Application Note

Material Solutions for Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Sensors

Sensors play a key role in advanced driver assistance systems and autonomous vehicles. They act as the eyes and ears of a vehicle, and have quickly become indispensable components in ADAS and autonomous driving vehicles.

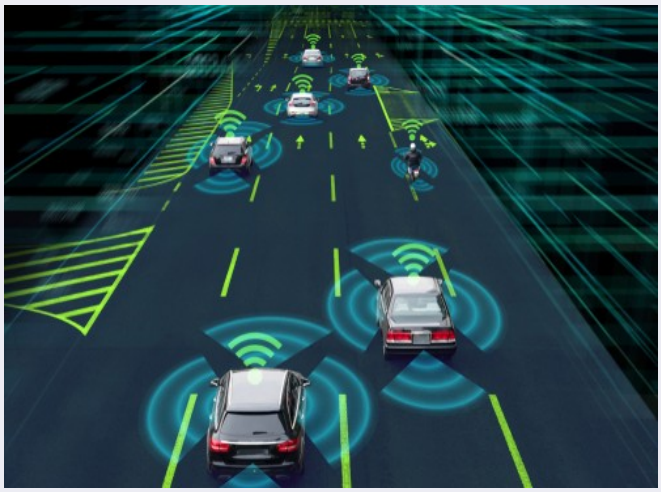
Camera: 20/20 Road Vision
High-definition cameras allow the vehicle to see street signs and pedestrians at long distances.

Radar: Reliable Anytime
Radar allows vehicles to see and measure the position and velocity of an object in comparison to the vehicle.

Ultrasonic Sensor: Sound Waves for Close Ranges Ultrasonic sensors gauge the distance between close range objects and the vehicle using high frequency sound waves to reliably obtain a full picture of the vehicle's immediate surroundings.

LiDAR: 3D Vision in All Directions
LiDAR provides a 360 degree field of 3D vision by measuring the distance of various objects from the vehicle in all directions.

Far Infrared: Heat-Sensing Technology
Far Infrared (FIR) cameras use heat-sensing technology to detect people, animals, and other objects that radiate heat in any environmental conditions.



Rogers Corporation has a comprehensive portfolio of material solutions that solve sensor sealing and vibration design challenges.

PORON® polyurethane and BISCO® silicone materials offer great compression set resistance, ensuring a tight seal is maintained throughout the life of the vehicle.

In addition, BISCO® silicones exhibit excellent sealing performance with providing resistance to UV, ozone, and extreme temperatures.

PORON® polyurethanes deliver reliable vibration dampening for sensor units as well as noise reduction.

Both material solution families are available in a variety of densities and thicknesses that offer the right amount of push back force, ensuring the reliability of sensor housing assemblies.

	Application	*Problem*	*Solution*	*Benefit*
Environmental Conditions	Sealing/Gasketing of Camera System and Sensor Units	Rotating head cover needs protection from moisture and dust ingress	BISCO® HT-800 BISCO® HT-6210	Components are sealed against external elements
	Cooling Channel for Sensor Housing Unit	Control of airflow	BISCO® HT-820 BISCO® HT-1260	Optimal temperature is maintained for continuous sensor operations
Sensor Module Protection	Sealing/Gasketing, Vibration Management	Sensor module requires sealing, gap filling, and vibration damping	BISCO® BF-1000 PORON® 92	Module assemblies are sealed and free of gaps, sensors are protected from vibration
	Optical Transmission	Undesirable light needs to be blocked	PORON® 92 BISCO® HT-800	Sensor interference is minimized by manipulating the path of the undesirable light or blocking it altogether

Rogers also offers rapid application development support to assist design engineers in selecting and specifying materials for autonomous vehicle sensor projects. The combination of application know-how and high-performing, unique material formulations translates into reliable sensor performance over the life of autonomous vehicles.

For more information, contact the Rogers Solutions Center at solutions@rogerscorp.com.