

moment[®]

Mobility revolution

EJOT supports with sustainable connections

Chernobyl

Solar park makes irradiated areas usable

Flood disaster

Donation from the EJOT employees and the owner family



What will power the car of the future

The search for transparency and orientation



Dear customers and partners of the EJOT Group,

Today we present to you the autumn edition of our customer and partner magazine – EJOT moment. The main topic of this issue is electromobility, which is on the rise in many countries, including the European Union. This is demonstrated on the one hand by the sharply increasing share of e-vehicles in the registration statistics, but also by the special government subsidies of many countries, with the goal to reduce the environmental impact of the mobility sector. Discussions among friends and family often lead to lengthy debates on this topic - friends and skeptics of electromobility both have their resolute opinions on this topic. The subject is also an emotional one.

For our group the topic is exciting, as we see great opportunities for us. From charging station to battery, from power electronics to lightweight construction, which is important for increasing the range of the vehicle - EJOT solutions are in demand for many applications.

Electromobility is an example of radical change. We experience this not only in mobility or in the drive train of the automobile. I cannot remember seeing so many unexpected changes in the past few decades. A pandemic that has the whole world under control, an enormous pressure on the world's supply chains. A general manager of our group just described it as a "Happy No Year", no plastic granulate, no wire, no containers and no microchips. Who could have imagined this a year ago?

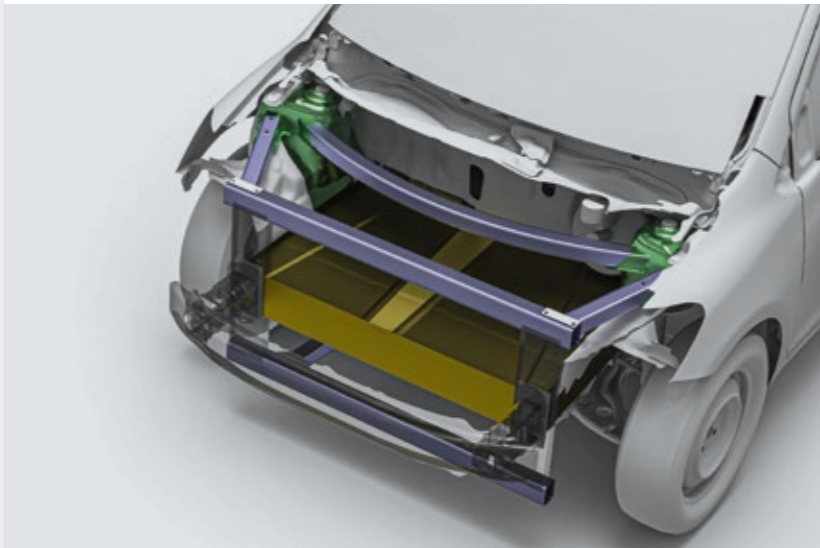
For our group it is also a time of transformation into a new legal structure of the company and into an even more extensive international setup. We will report on the latter in more detail in the spring edition of moment. Then, in the hundredth year of our company's history, we will look at the next 100 years and take matters into our own hands. I am very much looking forward to this!

Yours sincerely,

Christian F. Kocherscheidt
Managing Director



Photo: © Alfred PRACHT Lichttechnik GmbH



4 Moments

- >> Optimal connections in focus
- >> Dr. Wolfgang Scheiding new managing director of EJOT Holding
- >> Fastening advice for experts
- >> New management at EJOT in Tambach-Dietharz
- >> EJOT® wins German Innovation Award
- >> Secure direct fastening in 3D-printed parts
- >> Innovations
- >> EJOT® Iso-Bar ECO nominated for DETAIL Product Award

Title

- 8 Vehicle Drives in 2030**
The race for the best solution.
- 15 Hybrid vehicles**
The right choice of electrification level.
- 16 Sustainable Innovation at Pracht**
„WALLBOX ALPHA“ – a double charging station for electric vehicles.
- 18 Distance creates safety**
Spacers made by EJOT support fast and safe charging of electric vehicles.
- 20 Sustainability through proven joining technology**
The FDS® sealing screw for battery boxes.
- 22 New concepts in body construction**
Projects of the ACS in Attendorn.
- 26 Electric drives and battery packs with EJOT in China**
EJOT offers comprehensive service range.
Q&A: Interview with Michael Pan
- 28 USA infrastructure plan**
Billions for roads, bridges and electric vehicles.
- 30 Electromobility at EJOT**
EJOT converts its vehicle fleet.
- 31 Wall boxes – securely fastened, even on insulated facades**
Reduction of heat losses.
- 32 Solar park** makes irradiated areas usable 35 years after the Chernobyl nuclear disaster.
- 34 Look like from another planet**
In Feldkirchen near Graz, the shoe manufacturer Legero set up its new headquarters with outlet.
- 36 EJOT donation for flood victims in Altena**
Donation from the EJOT employees and the owner family Kocherscheidt.
- 38 German champion after graduating from Harvard**
Lisa Tertsch has been an asset to the EJOT team this summer.

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Optimal connections in focus

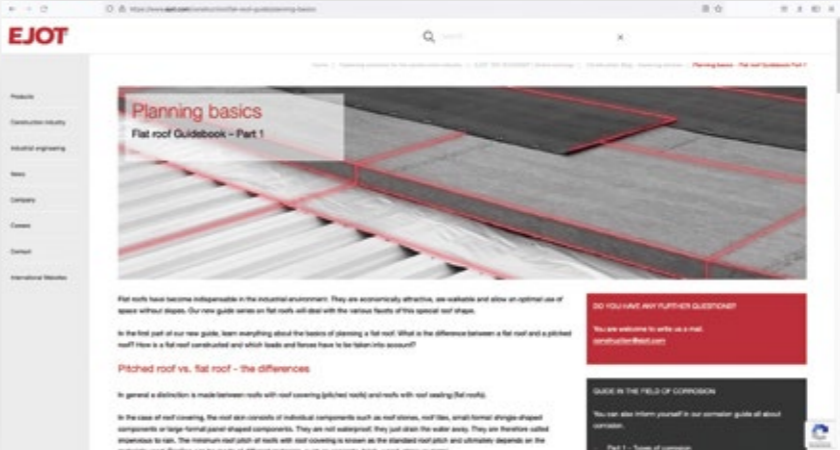
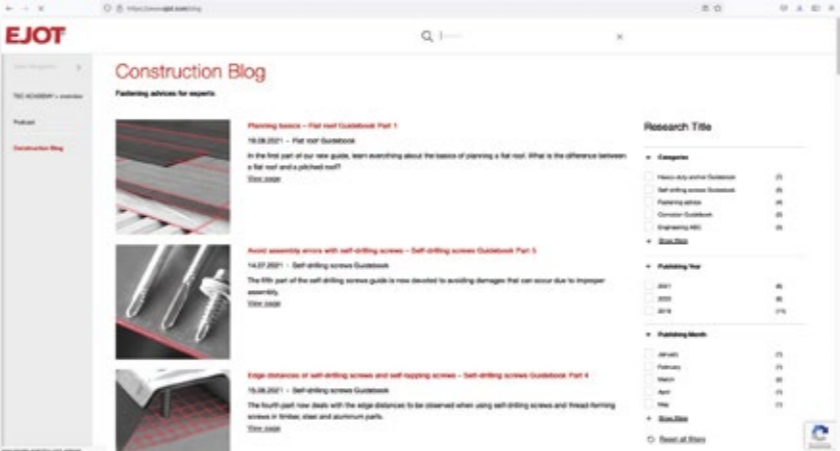
EJOT is the engineering partner for the development and implementation of reliable connection solutions for a wide range of applications. In customer discussions, new approaches and connection ideas often arise. The APPLITEC test laboratory is a central component in the implementation of these ideas. Here, the focus is on the individual component and its optimum connection design. Specially trained, qualified specialists carry out the component tests using the latest screw technology and analysis methods. Depending on the customer's requirements, the connection points can also be put through their paces using various load scenarios.



In addition to real component tests, FEM simulations open up further possibilities for designing and optimising components and screw points. Both methods, virtual or real, save valuable development time and thus costs. Based on the test results, the customer then receives documentation in the form of a detailed test report. The APPLITEC screw laboratories are an essential part of the EJOT service offer in the most important growth regions worldwide.

Fastening advice for experts

Guide series goes into the next round



The EJOT Construction Blog is part of the TEC ACADEMY section on our website. Helpful articles with tips and tricks for all areas of application of our products in the construction industry are published here at regular intervals. Do you already receive our EJOT Building Fasteners newsletter or follow us on LinkedIn, Facebook or Instagram? Then you have probably already read a reference to our latest blog post.

In addition to individual blog articles on interesting topics, there have also been short series including different guides for some time. In the past, we have dealt with various facets relating to the use of heavy-duty anchors, the subject of corrosion and useful information on the subject of self-drilling screws. The latest series of guides started in August. The topic this time: tips and tricks for everything related to flat roofs. The first part is already online on our website, further parts will follow in the coming weeks and months. Have a look! It's worth it.



You can find the [blog at www.ejot.com/blog](http://www.ejot.com/blog)



Mario Maiwald

Succession

On 1 September 2021 **Mario Maiwald** took over the management of the THREAD FORMING division at the EJOT site in Tambach-Dietharz from **Dr. Wilfried Pinzl**. Since taking over responsibility of the division in 2001, Dr. Pinzl succeeded in repositioning the screw factory in the group and developing it into a flagship of the EJOT Group. In his retirement, Dr. Pinzl EJOT will remain in an advisory role. His successor Mario Maiwald has been head of the EJOWELD division at the Tambach-Dietharz site since 2012.



Dr. Wilfried Pinzl

Responsible for sales America and Asia Dr. Wolfgang Scheiding is the new managing director of EJOT Holding since September



As a further managing director of EJOT Holding GmbH & Co KG, Dr. Wolfgang Scheiding has been in charge of sales for America and Asia since 1 September 2021. The 53-year-old has worked in various functions in the Kamax Group over a period of 20 years, in recent years as one of four managing directors with responsibility for commercial sales, application technology, product management and development as well as for the Asia region. From 2016 to 2020, Dr. Wolfgang Scheiding was Chairman of the Board of the German Fastener Association and member of the Board of the European Fastener Association.

EJOT® wins German Innovation Award 2021

After the CROSSFIX® substructure system for rear-ventilated curtain wall construction was already awarded the DETAIL Product Award in 2020, the specialist for fastening technology can now rejoice for the second time: CROSSFIX® has now also received the German Innovation Award in the category "Excellence in Business to Business – Building & Elements". The German Innovation Award has been presented annually by the German Design Council since 1953 and honours design, brands and innovation achievements of international significance.



CROSSFIX® is the first substructure made of stainless steel. The material enables a significant reduction of the thermal bridge surcharge in the system. In addition, it is suitable for accommodating horizontal and vertical support profiles and thus offers maximum flexibility during installation.

CROSSFIX®, with its unsurpassed versatility in use and design possibilities, as well as its excellent properties in terms of energy efficiency, exactly meets the current requirements in ventilated curtain wall construction", says Mark Dreyer, EJOT sales engineer.

"We are very proud that our product has received a prestigious award now for the second time. This confirms for us that

INNOVATIONS

The new JZ5-6.3: A strong screw for the hardest steels

In the construction of particularly large buildings, the trend is towards ever larger spans of steel beams. A high-strength material is used in order to ensure a reliable stability of the buildings. The JZ5-6.3 bi-met self-tapping screw is ideally suited for this material due to the hardened thread-forming zone and the associated particularly high process reliability when thread-forming. The new JZ5-6.3 is the strongest EJOT screw to date and meets the increasing demands on the market.



