# Hyundai Mobis unveils fire extinguishing technology for electric vehicles



A new technology has been unveiled that aims to enhance the safety of electric vehicles (EVs) by automatically extinguishing fires originating from battery cells upon ignition. Hyundai Mobis announced on the 14th of June its development of this innovative system, which includes a newly designed battery system featuring integrated fire suppression capabilities.

Hyundai Mobis has applied for three patents, both domestically and internationally, related to this fire extinguishing technology. The company's electric vehicle thermal runaway prevention mechanism is engineered to automatically spray a fire extinguishing agent in the event of battery cell ignition, effectively putting out fires before they can escalate. This pioneering technology is said to be capable of blocking thermal runaway by preventing heat transfer to adjacent cells—an issue of significant concern for the safety of electric vehicles.

Within the global regulatory landscape, notable countries such as those in Europe, China, and India have established standards that require battery systems to resist thermal runaway for a minimum of five minutes following an ignition incident. Some regions are even pushing for regulations that mandate comprehensive measures to abort heat transfer entirely during battery failures. As such, Hyundai Mobis's battery system architecture, which includes an extinguishing feature at the cell level, is anticipated to be recognised as a next-generation safety technology in international markets.

The battery system (BSA) developed by Hyundai Mobis incorporates both hardware and software components. The hardware comprises a battery management system (BMS), fire extinguishing devices, and a specially designed battery case. The BMS functions by analysing parameters such as temperature, voltage, and pressure using real-time data collected from sensors. In the event of abnormal readings indicative of ignition, it determines the optimal location to deploy the fire suppression agent and triggers the extinguishing mechanism.

The software driving the system is designed for swift and precise decision-making in response to any irregularities within the battery system. It utilises highly reliable judgment logic, employing a multi-safety mechanism and a dual-layer algorithm structure to enhance response accuracy.

Hyundai Mobis’s extinguishing systems are equipped with fire suppression agents that amount to five times the capacity of a standard household fire extinguisher, typically rated at 3.3 kg. Notably, these agents are composed of environmentally friendly materials that excel in cooling, insulation, and permeability without posing risks to human health.

Park Yong-jun, the head of the battery system research division at Hyundai Mobis, commented, “As large electric vehicles that enhance driving range are emerging, the safety standards for battery systems are becoming more stringent. We will develop an advanced battery system that surpasses global standards and integrates hardware and software to showcase it in the global market.”

In addition to this recent development, Hyundai Mobis previously introduced novel materials last year aimed at reducing battery overheating. Among these innovations is a vibration-type heat pipe composed of aluminium alloy and refrigerant, designed to be placed between battery cells to effectively lower temperatures during rapid charging. This technology is expected to serve as a reliable thermal management system for EV battery safety, including during high-speed charging scenarios.

Source: [Noah Wire Services](https://www.noahwire.com)

## References

* <https://www.mk.co.kr/en/business/11290561> - Hyundai Mobis has developed a technology to prevent 'thermal runaway' by automatically extinguishing EV battery fires. The system includes hardware such as a BMS and fire extinguisher, and software for quick response.
* <https://www.mk.co.kr/en/business/11290561> - Hyundai Mobis applied for three patents related to fire extinguishing technology, aiming to meet global safety standards that require at least a five-minute delay in thermal runaway after battery ignition.
* <https://www.mk.co.kr/en/business/11290561> - The system uses fire suppression agents with five times the capacity of a standard household fire extinguisher, designed for cooling, insulation, and permeability without health risks.
* <https://www.noahwire.com> - This source likely discusses Hyundai Mobis's previous innovation in reducing battery overheating with novel materials like vibration-type heat pipes.
* <https://www.mk.co.kr/en/business/11290561> - Park Yong-jun, head of battery system research at Hyundai Mobis, emphasized the importance of developing advanced safety technologies for EVs, especially as larger vehicles emerge.