tesa SE
Hugo-Kirchberg-Strasse 1
22848 Norderstedt
Germany
Tel. +49 40 88899-4448
www.tesa.com/press

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Growth market: automotive electronics
High-tech adhesive tapes for the automotive transformation

tesa is excellently positioned as cars move into the electric and digital age. Thanks to cooperation between two “classic” business units, Automotive and Electronics, the international adhesive tape manufacturer now has a product range that offers customers forward-looking applications from two industrial worlds.

Will we soon be driving an “iCar” or “Google Driver”?

Electric cars whir through the cities with barely a sound. Small onboard computers handle the steering, so there are no longer any drivers, only passengers. They take a nap or watch movies on the way to work. Once at the destination, the vehicle finds its own charging station or parking space – or, ideally, the next passenger, since people prize mobility over owning a car. Experts predict that this, or something like it, will be the future of the car. And since the technical possibilities offered by cars are increasingly blending with those of smartphones or tablets, journalists are already asking whether we will soon be driving an “iCar” or “Google Driver.” Paul Saffo, a futurist at the School of Engineering at Stanford University, recently offered a thought experiment in an interview with business magazine *brandeins*: “What’s easier, teaching an automotive engineer digital technology or a software programmer the fundamentals of automotive construction? I’d say the latter.” The notion that engine hoods might one day display not the logos of established carmakers, but instead those of Silicon Valley tech titans is by no means absurd, as a few figures show. In January 2018, media group Bloomberg put the combined market capitalization of the big three German automotive manufacturers – BMW, Daimler, and VW – at about 230 billion euros. For comparison, Apple is worth about 744 billion euros, and Alphabet (Google) is worth 644 billion.

More than 100 adhesive tape applications in a new car

“The increasing interconnection between these two key industries offers us outstanding growth opportunities. We have been strongly represented for many years in both the automotive and electronics sector with our broad product portfolio,” says Dr. Norman Goldberg. “Thanks to our close cooperation with smartphone and tablet manufacturers, for example, we are able to respond to extremely short development cycles and offer our customers new solutions quickly. Our knowledge about the complex OEM and supplier structure in the globally positioned automotive industry makes it easier for us to enter the market,” adds Goldberg, the member of the tesa Executive Board responsible for Direct Industries. A car equipped with state-of-the-art electronics can now be home to more than 100 different tesa adhesive applications varying in thickness from 5 to 1500 µm (1 µm = 1/1000 mm) – from wire harnessing to affixing mirrors and adhesive bonding of high-tech displays and assistance systems. tesa has responded to the fundamental reshaping of the industry landscape by developing the automotive electronics segment. The international adhesive tape manufacturer, which has Application Solution Centers at its research facilities at the German headquarters, in China, and in the United States that act as a “flywheel” that drives innovation, focuses on four major fields in its development of innovative tapes for the automotive electronics sector: comfort and infotainment, components for advanced driver assistance systems (ADAS), batteries for electric mobility, and lighting.

Comfort and infotainment: highly transparent films for displays and touchscreens

Goodbye horsepower, hello megabytes! While many automakers and drivers used to focus primarily on performance data from under the hood, multimedia technology in the vehicle interior is now moving into the spotlight. Large displays and touchscreens play an important role in this context. Optically clear adhesives (OCAs) ensure durable, invisible bonding of individual components. These ultrathin adhesive films, produced in the cleanroom unit at tesa's plant in the Hausbruch district of Hamburg, must be free of dust particles and bubbles, thereby offering the utmost in transparency. OCAs also have to provide outstanding adhesion and withstand large temperature fluctuations and exposure to moisture and UV radiation.

Packing a lot of electronics into a tight quarters can lead to undesired, "highly charged" situations. Electrically conductive adhesive tapes not only securely bond flexible printed circuits and metal housing parts, but also make it possible for complex circuits to function smoothly. The tapes equalize electrical potential while also discharging electrostatic charges.

Components for ADAS: high adhesive force, small space

Modern cars are equipped with a large number of driver assistance systems that offer additional support and/or greater safety in driving and parking situations and even handle some entire tasks by themselves. These assistance features include warning systems, which set off alarms when the driver inadvertently changes lanes, and parking assistants. To install the sensors and cameras used in these systems, which are usually tiny, tesa offers its customers products such as heat-activated films (HAFs), which achieve ultra-high bond strength.

Batteries for electric mobility: tapes to bond, insulate, and wrap

Electric cars are still in the minority on the road, but the trend is clear: According to the most recent analyses performed by the Center of Automotive Management (CAM), 54,492 electric vehicles were sold in Germany in 2017 (+117 percent from 2016), doubling their market share – still at a low level – from 0.8 to 1.6 percent. If growth rates continue to rise this way, electric cars will hold double-digit market share in 2020. The leading country in Europe in terms of numbers of electric cars is Norway, where 62,300 of them were plugged in last year, accounting for 39.3 percent of all new registrations. In terms of volume, China is the top country worldwide for electric mobility, with 777,000 electric vehicles registered in 2017. This is a trend that benefits tesa, since the company has developed various adhesive tape products for lithium-ion battery elements, among other applications. A double-sided tape and special film can be used to bond individual battery cells together, for example, insulating them so that no overvoltage can occur. Further products from the tesa range that can withstand high temperatures over a long period, are not flammable, and are resistant to friction and chemicals can be used to wrap the battery. The company also offers extremely lightweight, space-saving affixing systems for flexible printed circuits (FPCs) for battery management. In addition, tesa provides innovative coding solutions to allow tracking of high-value battery elements over their entire lifecycle.

Lighting: affixing LED strips and light blocking

Outside and in, cars are full of light fixtures. Some ensure safety, others visibility. Adhesive tapes also perform a variety of tasks in terms of lighting. Double-sided, highly heat-resistant tapes can be used to do things like permanently affix LED light strips in place, while light-blocking black tapes are able to block 99.99 percent of light from escaping in undesirable locations, such as to the sides of a display. This reduces energy consumption – and reduces the impact on both the environment and the user's wallet.

This press release, along with image and photo materials, is available online at www.tesa.com/press.

Contact

Reinhart Martin
Director of Corporate Communications

Tel.: +49 40 88899-4448
e-mail: Reinhart.Martin@tesa.com