SENSOR **FUSION**

SAFETY AND USER EXPERIENCE WITH **AI, BIOMETRICS, CAMERA** AND **RADAR**

RHEINMETALL
DERMALOG SENSORTEC

SAFETY AND USER EXPERIENCE WITH **AI, BIOMETRICS, CAMERA** AND **RADAR**

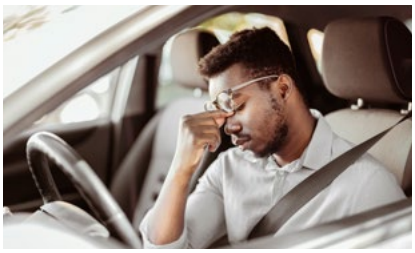
In the Rheinmetall Dermalog SensorTec joint venture, Rheinmetall and DERMALOG combine their biometrics, artificial intelligence, camera and radar technology expertise to jointly develop high-performance safety solutions for automotive vehicle interiors.

According to the World Health Organization, road traffic injuries are responsible for 1.35 million deaths worldwide yearly. A large percentage of traffic accidents are caused by distracted or fatigued drivers. Regulators and car manufacturers focus on assistance systems such as driver monitoring to increase road safety. For example, since 2022, all new vehicle types in the European Union must be equipped with driver monitoring systems.

Rheinmetall Dermalog SensorTec provides innovative cabin technology to enhance vehicle safety. Our solutions incorporate the latest biometric identification, artificial intelligence and radar technology to enable high-performance Driver Monitoring Systems (DMS), Occupant Monitoring Systems (OMS) and keyless Vehicle Access Control (VAC). In addition, our solutions provide advanced features such as object detection, occupant identification, and airbag suppression achieved by sensor fusion of radar and camera. Our technologies meet the high requirements of Euro NCAP and can be seamlessly integrated into all vehicle types.

WHY CHOOSE OUR SOLUTIONS?

- Fusion of radar and camera enables multiple functions with limited hardware integration.
- Best rounded algorithm available for face recognition in the automotive industry.
- EU GSR and NCAP compliant and seamlessly integrable into all vehicle types.



DRIVER MONITORING SYSTEMS (DMS)
Precise distraction and drowsiness detection based on the latest sensor technology.

OCCUPANT STATE MONITORING SYSTEMS (OMS)
Comprehensive safety for all vehicle occupants with a holistic cabin monitoring system.

VEHICLE ACCESS CONTROL (VAC)
Reshaping vehicle interaction using state-of-the-art facial recognition technology.

DRIVER MONITORING SYSTEMS (DMS)

DRIVER DROWSINESS DETECTION

Drowsiness at the wheel is one of the most common causes of traffic accidents. With the help of Driver Drowsiness Detection from Rheinmetall Dermalog SensorTec, such accidents can be avoided by warning the driver at the first sign of drowsiness. The solution is based on the latest facial recognition and eye tracking techniques, which enable fast and accurate analysis of the driver's state in real-time. This way, the system can prompt the driver to take a break before a dangerous situation occurs.

DRIVER DISTRACTION DETECTION

Whether smartphone, navigation device or on-board computer: due to technological advances, the potential for drivers being distracted is higher than ever. The consequence: Distractions and inattentiveness significantly impair driving safety. Rheinmetall Dermalog SensorTec's solution detects different types of distraction and provides information for safer driving behavior. For example, the system detects if a driver uses their mobile phone inappropriately, consumes food or drink, or is distracted by other occupants.

ADDITIONAL FEATURES

- Meets all EU GSR requirements
- Driver identification and authentication
- Biometric vehicle access
- Automated cockpit settings
- Gesture control
- Object detection
- DMS from a central cockpit position
- Airbag suppression
- Driving under the influence (DUI)
- Vital signs

OCCUPANT STATE MONITORING SYSTEMS (OMS)

CHILD PRESENCE DETECTION (CPD)

Depending on the ambient temperature, children's body temperature rises three to five times faster than an adult's body temperature. Given the fact that the interior of a parked car can heat up to well over 40°C in a very short space of time when in the sun, this can be life-threatening to children. In the past 25 years, over 900 children in the US alone have died of heat stroke because they were left in parked cars. For this reason, Euro NCAP now includes CPD systems in its vehicle safety assessment.

We provide a CPD system that reliably meets all Euro NCAP requirements with superior false positive rates. This ensures the safety of those who are not yet able to look after themselves.

SEAT OCCUPANCY DETECTION AND CLASSIFICATION FOR SEAT BELT REMINDER

Getting from A to B safely – that's what we all want. But what happens in the event of an accident? Many serious injuries can be avoided if everyone wears a seat belt. The Seat Belt Reminder not only informs the driver that they need to wear a seat belt, but also whether all other occupants in the car are wearing their seat belts. Nowadays, the data for this is provided by special sensor mats installed in the seat. They respond to pressure and indicate when the seat is occupied by a person or a sufficiently heavy object. With our contactless interior monitoring system, no additional sensors are needed in each seat.

ADDITIONAL FEATURES

- Meets all EU GSR requirements
- Pet detection
- Intrusion detection
- Airbag suppression through camera and radar fusion

VEHICLE ACCESS CONTROL (VAC)

SEAMLESS ACCESS

Seamless Access by Rheinmetall Dermalog SensorTec presents a new era of convenience and security, re-shaping vehicle interaction using state-of-the-art facial recognition technology. The solution provides instant and user-friendly access to vehicles and increases protection against unauthorized access.

Seamless Access by Rheinmetall Dermalog SensorTec makes car keys relics of the past. The system recognizes users instantly and grants access using the latest facial recognition technology, turning a tedious task into a seamless experience. The system is built to be reliable and accessible. It is designed to function in diverse lighting conditions and angles and can even recognize faces with glasses or changes in facial hair. Furthermore, it is equipped with liveness detection to prevent spoofing attacks, ensuring that a high-resolution photograph or a 3D mask cannot trick the system.

Seamless Access incorporates enhanced security features compared to traditional keys or standard keyless systems. It ensures that only authorized persons have access to the vehicle. If an unauthorized person attempts to enter the car, the system denies access and sends a notification to the owner‘s mobile device. The system is designed with simplicity and user-friendliness in mind. Vehicle owners can register their faces and easily manage the list of additional authorized users through a dedicated mobile application.

FULL CONTROL VIA MOBILE APP

- The Seamless Access App provides quick face enrollment in just a few steps.
- Besides the vehicle owner, additional users can be easily added or removed.
- In case of an unauthorized access attempt, the system can provide warnings.
- Best rounded algorithm available for face recognition in the automotive industry.

ADDITIONAL FEATURES

- Integrated liveness detection against spoofing
- Large detection range of up to 2 meters
- Available for vehicle fleet management

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