e-mobility
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# Is Giga always better?

## The evolving landscape of EV's

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Armin Diez, CTO talks us through the development of high-performance fuel cell stacks

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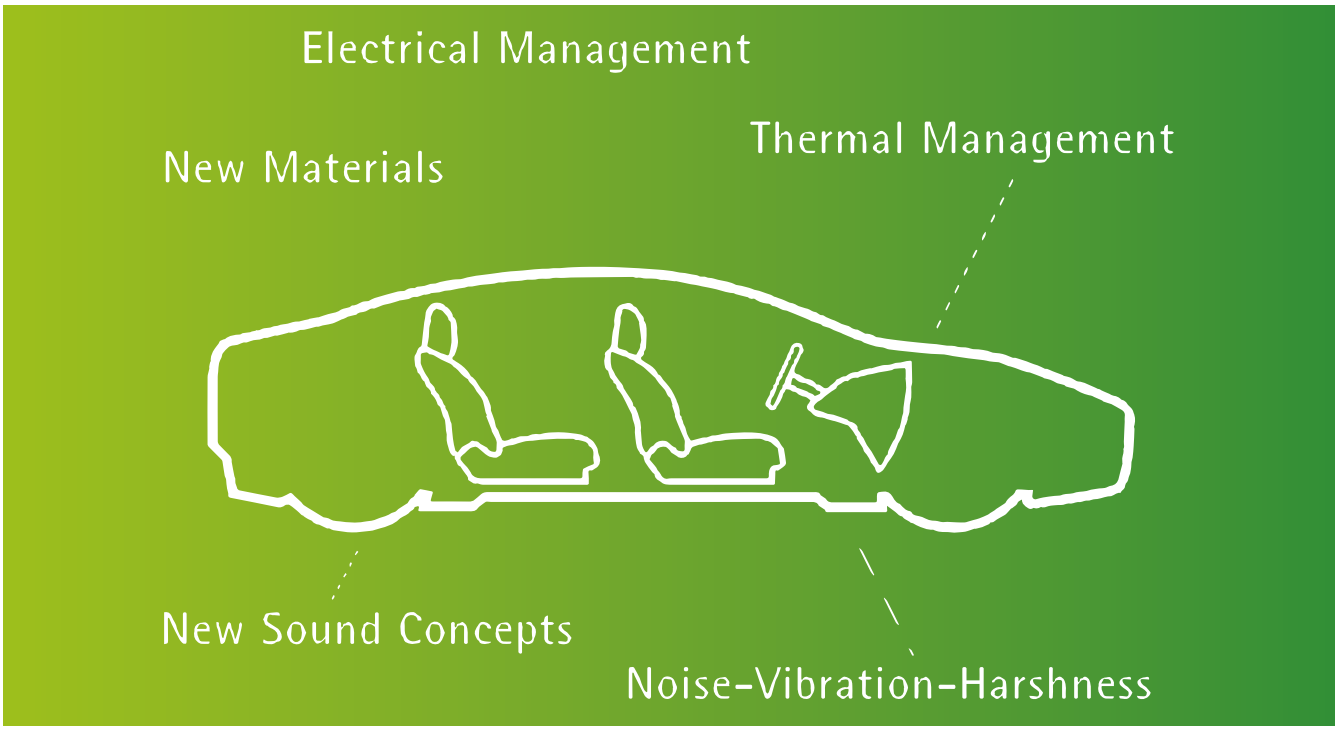
# Tapes for Electric Vehicles
## Functionality is Everything