JC2 Plus: Next generation concrete screws for higher load-carrying capacity

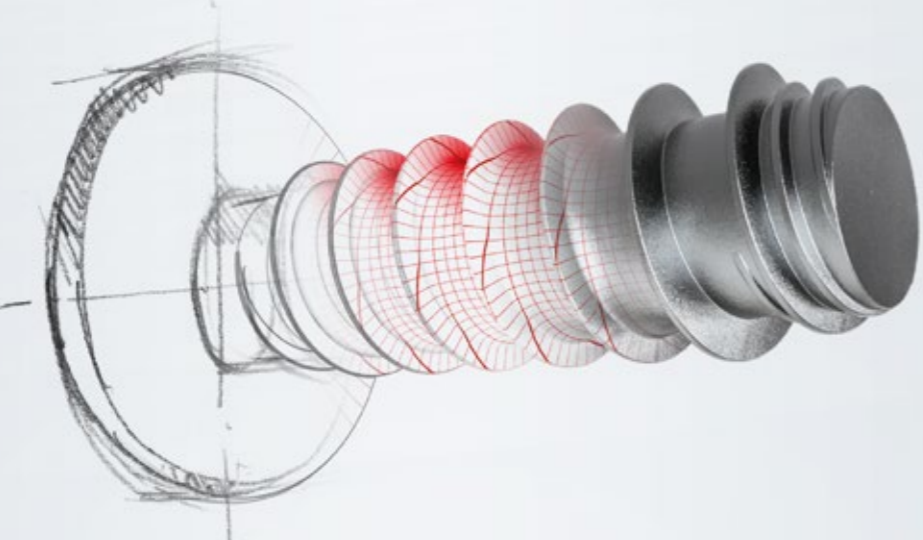
With the JC2 Plus, the proven JC2 concrete screw has got an even more powerful successor. The load-bearing capacity values in cracked and non-cracked concrete have been significantly increased compared to the previous model. Thanks to the optimised tip geometry, the new JC2 Plus is still easy to assemble. With the newly introduced size of 14 mm, the portfolio has also been expanded upwards.

Good to know: the new European Technical Assessment (ETA) 21/0020 regulates two installation depths, which means that the JC2 Plus concrete screw offers more flexibility for demanding applications.

Secure direct fastening in 3D-printed parts

3D-printed moulded parts are becoming increasingly important in the design of components. Similar to injection-moulded parts, these should enable reliable direct fastening. Together with the compound manufacturer Lehmann&Voss&Co. EJOT carried out a screw test with the EVO PT® screw. In the various test series, it was possible to prove that process-reliable direct screw connections in printed parts can be realised very well with the EVO PT®.

The 3D printed parts achieved strengths that are comparable to injection moulded parts. In particular, the new thread forming zone of the EVO PT® which enables a tightening torque independent of the screw depth, proved to be particularly advantageous in the screw connection tests. Reproducible screw connections in 3D-printed parts can thus be reliably implemented and future series applications with the EVO PT® screw are possible without restrictions.



EJOT® Iso-Bar ECO nominated for DETAIL Product Award



Every year the architecture trade magazine DETAIL honors innovative building products with this award. The innovative system for greening ETICS facades with the EJOT® Iso-Bar ECO is nominated in the "Roof and Facade" category. Please support us until November 30th with your vote.



Vehicle Drives in 2030



Does the use of electromobility really usher in the brave new world, or are special hybrid concepts the better solution? Will diesel and petrol engines with low-emission fuels prevail in the end, or a drive system powered by hydrogen?

>> Text: Prof. Dr.-Ing. Wilhelm Hannibal

The race to find the best solution is in full swing. One thing is certain: it will not be the one drive technology that is used to implement sustainable mobility concepts. Road mobility will be very complex in 2030 and beyond.

Public discussion in the transformation to low-CO₂ vehicle propulsion

In the public discussion, the internal combustion engine is largely a discontinued model. There is euphoria in the press and in political discussions that purely electric drives for passenger cars alone represent the drives of the future. Automobile manufacturers also postulate that e-vehicles will soon displace internal combustion engine drives.

But what are e-vehicles? Do hybrid drives, which can be driven purely electrically and/or the combustion engine alone, also count among electric vehicles? A look at the portfolio of vehicles on offer shows that there is a wide range of drive concepts for

sale. Customers only have a problem with the prices for the brave new world, as they want a vehicle with the most features possible while still remaining within their budget, and therefore stick to vehicles with a pure combustion engine drive. With the political financial support for pure electric vehicles (BEV: Battery Electric Vehicle), the BEV market in Germany is to be pushed further until the end of 2025. But how long does politics want to intervene in the market in this way? For example, after subsidies stopped in China at the end of 2019, BEV sales have fallen by more than 30 per cent. E-fuels and now the hot topic of today – hydrogen as an alternative fuel source – are added to the discussion, so that the customer is utterly confused when it comes to their purchase decision.

Forecasts and registration figures

For the year 2050, renowned analysts forecast an average share of 20 – 25 per cent BEV drives, approx. 60 per cent will be hybrid and approx. 15 – 20 per cent will be combustion engines

(see Figure 1). Although the number of registrations of plug-in hybrids and BEVs is steadily increasing, this share is still very low compared to the current annual number of approx. 3.5 million new passenger car registrations. The reasons for these rather low registration figures are complex and the majority of customers are

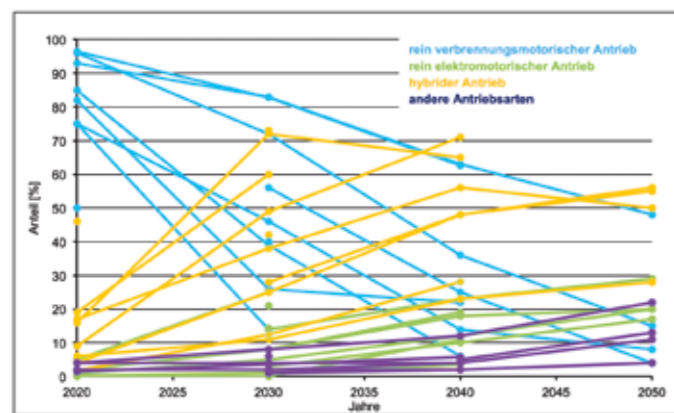


Figure 1: Trend development of different drive types

not yet ready to come to terms with the disadvantages of these technologies. These include, for example, the lack of charging capacity, limited range, limited battery life, BEV vehicles that can potentially be nearly impossible to extinguish in the event of an igniting battery due to a cell defect, and the high cost of parallel hybrid vehicles, which are primarily offered by German OEMs.

The dilemma of energy transition

In order to achieve the 1.5 degree objectives of the Paris Climate Agreement, don't we all have to change abruptly and embrace the



Figure 2: New registrations of electric vehicles in Germany for the year 2020

new drive technologies? This question can only be answered with yes in order to move towards CO₂-neutral mobility.

Ultimately, however, the measures necessary to achieve this goal are not apparent to us citizens. In any case, the new mobility concepts cause a significantly higher demand for electricity. But how should the electricity be produced? The elimination of nuclear and coal-fired electricity and the renunciation of fossil fuels will not be possible without massive support for the expansion of wind and solar energy. And if the expansion of wind energy receives fierce resistance from the population, and politics does not want to offend the citizens, we cannot get out of this dilemma.

Lack of standardisation with regard to CO₂ determination

But then what are the sensible innovative drive technologies? And how are CO₂ balances supposed to be evaluated between pure driving operation in the test (tank to wheel) and the consideration of the complete production chain of a vehicle up to the complete recycling of all vehicle components (cradle-to-cradle). For pure emissions in the registration test, the BEV vehicle with a fully charged battery is exemplary because it does not emit any CO₂. The combustion engine, on the other hand, emits CO₂ because it runs on fossil fuel. But from a cradle-to-cradle perspective, this balance looks completely different. Depending on the country of origin of the battery production, e.g. China or Europe, and depending on the primary energy used for the production of the vehicle (coal, nuclear or regenerative electricity), a BEV can have a significantly worse CO₂ footprint under certain criteria, e.g. annual mileage (see Figure 3). Since there are different scientific studies for balancing this, reliable standards should urgently be developed to better assess the comparability of a CO₂ Footprint. Furthermore, the investments required for the expansion of the electricity grid are not yet included in the CO₂ footprint balances. Since assumptions, such as for the durability of a battery, are based on about eight years, but in principle we do not yet have any experience in the field, the discussion is likely to remain controversial.

Politicians must learn from this and engage in this specialist discussion.

It is unacceptable that a tank-to-wheel approach should be the main political direction and that innovative alternatives should be "out of discussion". If barriers to the expansion of wind turbines are also built up, things will not improve when the Paris climate change objective of 1.5 degrees Celsius is achieved.

Communication regarding the implementation of sensible mobility concepts or drive concepts in vehicles between politics, the automotive industry and science should be significantly intensified so that more sustainably reliable drive concepts can also be implemented together. In the past, the automotive companies have developed numerous technical solutions for BEV and hybrid concepts, although market penetration in large-scale production has not yet been achieved.

In particular, low-cost solutions such as plug-in hybrid vehicles for large-scale production in the 20,000 – 25,000 euro segment,

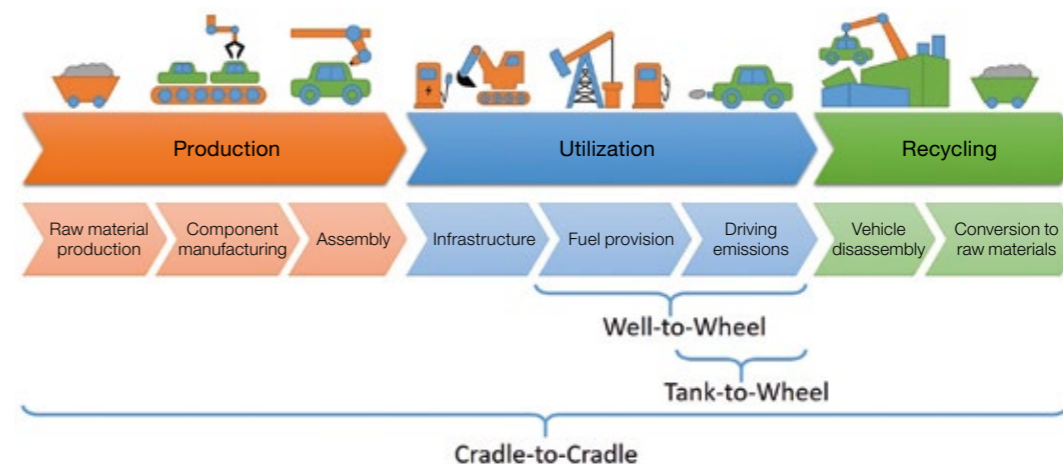


Figure 3: Definition of tank-to-wheel versus cradle-to-cradle balancing for determining the CO₂ footprint in the manufacture, use and recycling of vehicles

which also enable purely electric driving of approx. 60 – 90 km, are currently completely lacking – at least in the range of products offered by German car manufacturers. In addition to Tesla's pure BEV vehicles, Volkswagen in particular is focusing on all-electric powered vehicles.

In 2030 we will have a mix of diverse drive concepts in motor vehicles

Depending on the customer's requirement profile, different technologies will be used, although the combustion engine will continue to be used in various expansion variants.

The average car price across all vehicle classes in Germany is currently just over 31,000 euros and the annual mileage is approx. 13,500 km. For the majority of vehicles sold, the price segment around 20,000 euros is decisive. It must therefore be possible to offer BEV and hybrid drives for this, depending on the driving profile requirements. Since the majority of customers only own one vehicle and also visualise longer journeys – e.g. a trip to Lake Garda on holiday – a BEV drive is not yet suitable due to the lack of charging options and the range. If it were then a plug-in hybrid, the question arises as to what this drive concept will look like.

The current hybrid drives, which are mainly offered by German automobile manufacturers in the less cost-sensitive vehicle market, provide for parallel operation of electric motor and combustion engine. This allows performance to be increased, and the combustion engine is taken over from an existing modular system almost



unchanged. Unfortunately, this is not a cost-effective solution, so it is rather unsuitable for the volume market. In order to get into the price range of 20,000 euros, a series-operated hybrid drive with a constructively simple combustion engine is more likely to be the better choice. Similar to the drive concept of the BMW i3 range extender vehicle, the combustion engine then charges a much smaller battery than in a pure BEV vehicle, from which an electric motor drives the vehicle. In order to sell such a solution at a profit, the vehicle concept must be completely redesigned.

For cost reasons, the combustion engine will then be "refined", i.e. it will only run in an efficiency-optimised speed range of around 3,000 revolutions. All expensive features such as variable valve train, turbocharging or multi-valve technology will no longer be necessary. The manufacturing costs for what might then be a simplified three-cylinder gasoline engine are extremely low. With a compact, approx. 15 kWh small battery, the drive can travel purely electrically with a range of approx. 80 km. Since the average daily driving distance in Germany is less than 60 km, the combustion engine does not need to be started during normal daily operation. In this respect, the internal combustion engine efficiency then plays a subordinate role. If the internal combustion engine is then operated with the renewable fuels that are available in the long term, this concept will be significantly superior to a BEV drive in terms of perspective. For the 2,000 to 3,000 km per year for which the combustion engine is still needed on average, the additional costs for an e-fuel, that is, for example, one euro more expensive, amounting to around 150 to 220 euros, play a subordinate role. Because that way it is possible to drive emission-free and CO₂-neutral in the inner cities and still get to Lake Garda on holiday via Brenner Pass. For the implementation of such a concept, large numbers of units are needed to achieve the cost targets, and courage is needed to develop a new vehicle. With restrictions on a maximum top speed, unnecessary additional equipment and a variety of versions, such a concept can also be very profitable.



