

Sparking innovation

Transition to new mobility is generating leading-edge R&D at component makers and materials suppliers

Demands to improve the performance, range, sustainability and comfort of electric vehicles are recurring themes among manufacturers of automotive components and their materials suppliers.

Setting the scene, Cooper Standard detailed its approach to innovation in the field of air-charged cooler hoses and ducts, which must withstand high temperatures and ensure reliable vehicle engine performance.

The products are designed to maintain steady airflow and minimise pressure losses during the cooling and heating process, addressing in-take demands of modern, advanced air-cooling systems.

"We differentiate ourselves by the way we create CAC hoses, using digital analysis tools to size and fit before the need for a physical part," said Cooper Standard.

Special formulated, sustainable alternatives can be used to construct these components, without sacrificing durability of the material, added a company statement.

Use of sustainable alternatives and less material can also help to solve



Elastomers on the road to more sustainable mobility

common engineering constraints in space, weight, heat and vibration that ultimately can lead to vehicle design improvements.

Lightweighting supports reductions in overall vehicle mass, faster assembly and better thermal insulation of the vehicle, noted Cooper Standard.

Depending on the application, there is flexibility to control the thickness of the fluid component layers, while maintaining a sturdy foundation.

Cooper Standard also emphasised the role of state-of-the-art manufacturing processes, technology and rigorous testing in

producing moulded ducts and hoses to the highest standards.

Furthermore, it stated, production of these components involves sophisticated digital analysis and processes, including 3D modelling, and injection moulding.

"Reliable sealing and leak prevention testing are among the essential steps for maintaining system efficiency and delivering consistent performance across applications," Cooper Standard concluded.

New boots

At the recent K2025 expo in Duesseldorf, Germany, Celanese and Trelleborg presented a newly developed range of ball joint sealing boots based on thermoplastic elastomers (TPEs).

The innovation represents a shift from traditional chloroprene rubber (CR) to Celanese's Hytrel-branded thermoplastic copolyesters (TPCs).

Ball joint sealing boots are essential components in steering and suspension systems. Their use is increasing, particularly in electric vehicles equipped with double wishbone suspensions.

According to Celanese, the switch to TPE materials has delivered a number of significant benefits by enabling "a

TPE alternative to chloroprene rubber sealing unit



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complete redesign of the sealing boot.”

For instance, it explained, manufacturers can eliminate the need for metal clamping rings, thereby reducing production & design complexity as well as component weight.

This, said the materials major, can unlock “significant advantages” in manufacturing efficiency, part performance, and environmental impact.

The transition to Hytrel, added Celanese, increases cost efficiency, as the “multi-cavity” injection moulding of the elastomer reduces part costs by at least 10% compared to CR.

Furthermore, the materials can help with weight-reduction as the TPC provides higher stiffness compared to CR, allowing for thinner wall designs. This is said to result in parts that are 10–20% lighter overall.

The TPC material also eliminates the need for post-curing or cross-linking, thereby simplifying the manufacturing workflow.

In terms of recyclability, Celanese said scrap material from the TPC can be reground and reused, supporting circular production practices.



TPE storage tray can employ over 70% recycled material content

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Better leather

Also at K2025, Dow spotlighted the performance of its polyolefin elastomer-based synthetic leather for automotive seating and other interior applications.

Today, car interiors are becoming a ‘third space’ where people expect the same level of style and comfort they enjoy at home, according to the US-based materials company.

This is driving growing demand for seating leather with a luxurious feel, which can be produced in lighter colours, that also meet requirements for enhanced sustainability of materials used in cars.

In response, Dow has developed Evoair POE Leather, a polyolefin-based material, said to offer both high performance and a range of design, safety and sustainability benefits.

The ‘leather’ can be produced in light colours, exhibits “exceptional” colour stability, has a smooth soft finish and meets requirements for low-temperature performance and durability.

In terms of sustainability, the non-animal origin product is 25-40% lighter than PVC leather. It is also said to have low VOC/odour ratings and avoid the use of hazardous ingredients.

Dow as well cited third-party, life cycle analysis (LCA) data, putting the ‘cradle-to-gate’ carbon footprint of the POE at 3.05 kgCO₂e per square metre.

