



MULTISORB
Technologies

INNOVATIVE BUILT-IN DESICCANT ELIMINATES CONDENSATION FROM PARK DISTANCE CONTROL CAMERAS

Jaguar Land Rover Ltd. Incorporates PDC for Range Rover Series to Increase Driver Visibility

Connaught Electronics Limited (CEL), based in Galway, Ireland, is at the forefront of the growing trend towards incorporating vision systems into automobiles for enhanced driver visibility. Referred to as Park Distance Control (PDC), technologies such as rear view, side view and blind spot cameras have become increasingly popular in Asia and the United States, but the trend is just beginning to take hold in Europe.

CEL recently entered the marketplace as a supplier of automotive vision systems and one of its most popular technologies is the rear view camera. When the driver engages the reverse gear, the rear view camera automatically transmits a wide-angle color image of objects behind the vehicle to the dashboard touch screen.

Rear view cameras are becoming an increasingly popular addition to luxury vehicles, making it easier for drivers to navigate in reverse by providing a second vantage point of the area behind the vehicle. The cameras also help to increase safety by clearly displaying on the dashboard LCD any objects that may be behind the vehicle and out of the driver's normal range of sight.

When CEL was approached by Jaguar Land Rover Ltd. (Land Rover), the UK-based luxury automobile manufacturer, to design a rugged rear view camera for their high-end Range Rover, the company knew it would need to take every precaution to ensure that the camera could withstand the rugged environments for which the vehicles are designed. One of the primary issues facing automotive vision technologies is condensation in the camera's lens, a result of extreme temperature change or inclement weather. A major challenge for CEL in developing a rear view camera for the Range Rover is that the luxury SUV is designed to perform in environments where temperatures can rise above 85 degrees Celsius and fall below negative 40 degrees Celsius.

The Design team at CEL realized that, without sufficient moisture control, condensation prevents a clear picture from appearing on an automobile's dashboard LCD, which impairs the driver's ability to see objects behind the vehicle.

Versatile Desiccants

Peter Reilly, R&D Manager, and the engineering team at CEL, knew that their camera would have to withstand the same rugged environments as the Range Rover without the lens becoming cloudy with moisture from condensation. The challenge was achieving high levels of moisture control in a confined area. The sorbent needed to be small enough to fit behind the lens of the camera and not interfere with electrical functions.

To ensure that their camera would perform in line with Land Rover's expectations, CEL turned to Multisorb Technologies, a leading provider of moisture control solutions. CEL was looking for desiccant technology that could be built directly into the camera and assist with moisture prevention. Multisorb's Natrasorb[®] 900 was just the solution.

Lightweight Compressed Sorbent Eliminates Moisture

Multisorb's NatraSorb 900 is a compression molded desiccant that provides significant capacity for moisture absorption in a small area, without added bulk or weight. With crush strengths reaching up to 8000 pounds per square inch, it does not crack or crumble, providing a mechanically robust desiccant that can be shaped to fit into almost any space.

For CEL, Multisorb created a custom NatraSorb 900 solution. The desiccant was formed into a small rectangle that is secured behind the camera lens using a compression fit. With a high desiccant content compared to the overall part size and weight, NatraSorb 900 is capable of removing water vapor from the camera throughout the duration of the warranty. This prevents frost formation at temperatures as low as -40 degrees Celsius, and fogging at temperatures up to 85 degrees Celsius. Optical properties of the camera lens are preserved and the potential for corrosion of the electronic circuitry is eliminated.

“CEL needed a desiccant that was specifically designed for their unique application,” said Sam Incorvia, application product leader at Multisorb. “Not only did it have to maintain lens clarity, but it had to endure the rugged environments that Range Rover is designed for, not withstanding the rigorous testing that Land Rover puts its vehicles through.”

As more automotive electronics become available for commercial use, manufactures like CEL are also differentiating their products by moving toward designs that go beyond primary function to be lightweight and cost effective. These designs are often made of thermoplastics, which by nature transmit a certain amount of water vapor, regardless of extreme weather conditions. Water vapor ingress occurs slowly over time and often goes unnoticed until it results in a component or system failure.

“The technology from Multisorb clearly fits our needs and we have been impressed by its success in the field,” said Reilly. “It enhances the quality and reliability of our product to ensure that we receive good reception in the marketplace.”

Focus on Quality

Established in 1982, CEL designs and manufactures electronic systems for the automotive industry, including remote keyless entry products, sensors for detecting movement and break-in, and gateway modules that control automobile functions, generally referred to as “body electronics.” The company has established a reputation as a key player in the development of security applications for the automotive industry.

CEL supplies many of Europe's leading car manufacturers, either directly or indirectly, with this technology. Key customers include large German OEMs and automotive manufacturers like BMW, Daimler-Chrysler and Volvo. The company also works closely with Sumitomo Electric Industries in Japan, through which they supply electronic modules for Toyota in Europe.

Control of a company's quality of performance in the automotive industry is stringent, and those standards also apply to customer service. “As with all suppliers to the automotive industry, we must achieve a high standard of performance in many areas,”

explains Alan Moran, Business Development leader at CEL. “What sets CEL apart from competitors is that we are innovative and flexible with our customers and produce highly innovative products.”

New Technologies

CEL has expanded its relationship with Multisorb for the production of a handheld accessory camera, also for Land Rover’s Range Rover. Stored adjacent to the vehicle’s glove box, the wireless video camera streams a picture back to the dashboard navigation screen via radio frequency technology. Unlike the outside-mounted rear view and side view cameras, however, the handheld camera required a different type of moisture protection.

Multisorb’s Desimax SLF (Sorberent Loaded Film) self-adhesive desiccant sheet adheres to the inside of the camera, providing a versatile, efficient and cost effective method for adsorbing moisture within CEL’s handheld camera. Desimax SLF keeps the lens clear in spite of water vapor ingress caused by temperature changes. It is also rugged enough that it remains fixed and unbroken even in cases where the camera is mishandled, dropped, or even run over by the vehicle.

“We needed to partner with a desiccant supplier that could be as flexible as CEL is with its customers,” concludes Reilly. “Our cameras are working wonderfully in the Range Rovers, and we look forward to working with Multisorb to develop new, innovative vision systems in the future.”

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