Prof. Dr.-Ing. Wilhelm Hannibal

Mechanical engineering studies at the University of Hanover, Graduated in 1986, // then Development Engineer at Audi in Neckarsulm, Team leader pre-development multi-valve technology and technical calculation // 1993, Doctorate at the University of Stuttgart with Prof. Dr.-Ing Ulf Essers at the Institute for Vehicle Technology Stuttgart, // 1993, Project manager for the V8 multi-valve petrol engine // 1995, Head of technical calculation at Neckarsulm // Since August 1995 Professor for design theory and CAx training at the South Westphalia University of Applied Sciences in Iserlohn // Course spokesman for automotive engineering // 2001 Founding of enTec Consulting GmbH as co-owner and managing director, Field of activity: development of innovative technologies in the combustion engine and the drive technology of motor vehicles// Until 2020 Initiator and scientific director of the MTZ-Conference "Charge exchange in the combustion engine".

Prospects for battery development

Electrified driving is not possible without a battery. But how big

should it be? Due to its range, a BEV vehicle requires a large battery in which the criteria of power density, mass and safety lead to volume compression. In individual cases, the compression resulted in short circuits in individual cells, leading to devastating vehicle fires. Statistically, the number of fires involving lithium-ion batteries that meet today's standards will increase with the growth of electric vehicles. For these reasons, manufacturers in China are required to take back old batteries and recycling is currently prohibited. If, as with the serial hybrid concept proposed in the last paragraph, smaller batteries with e.g. 15 kWh are used, the volume compression can be designed to be less compact and the insulating layers separating the cells can be made thicker, which reduces the risk of short circuits and thus significantly reduces the risk of fire. However, no major development advances in large-scale battery technology are expected in the next few years, as battery production capacity is only now being built to accommodate the hoped-for increase in BEV vehicles. Nevertheless, billions in research funds are being invested in advancing battery technology, which is an absolute "must".

E-Fuels, the perspective on the continued use of the combustion engine

The problem is not the internal combustion engine, but the fuel. Efforts of various kinds to produce synthetic fuels economically are currently under development; an extremely interesting approach to the production of e-methanol is being pursued by the Siemens Energy and Porsche AG groups with the "Haru Oni" pilot project in Chile [4]. Porsche wants to use it to save the classic drive of its classic 911 model series. In 2022, 130,000 litres, and in 2026, 550 million litres of synthetic fuel will be produced annually. In the process, green hydrogen will be produced via the excellent wind conditions by means of wind turbines through electrolysis. In a further step, CO₂ will be extracted from the air to produce synthetic methanol with the hydrogen. Following and evaluating the e-fuel production methods up to market readiness remains exciting.

In the medium term, a hydrogen-fuelled drive system will also compete with a BEV drive system in commercial vehicles.

Hydrogen is another propulsion perspective for vehicle engines. If it can be produced economically from renewable sources, it is available as an alternative for fuel cell propulsion as well as for combustion in an internal combustion engine adapted for this purpose. The use of a fuel cell in passenger cars is not expected in large-scale production in 2030 due to the relatively high production costs of the drive module. For many years, the automotive industry has been researching an economical implementation in the passenger car volume segment. The few series applications in passenger cars from Korea and Japan will not change this due to the high acquisition costs.

The situation is different in commercial vehicles. Concepts with fuel cells are already in use worldwide in the heavy-duty market. The investment costs are more likely to pay off, and hydrogen can also perfectly replace diesel as a fuel with its pollutant load



for inner-city operation with commercial vehicles. Sweepers, construction vehicles, garbage trucks, buses and trucks of all kinds in inner-city operation will contribute significantly to improving air quality. In public transport, the fuel cell drive will compete with a pure BEV drive in bus operation. Concepts already exist in cities such as Hamburg to convert bus operations to purely electric driving. The entire route network has been adapted in terms of planning, and buses can be slowly recharged in the depots overnight without the network capacity collapsing.

The extent to which fuel cells will be widely used in long-haul truck operation in 2030 depends very much on the availability of hydrogen and the infrastructure of filling stations. The development activities in the fuel cell sector are enormous. Numerous cooperation agreements between their producers and commercial vehicle manufacturers have been concluded strategically in recent years. The combustion engine in commercial vehicles also offers excellent prospects for CO₂-free combustion of hydrogen. It will be interesting to see how this dual path will present itself in competition. In 2030, the hydrogen drive will probably be established in commercial vehicles. Only the percentage compared to the diesel engine drive is currently difficult to estimate.

Conclusion

The drive technologies in 2030 will differ depending on the requirements profile of the vehicle customers. In order to make urban driving as pollutant-free as possible, the aim is to use BEV drives for cars or to have sensible hybrid drive solutions ready. This requires enormous investments for charging stations, without which this scenario will not work. In the big cities and megacities, this is hardly conceivable due to the population density with passenger cars, so electric driving is more likely to take place with e-bikes and public transport with buses and subways to ensure the mobility of the population. At the same time, a large part of the mobility will take place with conventional bicycles, as is already the case in Copenhagen on well-developed bicycle lanes.

The extent to which the internal combustion engine will be politically banned from the cities can hardly be estimated now, because the old stock of vehicles alone is enormous. There is certainly a great understanding among the population to address climate change and it will continue to increase in view of climate catastrophes. Fossil fuels are the cause of the CO₂ problem, and these are not only used in the combustion engine. Politicians must succeed



in seeking sensible compromises as a whole in order to achieve the Paris climate goals. The car manufacturers should adapt to this compromise consensus and offer concepts beyond the radicality of betting on the “BEV” card. The plug-in hybrid, which has been further improved in terms of CO₂ emissions, will become mainstream. There is a lack of cost-effective offers especially in the compact car class, which will continue to be the main focus of new registrations. Should these offers be missing from the European car manufacturers, this market segment will be filled with Far East solutions.

The importance of e-fuels will play a greater role in the future. However, Germany is not the location where wind and solar energy can be so efficiently converted into electricity to produce fuel. The CO₂ footprint consideration will have to be oriented towards the cradle-to-cradle accounting. The transformation towards efficient mobility in 2030, which must also be implemented in a socially acceptable way, will not work without the customer. Corona has taught us that scientific support is needed in dealing with the crisis situation.

Politicians, business and science have been well-advised to advance this process in an open-ended manner via a task force that is as neutral as possible and that is to be jointly convened in the long term, and to communicate in-depth information on a large scale to the population about the possible drive scenarios. **E**

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Hybrid vehicles

The right choice of electrification level and battery size

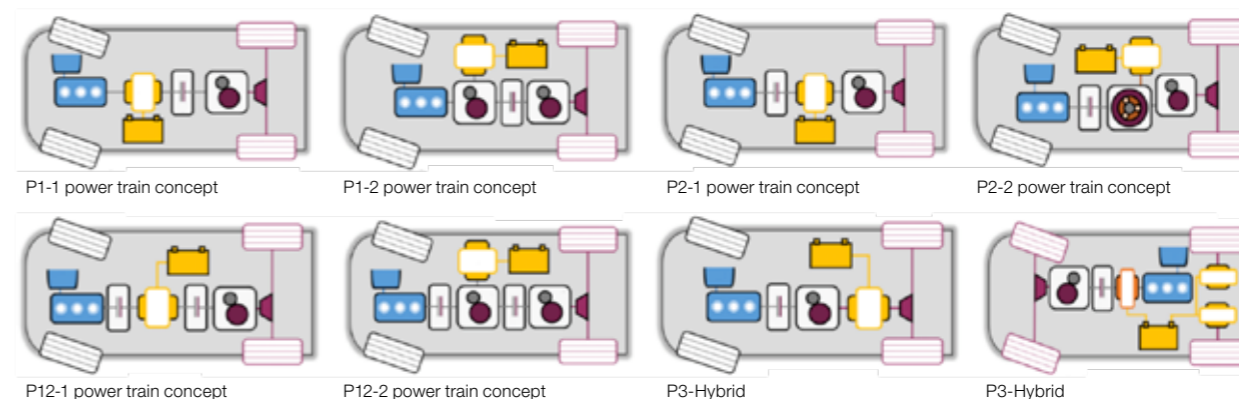
>> Text: Prof. Dr.-Ing. Wilhelm Hannibal

By definition, a hybrid vehicle is powered by at least two drive sources. As a rule, these are an electric drive and an internal combustion engine drive. If both drive sources are used simultaneously, it is a “parallel hybrid”. This type of drive is most common in Germany, especially in high-priced vehicles. A “serial hybrid” is a drive in which the drive energy comes solely from the battery, which feeds the electric motor drive. If necessary, the combustion engine switches on and charges the battery. It is not connected to the drive axle. These concepts are rarely found in large-scale production. In some cases, this technology is referred to as “range extender” drives, whereby with an electrically achievable range of approx. 120 km, the combustion engine then supplements the range. A “power-branched hybrid” is a concept in which the combustion engine delivers part of its power mechanically connected to the drive axle and additionally drives the drive wheels with part of its power via a motor-generator combination, operating as an electric motor. This allows the combustion engine to be operated in a speed and load range with good efficiency. Furthermore, there are also hybrid drives without plug-in functionality – mainly coming from Japan – with a small battery for a very short electric range. The combustion engine, as the main drive source of the vehicle, charges the battery, which means that in certain load cases – especially in urban operation – this concept results in consumption savings compared to pure combustion engine operation. The battery cannot be charged separately with this type of drive. However, only the drives described above that have a plug-in functionality in order to use regeneratively generated electricity for charging the battery make sense. What all hybrid drives have in common is that the energy released during braking of the vehicle can be used for recuperation, i.e. for charging the battery.

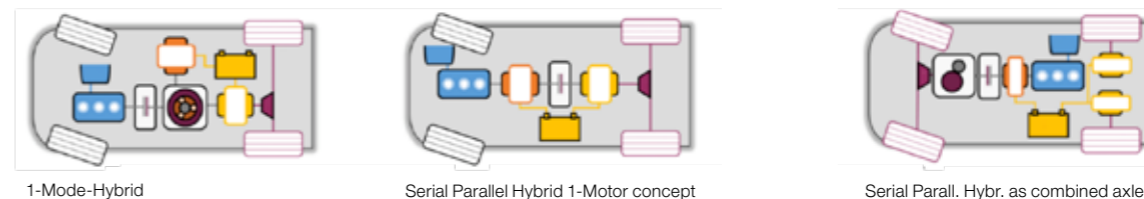
The variety of different hybrid drive concepts is hard for the customer to keep track of. The figure shows an excerpt of possible technical concepts that are currently under development. As a rule, customers orient themselves towards one car brand in the hope of being offered a suitable hybrid concept there. In the premium segment, however, where mainly high-performance parallel hybrid vehicles are offered, only expensive vehicle concepts are found. Low-

cost plug-in hybrid drives with which one can drive about 60 to 80 km a day are not in the portfolio of the OEMs. In order to keep the costs for an electrified vehicle in the compact car class – i.e. in the volume segment – as low as possible, the manufacturers rely on a purely electric drive with all its advantages, but also with the disadvantages that are unacceptable for most customers, such as a lack of range etc. **E**

Parallel Hybrid



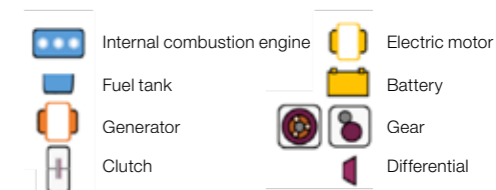
Power split hybrid



Serial Hybrid



Explanation



Sustainable Innovation at Pracht – a perfect team with EJOT

Some interesting parallels can be found between the specialist for innovative lighting technology Alfred Pracht Lichttechnik GmbH, based in Dautphetal-Buchenau in central Hesse, and the EJOT Group in Bad Berleburg. Both family-owned companies look back on a history of almost one hundred years and have developed from humble beginnings into global innovation leaders in their markets.

>>Text: Heinrich Georg Homrighausen



Photo: © Alfred PRACHT Lichttechnik GmbH

The absolute will to achieve performance and quality leadership applies equally to both companies and manifests itself in a saying by Alfred Pracht, owner of the second generation, who launched the first Pracht luminaire in 1953: "There will never be any compromises in the quality of my Pracht luminaires" (source: www.pracht.com).