Without providing comparative data, it indicated that the LCA figure was significantly below that of PVC leather and other options.

Circular and bio-circular versions of Evoair POE elastomer leather have also been developed, including one based on recycled polymers and circular feedstocks.

Another version is produced

using bio-circular feedstocks produced from residues of other industries, reducing the use of virgin fossil resources.

Clutter tamed

Kraiburg TPE has reported the development of an automotive interior storage tray made with materials featuring over 70% recycled content, low emissions, and soft-touch, non-slip surfaces.

The ‘decluttering’ tray, said the thermoplastic elastomer (TPE) materials producer, can transform a car interior: holding items ranging from mobile phones keys, and coins to food items and car tools.

For the application, Kraiburg TPE offers eco-friendly Global Recycled Standard (GRS) – certified automotive interiors TPE materials.

With over 70% recycle-content, the material facilitates in-process recycling allowing manufacturers to reduce production waste and improve efficiency, added Kraiburg TPE.

Hardness ranges from 25 to 95 Shore A, providing both soft, non-slip surfaces and durable, structurally stable components, the company statement continued.

The compounds, it noted, also exhibit “excellent” adhesion to polypropylene and enable efficient single- or multi-component moulding processes.

Meanwhile, the dry haptics feature “imparts a non-sticky tactile feel and non-slip surfaces for comfortable handling of the durable car storage trays.”

Advanced adhesive

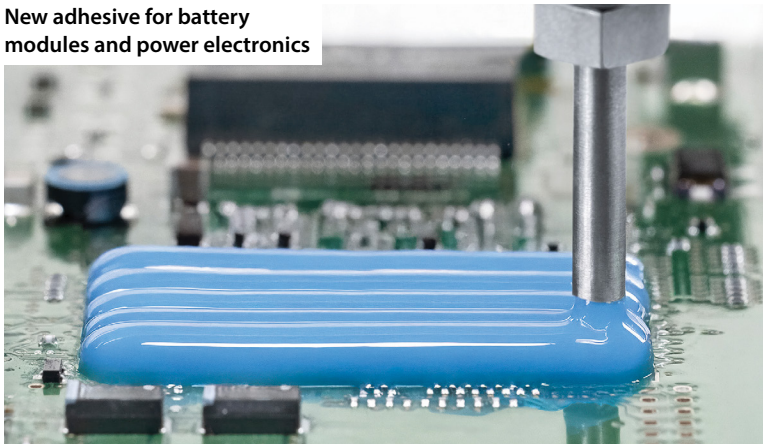
Adhesives specialist Wevo-Chemie has introduced a new two-component silicone adhesive for use in battery modules and power electronics.

The addition-curing Wevosil



POE leather offers a range of design, safety and sustainability benefits

New adhesive for battery modules and power electronics



28015 FL room temperature vulcanising (RTV) material combines 'high thermal conductivity with structural strength and residual flexibility', said the German company.

The material enables manufacturers to "implement targeted thermal management" while producing mechanically stable components.

In electric vehicles, battery modules are increasingly taking on load-bearing functions within the body structure and must deliver both crash safety and thermal stability.

In power electronics, where chips and circuit boards generate concentrated heat, conventional thermally conductive pastes or gap fillers often lack mechanical strength, requiring extra fasteners.

Wevo said its new adhesive, with a Shore A hardness of 70 and a modulus of elasticity of 60 N/mm²,

ensures durable bonding of modules to housings or adjoining parts.

At the same time, the adhesive maintains a reliable thermal link to cooling systems or vehicle bodywork used as heat

exchangers.

According to the company, the material has a thermal conductivity of 1.5 W/m-K, providing efficient heat dissipation at high power densities.

The material is claimed to remain stable up to 200 °C and flexible down to -60 °C, with an elongation at break of 20–25 % to prevent cracking under temperature stress.

Furthermore, the silicone cures rapidly — reaching initial adhesion above 2 MPa "within minutes" under infrared or laser exposure, said Wevo.

This allows the material to be integrated into automated assembly processes.

Wevo said the new adhesive combines thermal and structural properties in one material, reducing process complexity and supporting long-term reliability of sensitive components.



Cooper-Standard innovation in the field of air-charged cooler hoses and ducts



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