate of around 25 per 100,000 vehicles sold, compared to a rate of 3,475 per 100,000 vehicles sold for gas-powered cars.

However, when EV fires do occur, they are notoriously difficult to extinguish. The culprit? The vehicles' lithium-ion batteries.

EV battery packs are made up of thousands of smaller lithium-ion cells containing the chemical components that allow the battery to store energy. The entire pack is encased in a heavy-duty material, such as titanium, and attached to the vehicle's undercarriage.

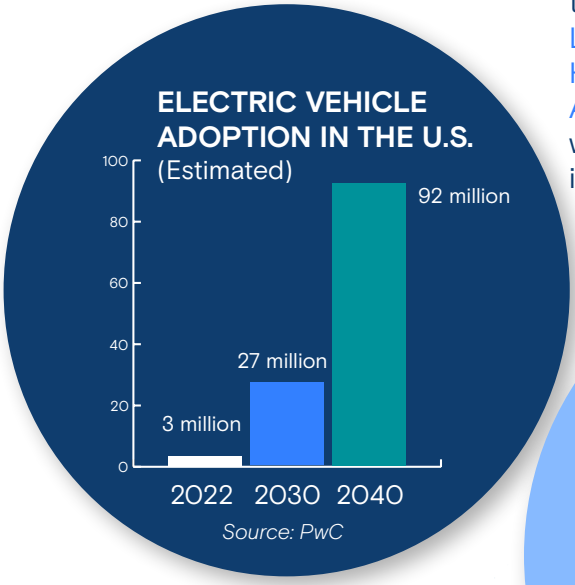
When something goes wrong with one or more of the cells in the battery, the cell components start to heat up and break down, releasing gases that can ignite.

Like a domino effect, the heat then spreads to other cells. The result is an uncontrolled chemical reaction inside the battery that continues until the reaction is completed – a phenomenon known as thermal runaway.

Thanks to thermal runaway and the vast amount of stored energy, EV battery fires burn hotter and last much longer than fires in internal combustion engine vehicles. EV fires can take tens of thousands of gallons of water (and several hours) to extinguish. Once the fire is over, there may still be stranded energy and residual heat within the battery, causing it to reignite later.

INSURANCE CONSIDERATIONS

Crashes are not the only cause of EV battery fires. Internal battery failure, faulty parts, and even flooding by salt water have all caused EV batteries to ignite.



However, collisions involving EVs pose a special concern to insurers. Because it is difficult to assess or repair EV battery packs, even minor accidents can result in replacement of this key component.

The cost to replace an EV battery pack varies by make and model of the vehicle. In some cases, it can represent up to 50 percent of the car's value. For certain vehicles, replacement is not even feasible, as the battery pack is built into the car's structure.

As a result, some insurers have found themselves having to write off slightly damaged EVs with few miles.

Alternatives to the lithium-ion batteries are currently in development, including solid-state batteries, which are less likely to ignite. Organizations such as the National Renewable Energy Laboratory (NREL) and National Highway Transportation Safety Administration (NHTSA) are also working on various initiatives to improve EV battery safety.

CONTACT US

to learn more about this and other emerging issues

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