

► DIVISION SENSORS AND ACTUATORS

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*Pyrotechnics for safe e-Mobility:*

## Rheinmetall wins the "2021 Technology Innovation Award" for its high-voltage pyrofuse

The transition to electric vehicles brings with it the need for new safety systems. In order to provide the growing market with advanced solutions, the technology group Rheinmetall has developed a pyrofuse which has now won the "2021 China Automotive & Parts Industry Developing & Innovation Award". The annual award ceremony was hosted by the distinguished magazine of the Chinese automobile industry 'Automobile & Parts' end of 2021.

The compact pyrofuse, a pyrotechnical safety switch system developed by Rheinmetall's division Sensors and Actuators, stands out from its competitors and wins the prize in the domain of new energy.

Rheinmetall's high-voltage pyrofuse ensures safe operation of battery electric vehicles (BEV), plug-in hybrid electric vehicles (PHEV) and fuel cell electric vehicles (FCEV). The system disconnects the battery or the DC charger in case of emergency such as accident, crash or short circuit, reducing possible dangers and risks for passengers, rescue teams and first aiders. It has an ultrafast response speed below one millisecond and breaks the power supply immediately.

The operating voltage of Rheinmetall's innovation ranges from 450 to 1000 VDC and it can break high currents of up to 30kA, operating at temperatures up to 120 °C. The fuse system has lowest best-in-class internal electrical resistance (<30  $\mu\Omega$ ) and reduces power losses and thermal self-heating.

Further benefits are the low weight and the cost efficient design and the ability to disconnect short circuit currents without outburst of conductive and hot gases. In addition, the system is also available with an integrated current sensor, saving costs, space, and assembly efforts and simplifying component harmonization.

With the ongoing transformation to e-mobility and new market demands, pyrofuse systems will be widely used in electric vehicles and this technological segment will undergo rapid development. Rheinmetall, with its position of an innovation leader, will continue to expand its advantages and drive further technological progress in the field of mobility and security.



### ► Key facts

- Rheinmetall wins "2021 Technology Innovation Award" for high-voltage pyrofuse
- For the safe operation of electric vehicles (BEV, PHEV, FCEV)
- Pyrofuse reduces the risks for passengers, rescue teams and first aiders
- Advanced safety system, ultrafast response time, developed for HV-classes

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The Group possesses longstanding expertise in pyrotechnics, having developed and produced a wide range of applications. For customers in the automotive industry, Rheinmetall has manufactured airbag igniters on a large scale. Belt tensioners also feature sensor-triggered Rheinmetall pyrotechnic solutions that react instantly in hazardous situations. Law enforcement agencies and armies use pyrotechnic flash/bang munitions from Rheinmetall to disorient and disable opponents. Moreover, special smoke/obscurant and illumination rounds can be used to protect assets deployed in harm's way and to give them a decisive tactical advantage in critical situations.