**Nicole Ehrmann**



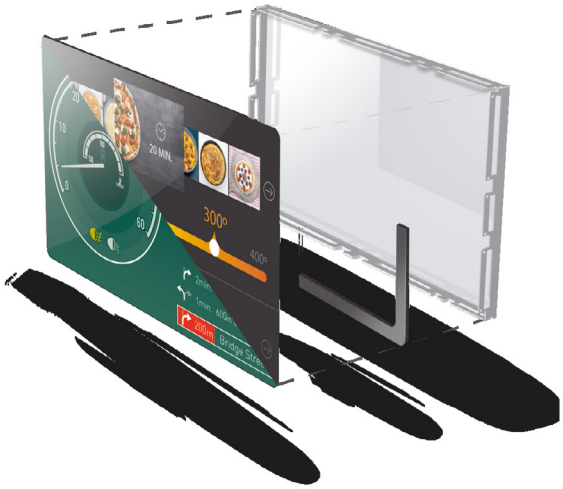

Do you also have the feeling that nearly every day we come upon new announcements about sales records of EV cars, new battery cell production sites in Europe and ambitious concepts of OEMs concerning the end of the combustion engine? The plans about zero emission-cars and driving experience, sustainability of production processes and materials used and the goal to save the world climate finally forces all players to develop new concepts to make a real difference – this time.

In the past an adhesive tape was only a very small part of a component and finally of a car and the importance of the raw materials, the construction and the function of the tape were limited. This role changes step by step. On the one hand the regulations – governmental, environmental – become stricter and on the other hand new design and function concepts on which the new electrical vehicles are based require not only a bonding function but also thermal conductivity, electrical conductivity, sound dampening or light management.

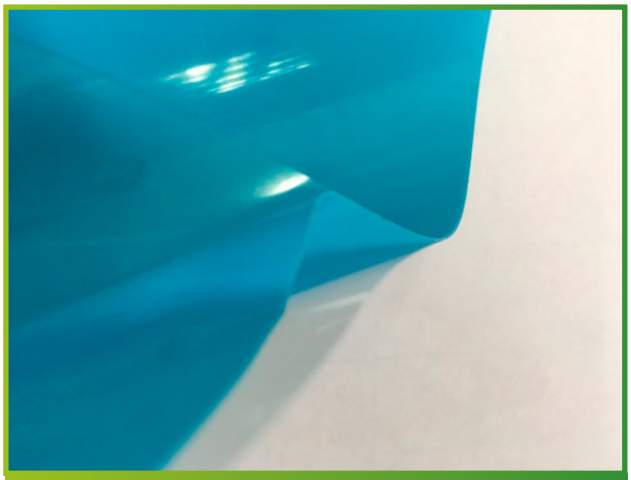
New interior design concepts which transform the car to our new living room where we can play, work and sleep include also new materials. The car windows become screens on which we can watch movies or become fully integrated in a virtual meeting room or simply surf the world wide web for information. The surfaces should be easy to clean and resistant to disinfection – and still should look nice and shiny. Part of these concepts are new acoustic equipment where simply the surface acts as a loudspeaker, more and more electronic devices that survey the driver and his behavior and attention and also the situation around the car. Radar, Lidar and IR camera systems are only a few of them. On the other side also the EV battery needs to be controlled closely to ensure the safety of the driver and the car. In short: more and more electronic components have to be integrated and they become smaller and smaller to enable this “second living room” experience.

Taking these developments into account two topics become more and more prominent: first the electrical management of each component and the correct interaction of these electronic parts. Second the thermal management when there is no more combustion engine which will produce a surplus of heat that can be utilized in the car interior. For an effective thermal management, a thermal conductive tape is one of the most practical solutions. Besides a high production reliability – in using a tape you will get a constant tape thickness and don’t have to worry about liquid dispensing of highly viscous pastes – thermal conductive tapes from Lohmann provide low thermal

resistivity values and can be applied by hand or fully automatically. The tapes have a good wetting behavior and the ability to positive fitting to the substrates. Therefore, you can reach the best thermal conductivity between the bonded parts. At the same time, you create a save electrical insulating connection.



PICTURE 2 Adhesive tape bonding in displays for optimal thermal management.



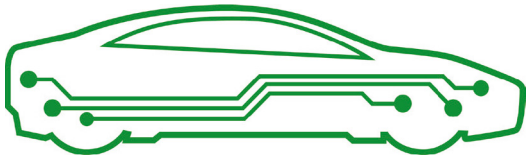
PICTURE 3 Thermally conductive tape.