And ultimately there are also certain parallels between the PIT (PRACHT INSTITUTE OF TECHNOLOGY) and the DIGITALUM Wittgenstein GmbH, which 14 other shareholders founded together with the EJOT Group. Investments in the qualification of the employees and in the cooperation with scientific partners secure the future of the company and are a component of the respective strategy.

The success of a diversification strategy of the Hessian lighting experts is also noteworthy. They recognised at an early stage which market opportunities the electromobility environment offers and how to surprise the market with the virtues of innovation, quality, experience and unique positions. Ultimately, the success of the spread of electromobility depends largely on whether it is possible to install sufficient private and public charging points. And these, of course, should also be eligible for subsidies and equipped with maximum safety.

The object of surprise for the strategists at Pracht is called "WALLBOX ALPHA" and is, in simple terms, a double charging point for electric vehicles. No further connection box is required for a second vehicle to be charged. The manufacturer promises



Photo: © Alfred PRACHT Lichttechnik GmbH

these two charging points with only one supply line, among other things also with the support of intelligent charging management, specially developed safety solutions, as well as simple installation and maintenance.

The application engineers from EJOT and the development team from Pracht have known each other for more than a decade. Connection tasks in the most diverse Pracht luminaires, for example, are solved with the help of PT®, DELTA PT® and ALtracs® Plus screws. As a result, the connection challenges of the WALLBOX ALPHA were also tackled as a team and implemented after extensive tests and calculations.

The task was to connect the actual box with the electronics and the add-on parts by direct fastening with DELTA PT® screws into thermoplastics. The unit of box and fastening element must withstand various forces over its entire service life, of course also outdoors and under the most varied temperature conditions. The cables are pulled, the cables are placed on the box, there can be loads on the connection through the connection cable as well as vandalism or rough handling. The situation is aptly described in the WALLBOX ALPHA product flyer: "high-quality and durable materials guarantee a long service life".

After the appropriate sample selection, determination of predicted values and tests on the customer's components. DELTA PT® 40 screws with a nominal thread diameter of 4 mm were selected and successfully screwed in place.



The customer's sales figures show that their technical and economic concept is very successful, the electrotechnical dealers and specialist companies could be convinced and the connections with the EJOT® screws are perfectly suited to the high requirements of this construction. Or, as Pracht puts it: "this is how uncomplicated charging works in everyday life".

E

Distance creates Safety

Spacers from EJOT support fast and safe charging of electric vehicles

>>Text: Andreas Blecher



The acceptance of electrically-powered vehicles as a part of tomorrow's mobility depends largely on two factors – the range of electric vehicles and the speed of charging process. In battery development, technological advances that lead us to expect a significant increase in range in the next few years are emerging. Even with the charging technology, charging times that are no longer so far away from normal refuelling processes are already possible – if you also factor in the enjoyment of a coffee or something similar into your time planning.

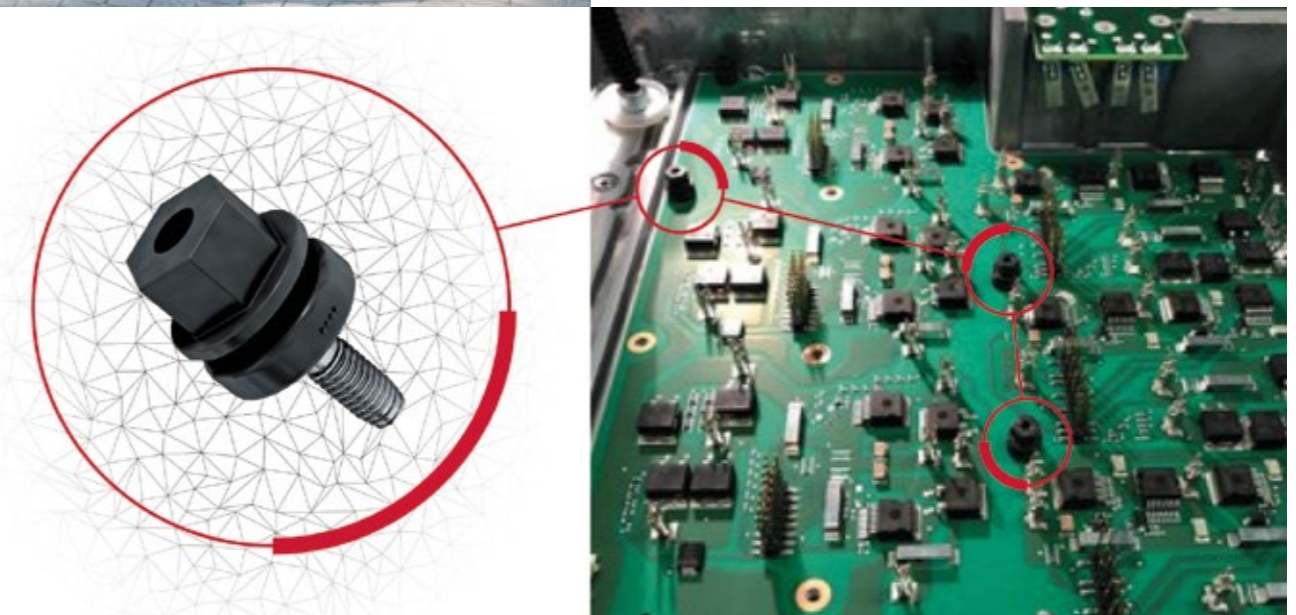
These fast charging processes are technically challenging for the entire charging infrastructure, especially inside the vehicle. The

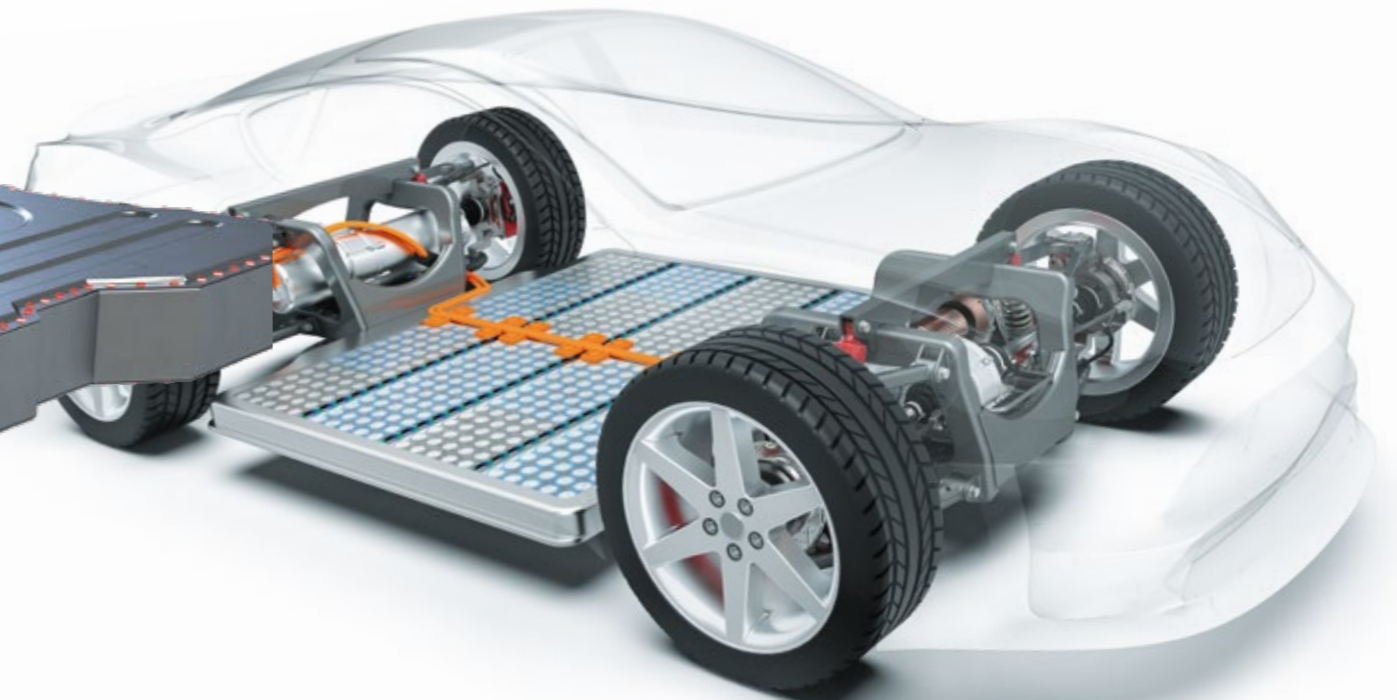
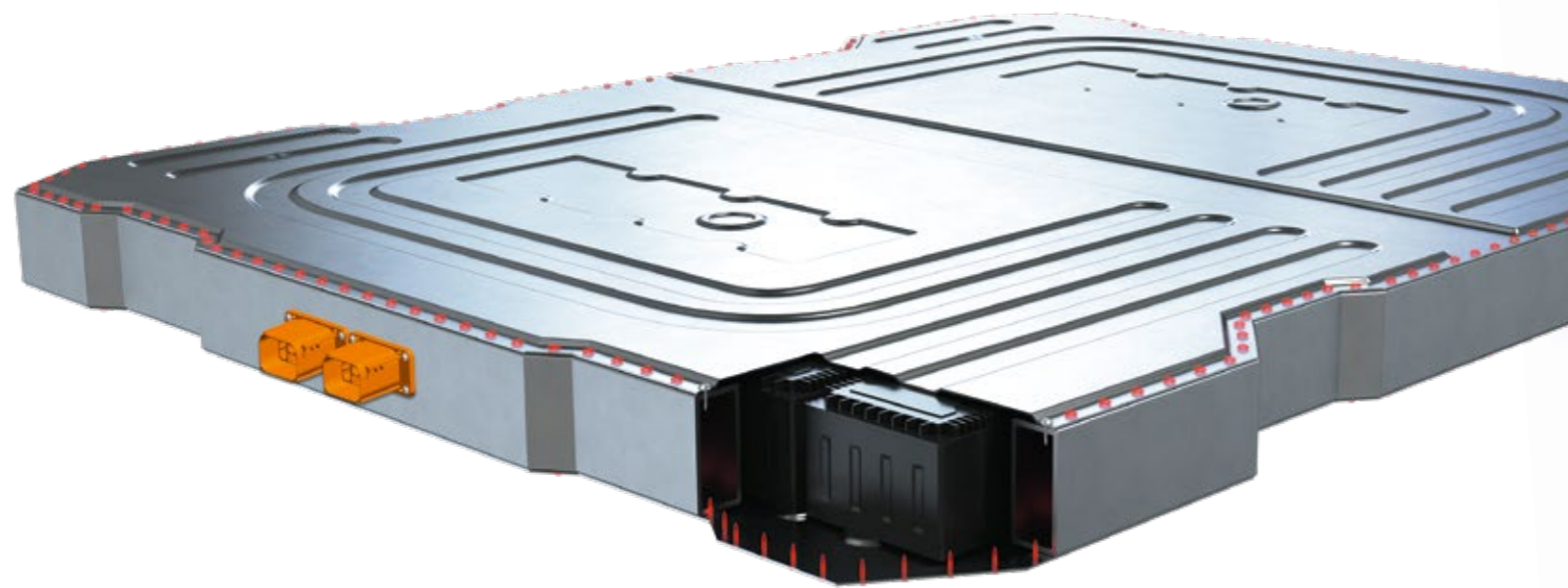
central component is the so-called on-board charger, a charging device used to charge the batteries of the electric vehicle. This die-cast aluminium box, about the size of a shoe box, ensures that the charging process takes place quickly and safely. All components of the on-board charger must permanently withstand the highest loads. This applies in particular to the integrated battery management system, the internal printed circuit boards of which have to be electrically decoupled from one another.

In many on-board chargers that are in use, this decoupling is implemented by so-called spacers that are inserted between the individual circuit boards. These spacer blocks consist of an ALtracs® screw with a plastic extrusion coating on the head. These metal-plastic combinations are an EJOT specialty and always designed for the customer's individual application. These element, called EJOSYST®, can take on a wide range of functions, and there are almost no limits to their use in terms of design.

In this application, the EJOSYST® component ensures a precisely defined distance between the circuit boards of the on-board charger. During assembly, the first printed circuit board is screwed into the die-cast aluminium using the ALtracs® self-tapping screw thread. The next circuit board is then screwed directly into the hole in the plastic that is sprayed on at the head with a DELTA PT® screw. The EJOT products built into the application meet, among other things, the special requirements of high-voltage technology with its strict safety regulations and guarantee the highest assembly safety and performance.

