

May 15, 2019

Sumitomo Riko Exhibiting at Automotive Engineering Exposition 2019 Yokohama

“Steering Wheel Touch Sensors” and “Highly Functional Armrests” for Self-Driving Cars Exhibited for the First Time

Sumitomo Riko Company Limited (Headquarters: Nakamura-ku, Nagoya-shi; Representative Director and President & CEO: Tetsu Matsui) will exhibit at a joint booth together with Sumitomo Electric Industries, Ltd. (Headquarters: Chuo-ku, Osaka-shi) and Sumitomo Wiring Systems, Ltd. (Headquarters: Yokkaichi-shi, Mie Prefecture) at the Automotive Engineering Exposition 2019 Yokohama, to be held from Wednesday, May 22 at PACIFICO Yokohama.



As the automotive industry enters a period of major change, including accelerated efforts in the shift to electric vehicles (EVs) and the practical application of self-driving cars, our company is actively engaged in the R&D of new products and materials utilizing our core competences of polymer materials technology and comprehensive evaluation technology.

At this exhibition, we will exhibit for the first time our Steering Wheel Touch Sensors for self-driving cars, which sense whether or not the driver is holding the steering wheel, as well as Highly Functional Armrests that provide a place to rest one's elbows or arms.

At driving automation levels 2 and 3 that have been put to practical use, an

automated system will drive under certain conditions. However in other cases or in emergency situations, it is necessary for the driver to hold on to the steering wheel. Therefore, we have applied and equipped steering wheels with our Smart Rubber (SR) Sensor, a soft and electrically conductive rubber material that we have developed. This makes it possible to detect whether or not a driver is holding the steering wheel (the sensor can detect whether the driver is holding the steering wheel with one or both hands, and where on the steering wheel their hands are located).

Visitors to this exhibition will be able to experience a product that visualizes how the Steering Wheel Touch Sensor responds based on where they hold a steering wheel.

As self-driving car technology advances and achieves driving automation levels 4 and 5, and the need to hold the steering wheel disappears, drivers and passengers are supposed to place their arms on their armrests. Also they are expected to use multimedia content on their own digital devices and so on, the armrest has been integrated with USB ports, switches, touch panels, and other electronic devices to achieve high functionality.

Visitors to this exhibition will be able to experience a product that integrates USB ports and Smart Rubber (SR) actuator switches.

In addition, the Sumitomo Riko booth will introduce other innovations for our automobile-centered society in the future. This includes letting visitors try out our Driver Monitoring System—a system that detects the driver’s heart rate, breathing, and body motion—which was exhibited last time, and exhibiting our Haptics Interface, a technology also utilized in our Highly Functional Armrests.

<Outline of exhibition>

Exhibition name	Automotive Engineering Exposition 2019 Yokohama
Exhibition dates	Wednesday, May 22 to Friday, May 24
Venue	Exhibition Hall, PACIFICO Yokohama
Booth No.	416

<Overview of the exhibited products>

>> Steering Wheel Touch Sensor (Development item/first time exhibited)

We have equipped a steering wheel with our special Smart Rubber (SR) Sensor, a soft and electrically conductive rubber material. This sensor detects whether or not the driver is holding the steering wheel with both hands. With this technology, it is possible to determine whether or not the car can be switched from automatic to manual operation.* This corresponds to automatic operation levels 2 and 3 of the UN Regulation No. 79 (an international standard for automatic steering).



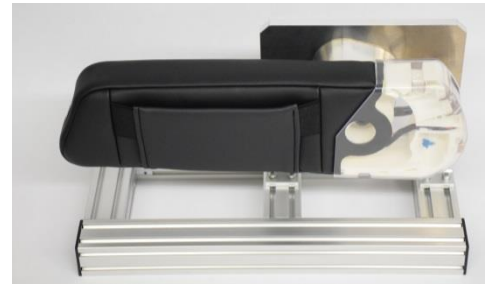
* The switch itself from manual to automatic operation is not

an issue. However, when switching from automatic to manual operation, an accident may occur if the driver does not have their hands firmly on the steering wheel.

>> Highly Functional Armrest (Development item/first time exhibited)

We aim to enhance the functionality of the ordinary armrest. Therefore, we integrated the conventional armrest with USB ports, switches, touch panels, and other electronic devices. On display at this exhibition is an armrest that integrates USB ports and Smart Rubber (SR) actuator switches. (See below.)

Left: USB ports and a pocket for digital devices
Right: Actuator switches on the top



>> Haptics Interface (Development item)

When the user touches a certain area on the car navigation screen, etc., the Haptics Interface vibrates to signal to the user that the input has been detected. An actuator made of Smart Rubber (SR), a special rubber that conducts electricity, produces this vibration. Using SR's characteristic of stretching when a voltage is applied and the contracting force inherent to rubber, SR can express various kinds of vibrations, such as strong and weak vibrations, different rhythms, and so on.



>> Driver Monitoring System (Development item)

SR sensors are either built into the seat or manufactured into the shape of the cushion and fitted onto the seat. The driver's heart rate, breathing, body motion, and so on are detected based on changes in pressure on the surface of the chair measured by the SR sensors. The system uses the results to assess the driver's condition, such as fatigue, drowsiness, sudden illness, etc. It can then connect to the necessary services, such as alerting the driver, actuating a driver assistance system, or sending an external notification.



Cushion with built-in SR sensor installed in seat