

PU stops leaks and stays stuck

Tom Shelley reports on some of the benefits to be obtained by using polyurethane based seals, sealants, gaskets and adhesives.

Much can be done with polyurethane, especially when it comes to sealing round connectors and glass, protecting cables, and performing repairs.

Sealing round antennae cables is a particular problem because it is necessary to prevent both stray electrical signals and moisture getting in to places where they are not wanted. At the same time, it is necessary to avoid electrolytic corrosion caused by attaching metal connector bodies, especially where these act as feed-throughs for antennae, which by definition involve the passage of significant amounts of electric current.

US company Aviation Devices and Electronic Components (AvDec) has come up with a number of products that avoid such problems by making use of the good properties of polyurethane in conjunction with other materials. These include the ability to maintain elasticity over long periods and the absence of solvents (since PU is made by mixing two liquid substances). PU is considered to be considerably less hazardous than some other polymeric adhesives and requires no special handling at end of life.

Furthermore, seals and sealants that can be easily pulled off and put back or replaced not only reduce maintenance time, but also improve reliability and safety as they avoid problems associated with gaining access to inspect surfaces for cracks and/or corrosion.

Products offered include Hi-Tak polyurethane conductive gaskets, which incorporate 5056 aluminium alloy mesh as an EMC barrier, or fibreglass for non conductive applications. Die cut, the gaskets come with an adhesive surface that is extremely sticky. The system also maintains its elasticity over a long period, so the gaskets stay

stuck despite vibration and repeated thermal expansion and contraction. They also provide easy access for inspection or repair long after the original application. As further aids to good performance, the company additionally offers a StretchSeal polyurethane wrap for coaxial connector sealing and SelfLevelingGreen, a polyurethane sealant for to the connector antenna interface.

Conductive polyurethane and mesh gaskets also offer benefits because they stay elastic, and the company offers both connector gaskets and fuel resistance conductive gaskets, which can be enormously important in terms of enhanced safety. In addition, the firm offers a range of other PU based sealants, including Thixoflex products. Because these are thixotropic, they can be used on vertical or overhead applications without dripping or sagging.

Polyurethane seals and sealants, are of course, not only made for and used in aerospace. AvDec's products are beginning to find uses in the medical sector in the UK, and Oxford Sensor

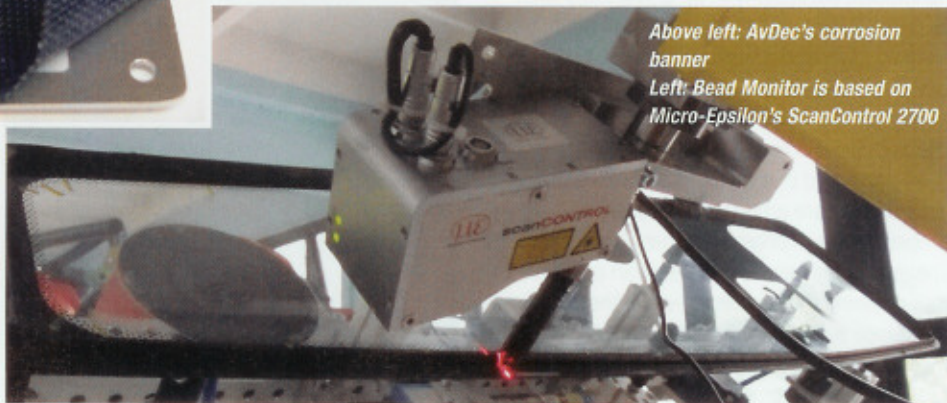
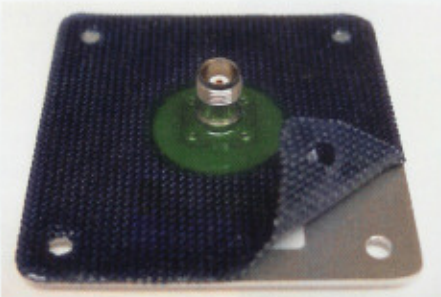
Technology in Abingdon has developed a 'BeadMonitor' system that measures the height and width of PU bead as it is applied to the edges

of vehicle glass during assembly. The sensor head is mounted on a robot arm, directly behind the application nozzles. The system is based on Micro-Epsilon's ScanControl 2700 non-contact laser profile displacement sensor.

Anthony Williams, Managing Director at Oxford Sensor Technology, commented: "BeadMonitor provides a cost effective solution for vehicle assemblers and systems integrators, who need to inspect PU beads before the robot places the glass into the vehicle. Typical cycle times for inspecting adhesive bead and for assembling glass into the vehicle are around 60s, depending on the number of robots employed in the line. The bead measurement process is critical, because if a glass windscreen is incorrectly fitted to the vehicle due to little or no adhesive being applied at a certain point on the glass edge, the result could be a water leak for the driver. Worse still, for many vehicles today, the windscreen has become an integral part of overall vehicle strength and rigidity, so any weaknesses in the glass bonding could pose a safety risk to the passengers."

BeadMonitor is currently undergoing trials with a major car manufacturer in Italy.

www.avdec.com
www.specialty-fasteners.co.uk
www.oxfordsensor.com
www.micro-epsilon.co.uk



Above left: AvDec's corrosion banner

Left: Bead Monitor is based on Micro-Epsilon's ScanControl 2700