The high technical demands of this application are also made clear by the technical requirement for a dielectric breakdown strength of 4 kV, both from circuit board to circuit board and for the screw connections. This dielectric breakdown strength is 100 percent tested at EJOT during production. **E**





Sustainability through proven joining technology

FDS® the flow drill screw from EJOT for battery housing applications – reliable, cost-saving and resource-friendly

>>Text: Altan Bülbül

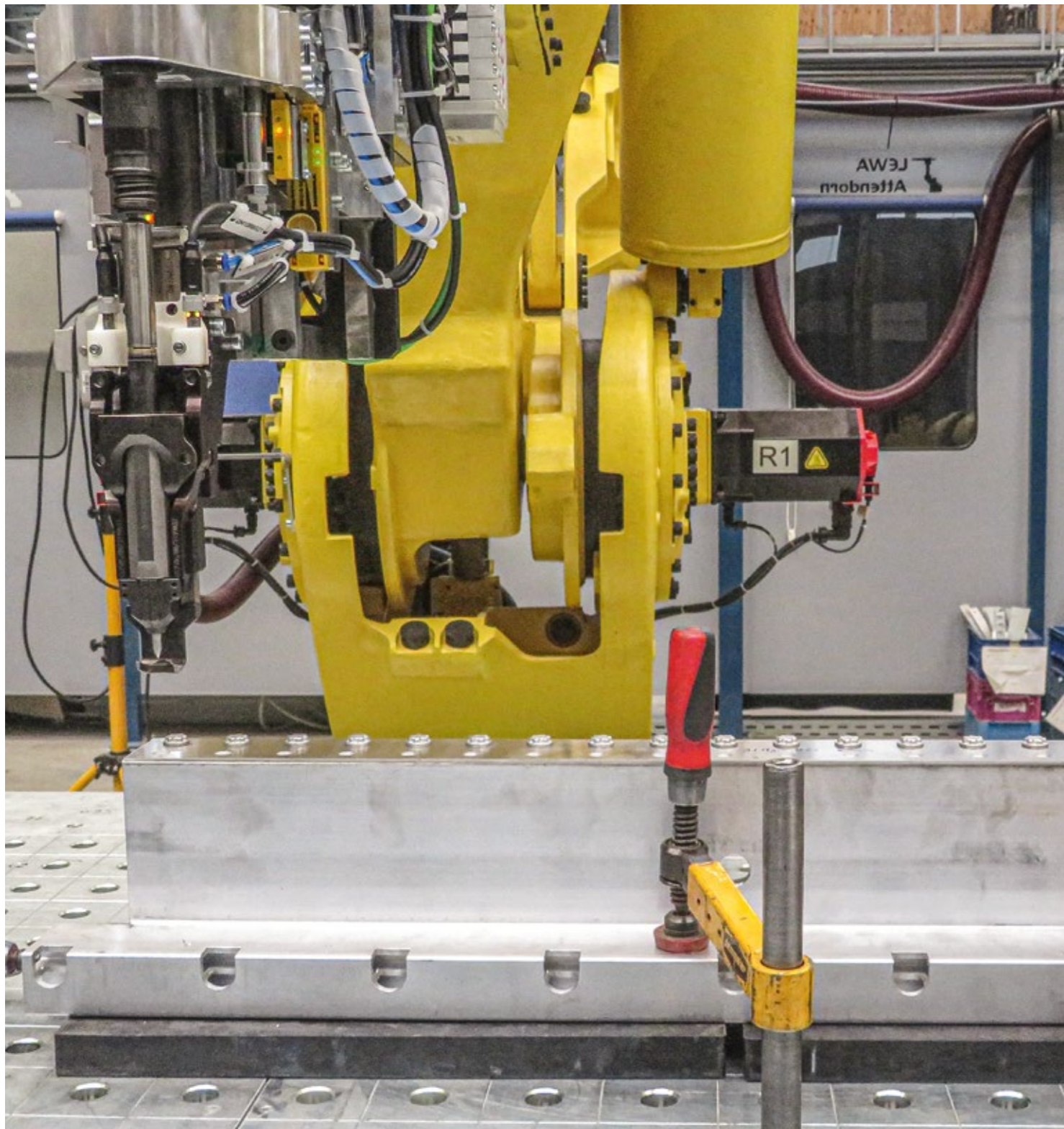


It is well known that the requirements for battery housings in electric vehicles are complex. The challenge for manufacturers is to develop housing systems that take into account aspects such as crash safety, corrosion resistance, fire protection, thermal management and recyclability. A material selection that is appropriate for the application and production must be made accordingly. The components currently predominantly used for this purpose are usually made of extruded aluminium profiles and die-cast or steel profiles.

Special technologies are used for the joining tasks, as the processing must be carried out with one-sided accessibility. Important requirements for the joining technology, are, for example, moderate process temperatures so that the functionality of the seals used is not impaired, a dismantling-friendly solution for maintenance and recycling purposes, and a sufficient sealing function at the joints. The EJOT FDS® has proven itself in applications for battery housing assemblies over the past years. The flow drill screw known in the automotive industry was already developed by EJOT at the beginning of the 1990s and introduced to the market for joining technologies in body shell construction under the brand name EJOT FDS®. Since then, this technology has been continuously developed and applied billions of times in various vehicle platforms of automotive manufacturers. Global availability is ensured by international EJOT locations and FDS® licensees. In the field of housing assembly, the EJOT FDS® is used for connecting the underbody group, the cooling floor system or the battery cover. For the battery lid connection, an FDS® variant with a loss-proof aluminium sealing washer is used.

This head-sealing FDS® has proven to be very robust against thermal and corrosive loads in series applications. The interior of the battery housing is protected from moisture and dirt and the screws can be loosened for maintenance and recycling purposes without any problems. Another advantage of using this joining element is the potential for cost saving. With the EJOT FDS® sealing washer, component preparations such as pre-drilling and thread cutting as well as sealing the screw at the head can be completely saved. EJOT has also developed a new screw tip shape for use in higher-strength aluminium grades. Increased particle and chip formation can occur specially in these more brittle materials. The new Round Point (RP) tip design designed for this purpose in the form of a turbine ensures clean and virtually particle-free joining. To ensure the quality and functionality of EJOT FDS® sealing screws, leakage tests are carried out in addition to the strict standard quality tests.

In summary, it can be emphasised that the EJOT FDS® has established itself as a proven technology in battery housing production. As a reliable joining technology, it covers the current requirements. The EJOT FDS® sealing screws are currently used for applications with increased sealing requirements. In addition to reducing system costs by saving process steps in component preparation, it also offers the potential to better recycle quantitatively processed material from e-car batteries. This is particularly successful thanks to the ease of disassembly of EJOT FDS® elements. The increased use of this joining technology can reduce the ecological footprint. **E**



The image shows the joining of supporting structures

New concepts in body construction

The automotive industry is currently going through the greatest transformation ever. While the last few years have been characterized by intensive discussions about possible drive alternatives, a clear focus on electromobility can now be seen for the next decade.

>>Text: Dr. Stefan Kurtenbach / Eduard Haberkorn

The range of electrified vehicles from all manufacturers is growing significantly, and consumer acceptance is also increasing rapidly. At the same time, vehicle body construction is changing due to the evolving requirements caused by the new power train systems. Electrically assisted drives such as plug-in hybrids (PHEV) or fully electric vehicles (BEV) place significantly different demands on the body design. The main differences to the usual body construction methods with internal combustion engines (ICE) are the accommodation of the drive batteries and the electric motors including the associated components such as management and cooling systems. Also for BEV, wheelbases are getting longer, engine compartments shorter and thus usable in different ways. This also has a significant influence on the new vehicle concepts.

Another major challenge from the production point of view is the quantity scenario for electrified vehicles. Viewed across the entire passenger car market, i.e. taking into account the established combustion vehicles and electrified passenger cars, a reduction in vehicle production figures per vehicle model is to be expected, since the overall market is growing only moderately. This leads to a rethinking of manufacturing technologies in order to achieve profitability in production. The Automotive Center Südwestfalen (ACS) in Attendorn took up these new challenges at an early stage and is working on various projects for the implementation of new concept and production-optimized body structures under the title "Modular Concept and Production Kit".

These projects are carried out as joint industrial projects. That means a consortium of industrial partners discusses the central issues together. The processing is mainly carried out by the ACS. Joining technologies between the individual components form an essential intersection in all projects. EJOT participates with different competencies.

The project kit contains individual projects that logically build on one another. In the "LACEF" kick-off project, the effects of the elimination of the drive and transmission units in ICE vehicles were analyzed and the installation space for new types of BEV was further developed. Innovative concepts (see Fig. 1, page 24)

with regard to load and failure behavior were developed and analyzed. A professional article on the results has been published in the *Automobiltechnischen Zeitschrift (ATZ)* 10/2021. As a result, it can be stated that the structural design of BEVs differs significantly from known designs. The load paths run more centrally through the front of the car, the transition to the battery box and the passenger cell is less harmonious. Furthermore, due to the significantly different mass distribution in the BEV, other highly stressed crash levels develop in the front of the vehicle.

Another work package "ECoS" deals with the side floor structure. The motivation and drivers of changes are identical to the aspects mentioned above. In particular, with side floor structures from BEV, there is very little installation space available to accommodate crash loads and protect the battery. For this reason, amongst other things, a large number of different materials and material combinations is used. In conjunction with various manufacturing processes, when designing solution systems, attention must be paid to economical and robust manufacturing. Within the assembly, particular attention is paid to the joining technology. The project is currently in the processing phase.

Special requirements for the joining technology

But it is not only the fully electric vehicles that bring new challenges with regard to the body structure. Partly electrified vehicles also have new requirements. According to the state of the art, the vast majority of battery boxes in these vehicles are die-cast aluminum solutions. Due to the increasing number of vehicles and variants, the question of profitability in large-scale production arises. The ACS is taking on this challenge in a further joint project with EJOT and other partners. In the current project, the reference assembly group is simulated virtually and serves as a reference value (Fig. 2, page 24) for the new developments. In the conception process, current and future requirements for the system (e.g. cell technology, load cases, range expectation, ...) are included in the specification sheet. In finding solutions, the ACS concentrates on large-scale production processes such as progressive forming and injection moulding. In addition to the technical performance, an economic assessment is the focus of the work.



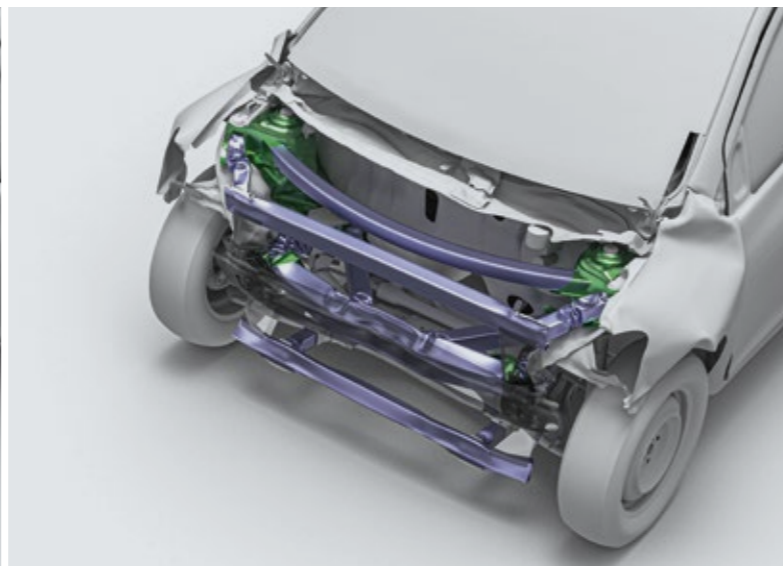
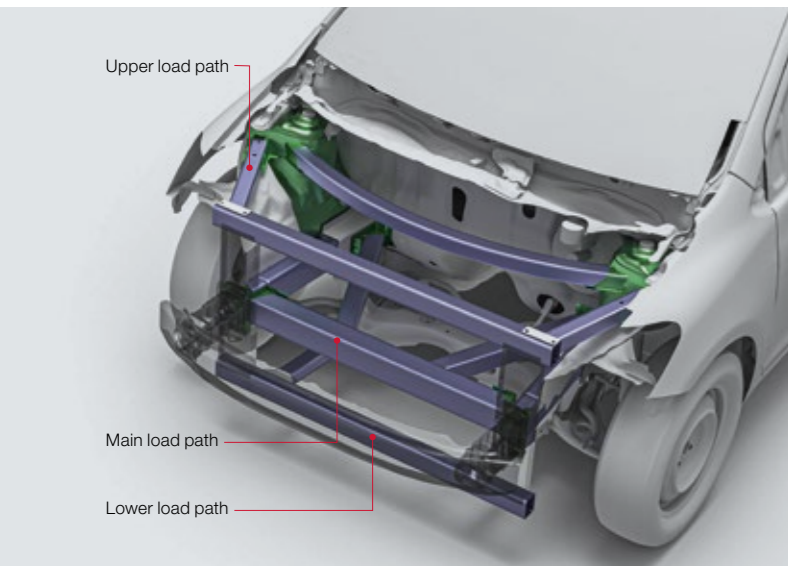


