# Press Release

New high voltage sensor from Marquardt

## Safely into the Mobility Revolution

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- The high-voltage sensor provides increased safety for electric cars, fuel cell vehicles and stationary battery systems
- The HV sensor measures much faster and more accurately than conventional sensors, allowing the battery management system to immediately react to malfunctions
- Marquardt offers flexible customization of the HV sensor to meet customer requirements, with modules up to ASIL D safety classification.

*Rietheim-Weilheim, Germany, February 2023* – A key safety function of any battery management system (BMS) is the measuring and reporting of current and overcurrent; this function is provided by a high voltage (HV) sensor. As an expert in mechatronics, Marquardt has developed an HV sensor that offers improvements in the BMS, as Ellen Marquardt, Product Management Power and Energy Solutions, explains: "Our new HV sensor not only measures very precisely, but also extremely quickly. This allows the system to respond immediately. This advanced technology has the potential to save lives in the event of an accident, making it a crucial factor in ensuring the safety of e-mobility."

### From insulation resistance to pyroswitch

If the sensor detects an overcurrent, it immediately triggers the pyroswitch, which then disconnects the system from the power supply within just five milliseconds. The HV sensor also continuously monitors the resistance between the chassis and the battery to ensure it is within the desired range. While this may be simple for static systems, it is a technical challenge for dynamic systems, like vehicles, explains Ellen Marquardt: "Due to the constant motion of vehicles, the voltage rises and falls rapidly, making it easy for incorrect resistance values to be measured. We offer a solution with higher measurement accuracy than conventional sensors." Marquardt has developed a

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proprietary algorithm for the insulation resistance measurement, and also delivers the HV sensor with its own software. "We are expanding our portfolio with this self-developed HV sensor, ensuring that the battery management system is state-of-the-are down to the smallest detail," says Ellen Marquardt.

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**Flexibility through scalable design**

The HV sensor can be used in electric cars, hybrid vehicles, fuel cell electric vehicles, and stationary systems. Depending on the application, the HV sensor meets the required safety functions from ASIL A to ASIL D. One advantage of the HV sensor is its scalable design, which makes it possible to combine different functionalities. "This allows us to adapt the sensor to the respective customer's requirements from specification to production - and in a cost-effective manner", emphasizes Ellen Marquardt.

The HV sensor will go into series production in 2023 and will serve a diverse customer base, including passenger cars, trucks, off-road vehicles, agricultural and construction machinery, and even aviation. The HV sensor can be used in all these sectors - and thus make the mobility of the future better, safer and more sustainable.

Further information about the Marquardt HV sensor can be found at the following link:
https://www.marquardt.com/us/hv-sensor/

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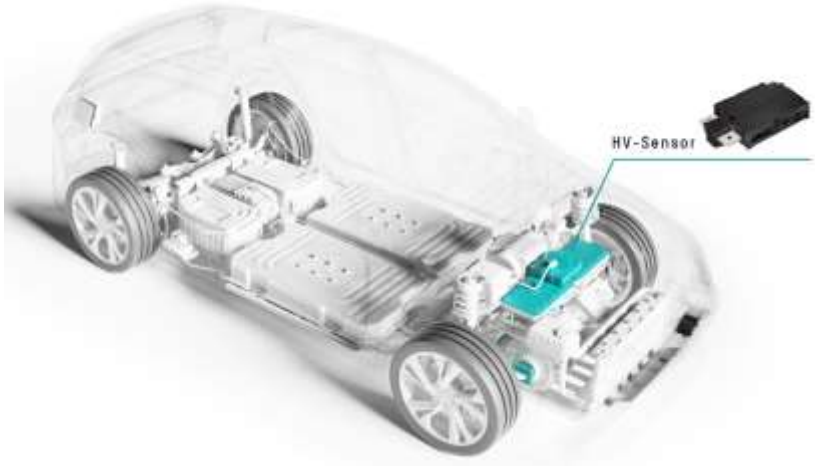
Press photos:




*Marquardt-Press-Photo-HV-Sensor-1:* The Marquardt High-Voltage sensor can be installed in fully electric cars, in vehicles with hybrid engines or fuel cell drives, as well as in stationary battery systems.

*Marquardt-Press-Photo-HV-Sensor-2:* The Marquardt High-Voltage sensor measures much faster and more accurately than conventional sensors.

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**About Marquardt**

Marquardt, a family-run company founded in 1925 and based in Rietheim-Weilheim, Germany, is one of the world's leading manufacturers of electromechanical and electronic switches and switching systems. The products of the mechatronics expert are used by many well-known customers in the automotive industry and include operating components, vehicle access, driver authorization systems and battery management systems. The company's systems are also used in household appliances, industrial applications and power tools. Marquardt Group employs approximately 10,200 members of staff worldwide at 21 locations in four continents. The company generated 1.3 billion euros sales revenue in the fiscal year 2021. Each year, Marquardt invests around ten percent of its revenues in research & development.

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