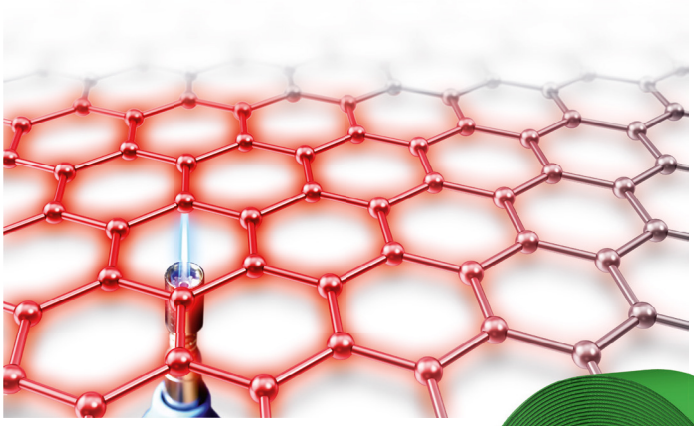
Tape companies like Lohmann who has its headquarter in Europe and also develops and produces here, creating new and innovative functional tapes that enable these new concepts and bring them to life. Searching for new raw materials that are easier to recycle, developing concepts of de-bonding and implementing new production technologies that save energy are puzzle parts of the way to new products. Lohmann for example invested in a new coating line with UV technology to focus on solvent free technology in the future. With this new coating line Lohmann reduces its carbon footprint by 3200 tons CO2. This is equivalent to the CO2 retention of 7000 trees. The solvent used in the past for the production had to be distilled for further utilization or used for thermal recycling. The coating line also enables Lohmann to provide a whole range of low-emission tapes for all kinds of industries. Not only the automotive industry has strict standards regarding emissions in the automotive interior – test methods regarding VDA 270, 275, 276 are well established – but also for industrial applications and for medical purposes adhesive tapes have to fulfil strict standards. Efficient tape design like asymmetrical adhesive use, optimized to bond to different substrate combination. The tape design can be just an adhesive layer or can include different kinds of carrier systems which can be placed at different positions inside the tape construction. Carriers can be fabrics, fleeces or films made from a wide variety of materials. For the automotive industry a whole portfolio of low-emission tapes was designed to enable and support new interior designs with new substrates.


PICTURE 4 Lohmann's LE (Low Emission) range for automotive applications.

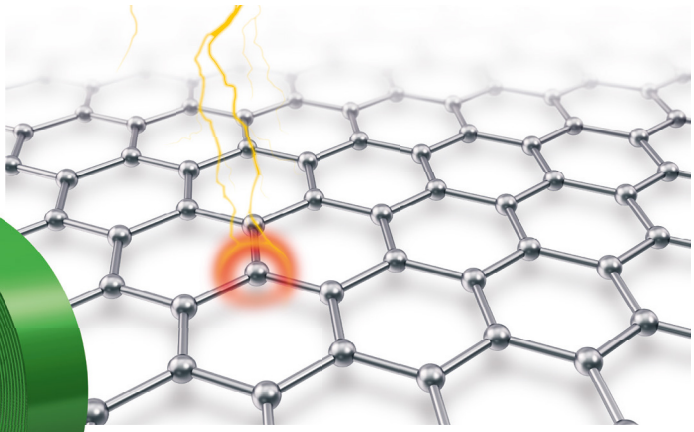
And after all the value chain may change with the new developments. In the past an adhesive or an adhesive tape was delivered to a part manufacturer and he applied the tape on the part. To shorten the supply chain and to make a production process more efficient, the tape can be applied directly after die-cutting to the respective part. Or any kind of printing process may replace the assembly of electronic parts during the ongoing miniaturization of electronic components. The handling of delicate die-cuts of adhesive tapes from one place to another will maybe promote this change in the supply chain. Also, 3D printing processes open new possibilities how to design connections which are done with a traditional adhesive tape so far. It's an interesting time to work in the adhesive industry with a lot of topics to solve and an incredible field of new chances and innovation.