Figure 1

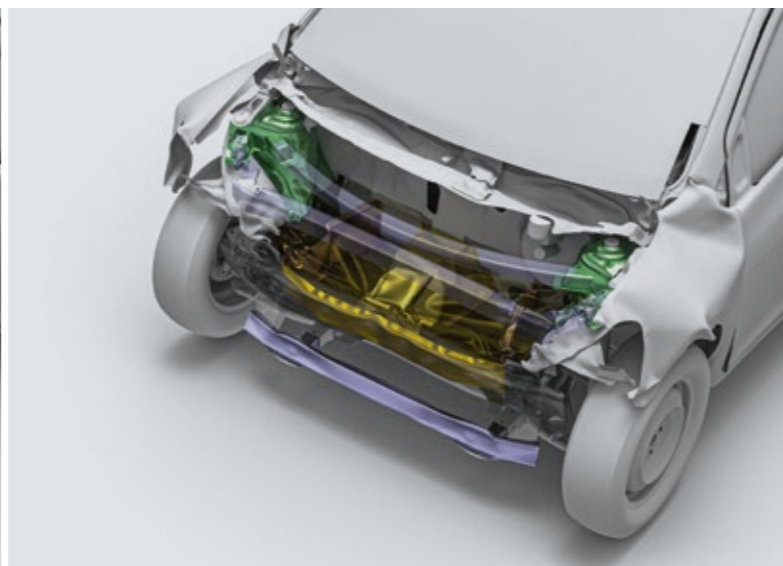
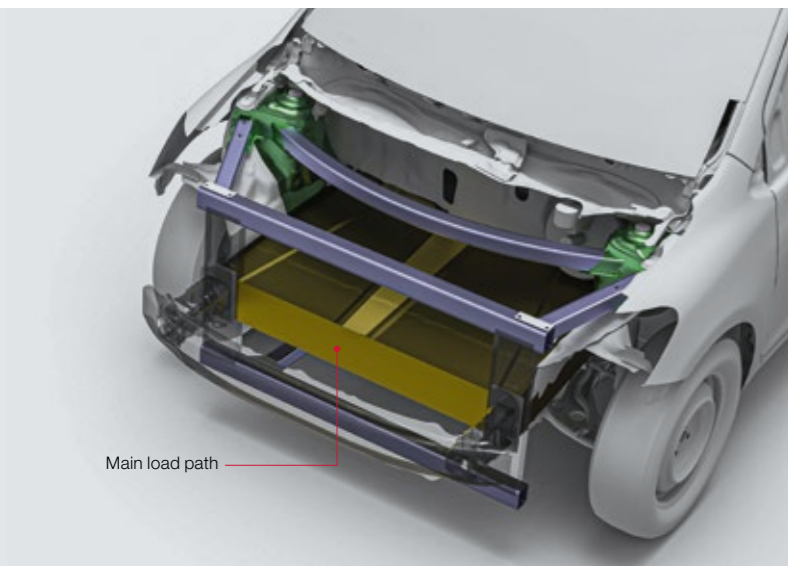
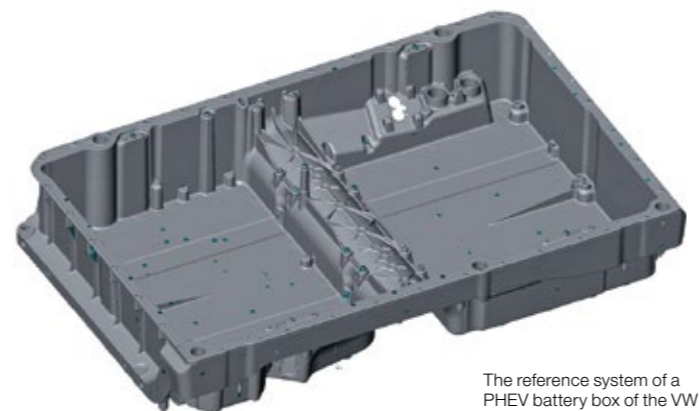


Figure 2

- **Al extrusion**
Sheet steel
Steel roll profiles
- **Al casting**
- **Sheet steel**
Aluminium sheet



The reference system of a PHEV battery box of the VW Passat GTE

In addition to such conceptual projects, EJOT and ACS are also working together on the technological development of joining technologies for innovative battery boxes, e.g. for pre-series developments. Due to the material mix encountered in these assemblies, special challenges are placed on the joining technology. For example aluminium and steel components are joined together. A new, essential requirement must be taken into account for the battery boxes: The boxes have very high tightness requirements due to the existing cell chemistry. Pre-hole-free joining technologies such as FDS® offer the great advantage, that continuous adhesive beads can be applied first. The flow drill screws are then set through all parts. The simultaneously reduced heat input also minimizes the thermal impairment of the sealing seam itself. Due to the component dimensions and the tolerance requirements, joining processes that generate a reduced heat input are preferred. Finally, reversible joining processes are required for maintenance purposes in the parts between covers and base bodies.

In the case of a profile-intensive design, there is often only one-sided access, which restricts the selection of a joining technology. Self-tapping screws are often an option here as well.

In order to train the suppliers and to be able to realistically map the possibilities and limits of these joining technologies, various joining stations are available in the ACS. If requested, joining tests with various material partners can be carried out reproducibly in an automated environment (Fig. 3, page 22) in cooperation with EJOT. Topics such as the evaluation of process parameters (e.g. speed curve, switching torques, etc.) are addressed. In a representative environment, different material dimensions, cross-sections or grades can be analyzed with demonstrators of different quality so as not to influence the processes on the supplier's production systems

Solution concepts for various assemblies

In summary, it can be said that the ACS carries out numerous projects with and for automotive suppliers. This way pre-competitive issues are addressed, amongst others in the context of the transformation of the body structure through the electrification of vehicles. Solution concepts are developed for different assemblies.

The ACS also supports the development of current and future challenges in component-specific processes with competencies and resources, if required with the involvement of technology partners such as EJOT. E

Research and development centre



The ACS, based in Attendorn, is a competence center for research and development, prototype construction and testing. The competencies in virtual development as well as in process and prototype construction in the technical center encompass a wide range of metals and plastics. In the virtual development, static and dynamic loads on components and assemblies are analyzed. Various joining cells, equipment for forming, injection molding and analysis of component service life simulate series production processes as well as loads in the vehicle.

Electric drives and battery packs with EJOT® in China

With the increasing number of vehicles in our lives, the world continues to place higher demands on environmental protection. Therefore, environmental awareness of all parties from government to enterprises is on the rise.

>>Text: Andy Ho / Michael Pan

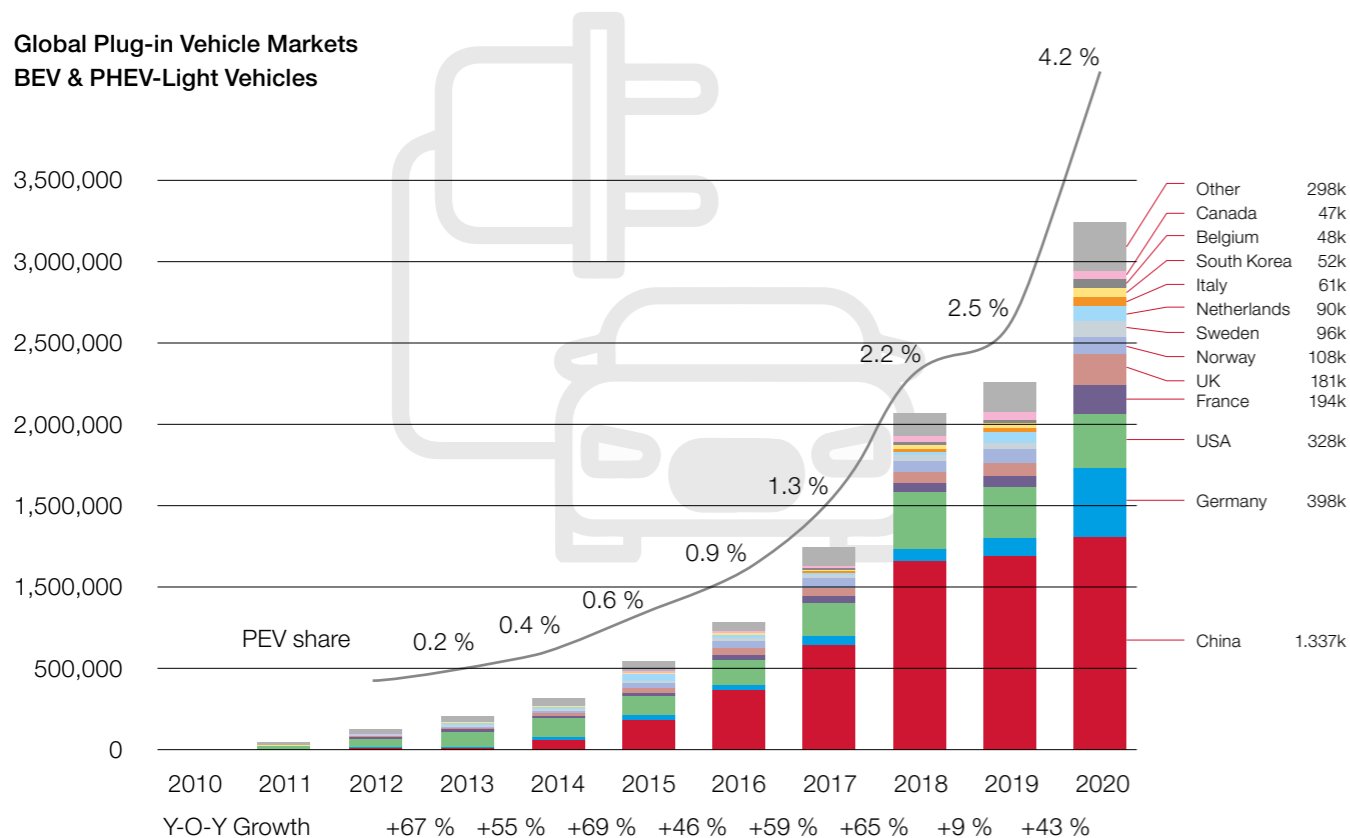
China, currently the world's second largest economy, has also proposed a carbon neutral and carbon peaking timeline in 2021, aiming to promote the determination to further strengthen and implement environmental protection in China.

By the end of 2020, China was still the world's largest market for electric vehicles: it occupies about 40 percent of the world sales. Below are the statistics for the world's major countries and regions:

The automotive industry, which accounts for a high proportion of total CO₂ emissions, has also undergone significant changes in the past decade: traditional energy vehicles gradually being replaced by electric vehicles. Thus, major auto manufacturers are actively promoting EV, NEV and AI vehicles. More integrated control systems have given EJOT more market opportunities.

Since 2015, EJOT has been in contact with the new power car manufacturer Nio Inc. in China and has been providing EJOT's solutions for electric drive systems and battery packs. Until June 2021, EJOT China has been involved in more than 20 projects for electric drive systems and has provided solutions for different needs to more than 10 customers for electric drive control

Global Plug-in Vehicle Markets
BEV & PHEV-Light Vehicles



systems such as ALtracs® Plus, DELTA PT®, standard threaded parts, EJOCLEAN®, etc.

We have supplied components for the connection of sub-components of electric drive systems such as Inverter / DCDC, from PCB to Modular, to Connector and housing. Our comprehensive service using EJOCALC® for initial design simulation to actual testing of the finished torque in our application technology center has earned positive responses from our customers. For this we also appreciate the preliminary work done by our colleagues in other regions around the world. The teamwork enables us a unified EJOT voice in front of our global customers and makes us more competitive in acquiring projects. The following are examples of customers for whom we currently have mass production supply in electric drive control systems.

In the electric vehicle power source battery pack business, our FDS® and ALtracs® Plus are providing more and more connection testing and mass production services to our customers as the use of aluminum alloy battery packs spreads. Over the past 4 years, we have been providing mechanical and waterproof tests to different battery pack and frame customers. As a result, the large amount of data accumulated from this process allows us to be more experienced in combining market demand and competition with competitors. Currently we are promoting FDS RP and FDS Short RP, which allow us to reduce manufacturing cost from the process point of view, and with the above mentioned technology reserve, we are gaining more sales share in the battery pack market.

Finally, we would like to thank our entire team for their continued support in all aspects of our business, without which we will never be able to progress to the next level.

Q&A



>> Interview with Michael Pan

How will electromobility develop in China over the next few years?

From 2015, EV cars sold car ratio has increased from 1 percent up to 10 percent in 2021, and I believe every year the ratio will continue to increase, possibly up to 40 percent around 2030.

How quickly will the shift away from the combustion engine develop?

Currently we seldom meet new engine development. On the other hand we could see new ideas of EV car powering solutions popping out every year, example CATL announced Na battery.

What role do plug-in hybrids play?

For China maybe this is not the trend because the government policy cancelled the supportive program.

Are there other types of propulsion (hydrogen)?

Yes, fuel cell battery is one of the solutions on the market, for example hydrogen, but due to the high cost and safety stability, maybe it will not be the trend in short time: The main reason is that the local companies do not have the technology and foreign companies can be the winners.

Michael Pan
Position: Regional Sales Manager East
EJOT location: EJOT® China, Taicang
Country: P.R. China

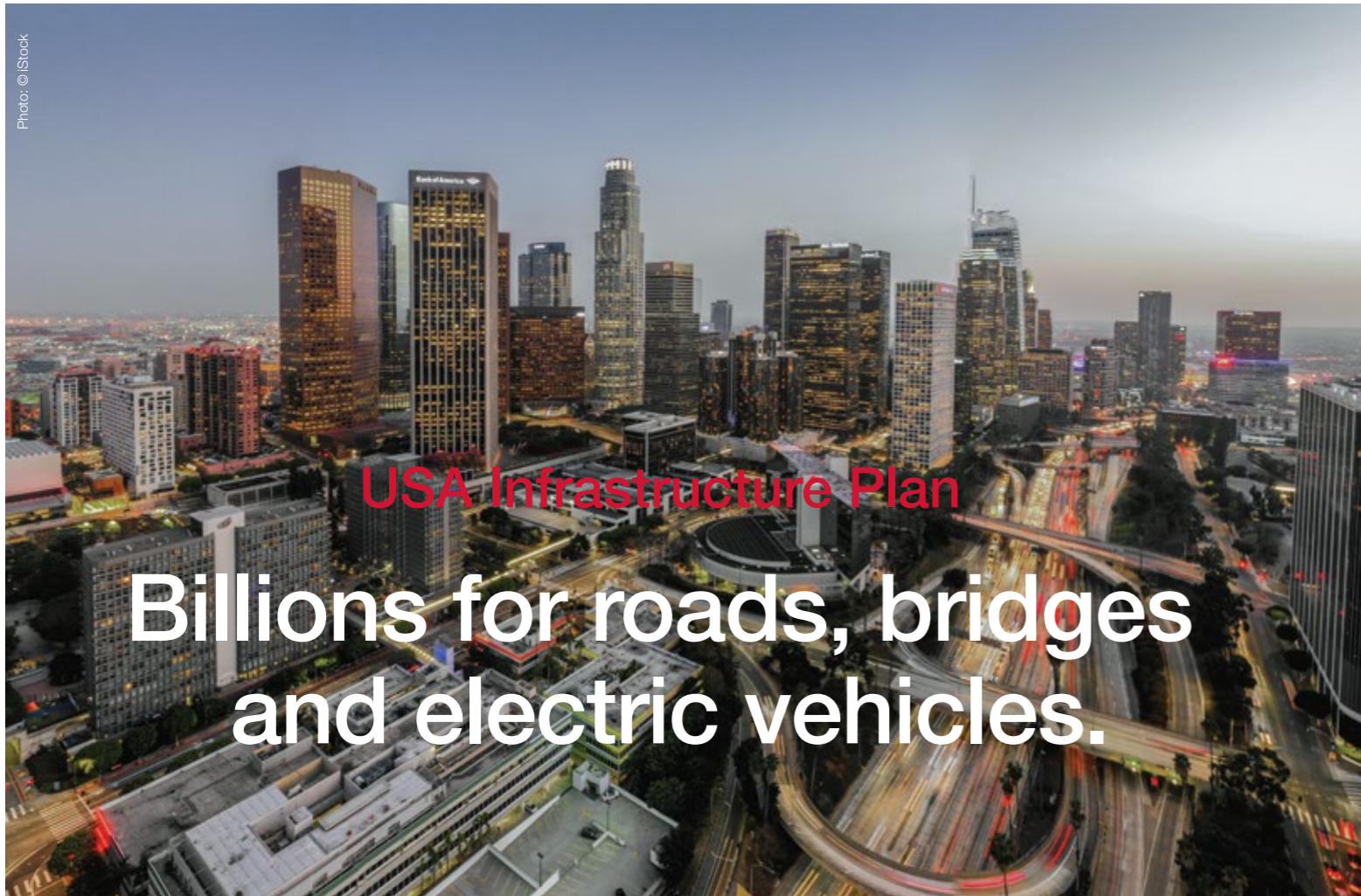


Photo: © iStock

USA Infrastructure Plan
Billions for roads, bridges and electric vehicles.

President Joe Biden's goal is for 50 percent of new vehicles in the U.S. to run on electricity by 2030

>>Text: Ed Plomer / Kerem Ipekbayrak

It's not finalized yet, but President Biden's infrastructure plan moved one step closer to reality this week when a bipartisan group of 10 senators announced they reached a deal on the bill's framework. It is expected that some changes will occur before it becomes law, but we can now see the outline of how the US federal government will invest in the future.

In a separate development, President Biden sign an executive order on August 5th setting a target for electric vehicles, hydrogen-fuel cell and plug-in hybrid vehicles to make up 50 percent of US sales by 2030.

President Biden at the White House on Thursday, August 5th, 2021 said: "We need to move fast. The rest of the world is moving ahead, we've just got to step up." Biden is setting a goal for US new vehicle sales to be electric by 2030 while tightening the pollution standards for vehicles which are the largest source of planet heating gases in USA. Biden also announced that new vehicle emission rules will be published to reduce air pollution by 2026.

First reactions to the executive order were supportive of the administration's efforts, which in essence, will try to do two things – tackle climate changes by reducing the carbon footprint of the



Photo: © iStock

The US government under Joe Biden is investing \$ 1 trillion in a new infrastructure plan

US transportation sector and successfully compete with China and other countries, on electric vehicle production.

The future of the automobile industry is the EV and China is the fastest growing EV market in the world. The most important component of an EV is the battery and while 80 percent of the

world's production is led by China, Biden said that the EV and battery manufacturing should take place in the US and there is no reason for USA to not take over the leadership.

Biden's administration will take new steps to change the standards for the emissions and efficiency of the vehicles and work with clean energy. Biden also said "this is important but we need to invest in our workforce and production capacity to reveal our true potential".

Over 29 percent of the carbon emission in 2019 in the US was coming from the transportation. US is behind the EU and China for the sales of zero emission vehicles. The Big-3 (GM, Ford, Stellantis) welcomed Biden's statements even though there is no legal obligation to achieve this goal. This is a voluntary goal and the auto-makers stressed they would need federal support for vehicle charging stations and consumer tax incentives.

The Auto Workers Union (UAW), one of the largest unions in the USA, and European and Japanese automotive manufacturers BMW, Honda, Volkswagen and Volvo also supported Biden's initiative. According to data from the International Energy Agency, 10 percent of car sales in Europe last year were electric vehicles, while in the US, this rate remained at only 2 percent, mostly Tesla's vehicles. The US state of California, on the other hand, went further and announced that by 2035, all new vehicles sold in the state would be zero carbon emission vehicles.

In regards to the bipartisan infrastructure deal this \$ 1 trillion plan includes \$ 579 billion in new infrastructure spending. The first spending of \$ 109 billion will be for transportation projects like roads and bridges, \$ 66 billion for railroad improvements, \$ 49 billion on mass transit and \$ 15 billion for electric-vehicle infrastructure and electric busses.



Photo: © iStock

The share of electric vehicles in the USA is expected to increase significantly over the next few years

Since 2010 all-electric and plug-in hybrid cars purchased new in the US were eligible for a federal income tax credit of up to \$ 7,500. The credit amount will vary based on the capacity of the battery used to power the vehicle. Automobile makers are urging the federal government to continue and increase these incentives.

Since the 1750s, when the industrial revolution took place in the world, the air temperature has increased by about 1.2 degrees Celsius. If governments do not take strict measures to reduce carbon emissions, the temperature will continue to rise causing climate change.

Biden's predecessor, Donald Trump, withdrew the US from the Paris Climate Agreement and loosened regulations to protect the environment and take measures against climate change. Biden, who re-signed the Convention, is trying to convey the message that the United States is serious about the fight against climate change.

Specific to electric-vehicle, President Biden originally wanted more EV promotion in his infrastructure plan, and that may come with another infrastructure proposal in the future. A casualty of this agreement was that President Biden wanted \$ 100 billion in EV subsidies that was in his American Jobs Plan to help more people buy plug-in vehicles. This was turned down but there are other proposals being talked in Congress that would raise the \$ 7,500 tax credit to \$ 12,500.

Going forward, the infrastructure bill needs approval from both chambers of congress before it can get signed into law. Timing for completion is hoped for fall 2021.

E

Electromobility at EJOT®

There are more and more vehicles with the "E" in the licence plate on the EJOT parking lots at the locations in Germany. EJOT is in the process of converting its vehicle fleet to electromobility.

>>Text: Andreas Wolf

At the moment, the majority of cars have plug-in hybrid drives. Purely electric drives are rare yet in the rows of vehicles. This conversion is part of a comprehensive sustainability concept with which the EJOT Group wants to reduce CO₂ emissions – all the way to climate neutrality.

The installation of a total of 38 charging stations has started at the German locations in Wittgenstein and Tambach-Dietharz. This alone achieves a CO₂ saving of approx. 1,000 tons per year. These are charging stations with a capacity of 22 kW each, at which two

vehicles can recharge their batteries at the same time – around 80 percent in two to four hours.

The costs, including civil engineering work, are 383,000 euros, minus a subsidy amount of around 80,000 euros.

A charging station (22 kw) already exists at the EJOT France location in Villé, and two more will follow in early 2022 to cover the need for an electric vehicle and six vehicles with plug-in hybrid drives. **E**



Wall boxes – securely fastened, even on insulated facades

When it comes to achieving climate policy goals, the topics of electromobility and the energetic renovation and design of buildings play an important role.

>>Text: Carina Grebe

In order to reduce heat losses through the external walls and to make buildings more energy-efficient, external thermal insulation composite systems (ETICS) are often used. This must be taken into account when installing electric car charging stations, the so-called wall boxes, because the insulation material places special demands on the fastening compared to the monolithic construction

When attaching wall boxes to facades with thermal insulation, for example, the focus is on secure, and above all thermal bridge-free attachment in the substrate, as well as optimal sealing on the plaster surface.

Before actually mounting the ETICS, planners and builders can include the cold bridge-minimising mounting elements in the design at the desired positions, and the installer can then mount the elements together with the ETICS. Often, however, the exact position on the facade is not yet known when planning, or a building is retrofitted with a wall box.



The EJOT Iso-Dart offers the perfect solution for this particular challenge. With the fastening system consisting of a facade anchor and a plastic assembly socket, light to medium-weight add-on parts such as wall boxes can be retrofitted and permanently attached to the ETICS facade. The high-quality ethylene propylene-diene rubber seal also provides a permanent seal against moisture.

EJOT Iso-Dart allows the fastening of attachments by accommodating common Ø 9 mm coarse thread screws or Ø 9 mm hanger bolts with M10 neck thread. With the reduction insert the application range was expanded by the uptake of Ø 5 mm and Ø 6 mm coarse thread screws. The fastening system is particularly suited to installation into ETICS systems made of EPS, mineral wool or mineral foam.

EJOT offers an extensive range of high-quality assembly elements with the business area "Fastening solutions for add-on parts". You will always find the right solution for all on-site and static requirements. **E**



Solar park makes irradiated areas usable

>>Text: Katrin Strübe

Even 35 years after the Chernobyl disaster, the areas within the 10 km zone around the damaged reactor block 4 are not usable for humans. That doesn't have to be the case, decided the Ukrainian company RODINA and the Hamburg-based ENERPARC AG, who joined forces and set up a solar park in the irradiated area. Last but not least, a symbolic sign: The future is also coming to Chernobyl.