**Nicole Ehrmann Senior Market Manager Transportation Lohmann**

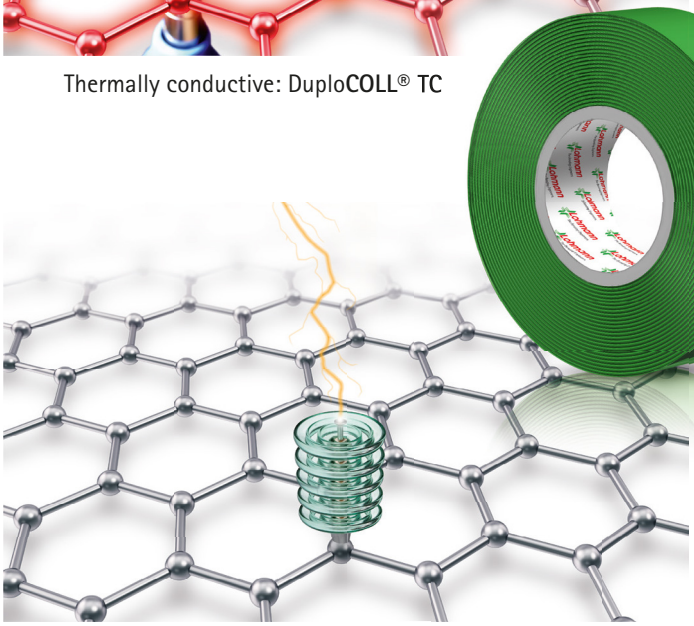




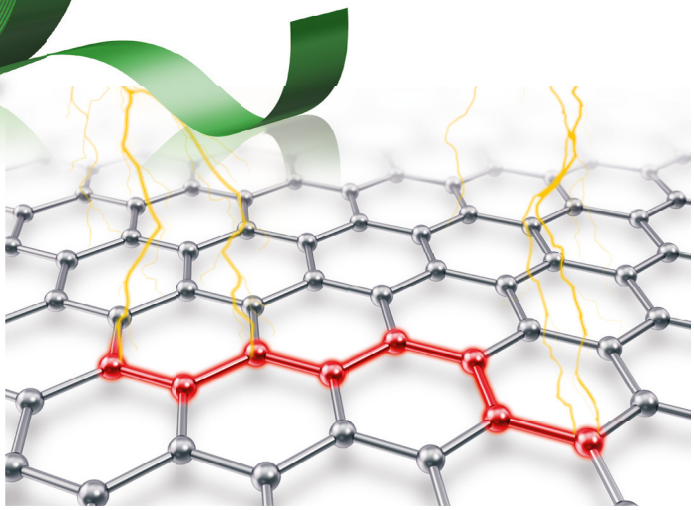
Thermally conductive: Duplo**COLL**® **TC**



Antistatic: Duplo**COLL**® **AS**



Electrically insulating: Duplo**COLL**® **IS**



Electrically conductive: Duplo**COLL**® **EC**

# More than just Bonding

## Lohmann's bonding solutions – The all-rounders for the automotive industry.

The tasks a bonding solution has to fulfill, are constantly increasing – not only in the automotive industry. During the development of adhesive tapes, more functions have to be considered than just the bonding. The new adhesives bond to low surface energy substrates, are low-outgassing and – at the same time – take over functions like thermal or electrical conductivity. The growing number of electronic devices in our new cars especially the EV ones require an excellent thermal management and a reliable electrical management that is smart and cost-efficient. Lohmann Functional Tapes offer customized die-cut solutions and can help improving your production process reliability with smart, innovative adhesive tape solutions. We develop, manufacture and die-cut each and every tape. This is called: Smart Bonding Approach.

Get in touch with our experts and find the perfect solution for your bonding challenge!

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Lohmann
*The Bonding Engineers*