On 26 April 1986, an explosion destroyed reactor 4 of the Chernobyl nuclear power plant in Ukraine, causing one of the greatest nuclear disasters of humankind. Numerous people lost their lives as a result of the direct and indirect consequences of the disaster. An area of around 6,400 km² around the damaged power plant had to be abandoned due to the high radiation exposure. It was presumed not to be usable for humans for hundreds, if not thousands of years.

Regaining usefulness

“Let's Green It” – this is the motto of the German-Ukrainian consortium RODINA - ENERPARC AG. The goal: areas contaminated by the Chernobyl nuclear disaster should be made usable again and brought back to life. After more than four years of planning, the time had finally come. In October 2017, construction work began on a 1 MWp open space solar system on an area of 1.6 ha directly next to the sarcophagus of the destroyed reactor. The system with

3,762 solar modules, which was completed in June 2018, now delivers around 1,024 MWh of electricity annually – enough for 250 four-person households. The energy generated in Chernobyl is currently being used for the surrounding buildings, which are primarily devoted to the disposal and dismantling of the power plant – set for almost 50 years, because that is how long the lease for the area on which the open-space system stands still runs.

German quality screws for Chernobyl

The construction of the photovoltaic system in the irradiated area brought with it some special features that had to be taken into account in the planning and construction. For example, digging or dredging was not allowed on the site so as not to release radiation from the ground. All the lines required for the system had to be routed above ground in specially constructed cement blocks. The know-how for the construction of the solar system came from the Hamburg company ENERPARC, which also relied on Made in Germany quality when connecting the components of the assembly substructure. A total of almost 6,000 self-drilling screws and almost 12,000 thread-forming screws from EJOT were used. These EJOT screws are made of high quality A2 stainless steel. They are particularly corrosion-resistant and designed for a reliable and long-lasting connection.

The screws JZ3-6.3x19 E16 are used to connect the support profiles. They form a thread in the pre-drilled or pre-punched core hole and thus create a tight and secure connection. They are suitable for fastening steel and/or aluminium components. The JZ3 installed in the Chernobyl solar park recently received an even more powerful successor in the form of the JZ5. The JZ5 is the strongest EJOT screw to date and scores particularly well when used in high-strength materials.



The JZ3 self-drilling screw (left) is particularly characterized by its fast and flexible use, as there is no need to pre-drill. The JZ5 (right) is the successor to the JZ3 self-tapping screw installed in the Chernobyl solar park and is ideally suited for fixing profile sheets and sandwich elements onto steel substructures.



The JT3-6-5.5x25 E16 self-drilling screws are made of stainless steel with a hardened steel drill bit and are used to attach the support profiles to the substructure. They show their strengths particularly when they are used quickly and flexibly, as there is no need for pre-drilling. They are also suitable for use in steel and aluminium and with a combination of these two materials up to a total thickness of the connection of 6 mm.

ENERPARC and EJOT have been working together as partners for many years. Consistently good quality, delivery reliability, dependability with competitive conditions, good service and solution-oriented advice – at ENERPARC they know that they have a solid partner at their side in the German family business EJOT.

Reliable products for the highest safety requirements

The Chernobyl reactor is not unknown to the experts at EJOT. After a construction period of almost 10 years, in July 2019 the new protective cover “New Safe Confinement”, also known colloquially as the “Arch of Chernobyl”, was put into operation over the aging old sarcophagus of the damaged Block 4. Almost three million EJOT SUPER-SAPHIR self-drilling screws JT3 were used and reliably hold various trapezoidal and intermediate profiles as well as elements of the inner and outer cladding in place. In order to ensure the durability of the new protective cover and thus also its screw connections, special reports were commissioned to examine the influence of radioactive radiation on stainless steels. “We are aware of the great responsibility that we have taken on by participating in this project. At the same time, however, we are also very proud that we were able to make a contribution to this building project, which is extremely important for all of us, with our high-quality and durable products,” explains EJOT Construction Fasteners Managing Director Dr. Jens Oliver Weber. **E**



Watch the video now and find out more about the Chernobyl solar park!



It looks like from another planet

In Feldkirchen near Graz (AT), shoe manufacturer Legero built the so-called UFO in 2019 – its new headquarters with outlet. Around 3,500 m² of the total of 5,000 m² facade were designed as a rear-ventilated facade. This facade was built with the stainless steel substructure system CROSSFIX® from EJOT. The system enables the inclusion of horizontal and vertical support profiles and because it is made completely from stainless steel, it helps to reduce thermal bridges in the system. CROSSFIX® was recently honoured with the DETAIL Product Award and the German Innovation Award.

More about the award-winning system at: www.ejot-crossfix.com

E





EJOT® donates for flood victims in Altena

“We have over 500 affected families – from minor damage to total loss, apart from collateral damage to the public infrastructure.” This is how Uwe Kober, Mayor of Altena, describes the situation in the city with approx. 16,500 inhabitants after the flood disaster.

>>Text: Andreas Wolf

In a joint conversation with managing director Angelika Wetzstein and the deputy group works council chairman Wolfgang Burghardt, the mayor expresses his deep gratitude for the generous donation from the EJOT workforce and the Kocherscheidt family of shareholders.

Mayor Kober talks about the flood disaster that broke out in mid July, about metre-high mountains of rubble, the unbelievable community feeling among the citizens, the willingness to help from all over Germany or about Paul Ziemak, the CDU general secretary, who bought drying equipment from a company on the Polish border. Despite all the hardship, Uwe Kober remains confident. “We will overcome this, here in Altena.”

He reports of scrap collectors who, in their ruthlessness, took away everything that was laying around in gardens of people’s houses. He talks of a precarious situation when the city of Altena was cut off from the outside world for 12 hours, including for emergency vehicles. “Fortunately, nothing happened.” People did incredible things and have shown enormous solidarity. The clean-up has been going on for months. “We have experienced a wave of helpfulness,” reports Mayor Kober. From all over the country, from the political scene, from many people who were suddenly here and wanted to help.

135,000 euros have been collected in the EJOT donation campaign and transferred to the special “Flood 2021” account of the city of Altena. “This sum will help us a lot,” says the mayor. “The money will be used unbureaucratically to help those people who are in greatest need,” emphasises Kober. Over 2,000 employees at the EJOT locations in Wittgenstein and Tambach-Dietharz, as well as the construction branches in Germany each donated an hour of work in August 2021. The Kocherscheidt family of shareholders doubled the sum of this.

In Altena, three narrow side valleys are particularly affected, where small streams grew up to two metres in a very short time, carried away tons of rubble and debris and have since left a trail of destruction. Unimaginable to those who haven’t seen it themselves.

A big “Thank you” for the generous donation from EJOT also came from a company in Altena: Christian von der Crone, Managing Director at Lüling GmbH & Co. KG, wrote in an email to Christian Kocherscheidt: “I was very happy to read the report



Weeks after the flood disaster, rubble and debris are still piling up

in the local press regarding your financial commitment to the citizens of Altena affected by the flood disaster. I would like to take this opportunity to thank you and the staff at EJOT for your generosity. Your financial contributions will create hope and new perspectives for many people.” The Lüling company supplies wire to EJOT.

In the almost 100-year history of the EJOT Group, there have been close ties to Altena to this day. Even company founder Adolf Böhl received know-how from a friend who had a wire drawing shop in Altena. Senior boss Hans Werner Kocherscheidt, who died in 2017 at the age of 88, went to school in Altena and passed his Abitur there. In the 1960s, Hans Werner Kocherscheidt succeeded in filling central positions at EJOT with experienced employees from the former Lennewerk Altena company. For many years, the Altena-based companies Brüninghaus, Hesse, Finkernagel, Lüling, Claas and Frohn have been important suppliers for EJOT. **E**



German Champion – after graduating from Harvard

Lisa Tertsch has been an asset to the EJOT team this summer: In Berlin, the triathlete won two German championship titles at the “Finals” at the beginning of June. At the end of the season of the 1st Bitburger 0.0% Bundesliga Triathlon, she won the German championship with the EJOT women's team in Saarbrücken at the end of August. She is also the best individual athlete in the field of the 14 Bundesliga teams.

>>Text: Andreas Wolf

At the age of 22, Lisa Tertsch can already look back on a successful sporting career with national and international successes. But she has not focused exclusively on sport. Shortly after finishing school, she became junior runner-up in Cozumel, Mexico. “That was basically alongside the Abitur,” she says and laughs. She passed the Abitur, the general qualification for university entrance, with a top grade of 1.0. Now, she focuses

exclusively on triathlon and her athletic career. However, her way there is very individual, unlike most professional athletes.

Despite the sporting successes during her school days, she did not switch to a sports high school. She doesn't want to focus one-sidedly on sports. “I always wanted to do both, which was not easy and required a lot of effort.” But it paid off, she says.

“I always had a good balance with school and sport.” She can work in a focused manner and has a clear structure. She is supported by her parents, who do not urge her to go in one direction, but who are always by her side. It's good to have someone, through the ups and downs. “Without bad times, you can't appreciate the good times.”

After finishing high school, she had to make a decision: sport or university. At this point in her life, again, she wanted to do both, neither to forego sport nor studies. “That's just not possible in Germany,” she says. In the USA, however, where places at university are awarded through sports scholarships, it is. Especially since she wanted to go abroad anyway: to get to know a new culture, learn English properly, get away from home and become independent. She applied to various universities and even tried to get into the renowned Harvard University in Boston. With success. Her trump card in the application process: The Abitur grade 1.0, excellent running times and a good application interview. She started her studies in the summer of 2016 with a major in economics and a minor in evolutionary biology. She reduced her triathlon training and concentrated more on running.

She resumed swimming and cycling training during her studies in summer 2018. In addition, she starts in running competitions – until the summer 2019, when she started thinking about participating in the 2020 Olympic Games in Tokyo and decides to return to Germany. She took a break from her studies and started competing in triathlon again, with a surprising comeback: victories in the World Cup and European Cup races, 3rd place at the U23 World Championships in Lausanne. At the end of 2019 she was named Triathlete of the Year by the European Triathlon Union. “I actually just wanted to see where I stood in terms of my athletic ability, and then I ended up winning everything.”

Then came Corona. Competitions were cancelled. In summer 2020 she decided to resume her studies – online, from Darmstadt, where she lives. In terms of sport, she worked intensively on swimming technique. “Swimming has always been a critical discipline,” says the 22-year-old. At first alone, and then with a swimming coach who has helped to adapt her training successfully. “If you always do the same thing, you can only expect the same result.”

A running coach in the USA gave her crucial momentum in her training. What's more important than rigidly working through a training plan that is fixed in every detail is listening to your body, which sends out important signals. “If I can tell that something is wrong, I cut down on my training.” At the end of the day, you have to eat properly, sleep properly and train properly, sometimes quickly and sometimes slowly, continuity is better than to power through without thinking about it. She can see that her athletic ability has greatly improved since applying this training philosophy. Not to mention, Lisa Tertsch has been practically injury-free for four years.

Until spring 2021, she continued studying online and training in Darmstadt – without taking part in competitions. She completed her bachelor's degree in May 2021 with a top grade. A few days later, she missed the Olympic qualification for Tokyo. Very

annoying, but also understandable. The qualification was a 20-minute sprint triathlon, as an individual competition without opponents. This special qualification format is justified by the fact that the relay position in the Olympic team is still open. In the meantime, she has gotten over it. “I know that I belong there because of my performance potential, especially since I have already beaten many of the Olympic starters.”

The big goal for Lisa Tertsch now is the Olympic Games in Paris in 2024. It is important that competitions are possible again. She wants to use this to further establish herself in the international triathlon scene. Professional sport is now the focus.



” If you always do the same thing, you can only expect the same result. “

Lisa Tertsch

And later, after the active sports career? Lisa Tertsch has a clear plan for this as well: “I want to have a normal job.” That is why she completed her studies, she emphasises, in addition to sport, there are a lot of interesting things to discover in this world. “Triathlon is important to me, but if that doesn't work, then I can do other cool things.” She knows that if she's looking for a job later, she'll find one relatively quickly. Knowing this allows her to invest so much time and energy into sports at the moment. “I am very content and relaxed.”

E

The EJOT logo is displayed in a bold, red, sans-serif font in the upper right corner of the image. The background of the entire page is a close-up of a white wall with a diamond-shaped metal mesh structure. Several grey metal brackets are mounted on the wall, securing the mesh. In the foreground, there are green grapevines with large, lobed leaves. On the right side, a vertical metal component, the Iso-Bar ECO, is shown in detail. It consists of a cylindrical upper part with a circular opening, a wider base, and a long, white, ribbed section extending downwards.

We bring life to
ETICS facades

Facade greening with the Iso-Bar ECO