


PRESS BOOK 2017



RINSPEED

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In my wildest dreams

No one, and least of all myself, would have been able to predict or even envision almost 40 years ago that the passionate, albeit initially still tentative efforts of a young college student would lead to a company history that spans many years and is filled with crazy vehicles and inventions. Dreams came true, dreams that turned into real blood running through my veins.

I have always been fascinated and shaped by crazy and unusual things that break with the established norms. I never wanted to be like the others. My first bicycle already sported one of these high-rise handlebars in the fashion of 'Easy Rider.' And then my first car - an Autobianchi A112 with the name 'Rinspeed' in big letters on the sides. "Me too" has always been a horror to me.



The rest is history - almost. From importing sunroofs from the USA to becoming a tuning company for Porsche cars, and then the major leap to creating my own concept vehicles. A life full of dynamic spirit - nomen est omen at rinSPEED - and changes, but always with the same goal: thinking outside the box, being creative, and discovering the future.

And there is a large and diverse portion particularly of this future in our "Oasis." A varied power pack of technologies, materials, new services, and tangible visions. And all of it wrapped in a design that already shouts out from a distance: "Look at me, people, I am different." Just like 40 years ago. Only different.

I would like to thank in particular my creative and tireless team, my esteemed partners and helpers, and my family. Without them, none of these wild dreams would have ever come true.

Cordially,

A handwritten signature in black ink, appearing to be 'Dieter', written in a cursive style.



PRESSEBUCH - PRESS BOOK

RINSPEED OASIS KONZEPT / OASIS CONCEPT
 TECHNISCHE DATEN / TECHNICAL DATA

4er GmbH

Axa Winterthur Versicherungen
www.axa.ch

Borbet GmbH
www.borbet.de

Carl F. Bucherer
www.carl-f-bucherer.com

Dekra Automobil GmbH
www.dekra.com

Dr. Schneider Unternehmensgruppe
www.dr-schneider.com

Ernst & Young GmbH
www.ey.com

Esoro AG
www.esoro.ch

EVA Fahrzeugtechnik GmbH
www.evafahrzeugtechnik.de

GF Automotive
www.gfau.com

Harman International Inc.
www.harman.com

Harting KGaA
www.harting.com

Huf Group
www.huf-group.com

Leopold Kostal GmbH & Co. KG
www.kostal.com

MHP - A Porsche Company
www.mhp.com

NXP Semiconductors Germany GmbH
www.nxp.com

Osram
www.osram.com

QNX Software Systems GmbH
www.qnx.com

SAP America, Inc.
www.sap.com

Schoeller GmbH & CoKG
www.schoeller-wool.com

Siemens AG - Mobility Division - Intelligent Traffic Systems
www.siemens.com

Sika Automotive AG
www.sikaautomotive.com

Stahl Holding BV
www.stahl.com

Strähle + Hess GmbH
www.straehle-hess.de

Techniplas
www.techniplas.com

Turkish Automobile Development Center
www.mam.tubitak.gov.tr

Vites GmbH
www.vites.de

Vollmond Werbeagentur
www.werbeagentur-saarland.de

WayRay
www.wayray.com

ZF Friedrichshafen AG
www.zf.com

Rinspeed presents the clever urban "Oasis" runabout at the CES in Las Vegas and the NAIAS in Detroit in January 2017

RINSPEED

GARDEN PLOT ON WHEELS FOR THE URBAN JUNGLE

You can count on Swiss automotive visionary Frank M. Rinderknecht when it comes to reimagining mobility. With the Rinspeed concept vehicle "Oasis," the ingenious self-driving electric vehicle for the city and surrounding areas, he refutes the deeply ingrained notion of the urban jungle that requires SUVs the size of battle tanks for the daily struggle for survival. His alternative concept: a maneuverable speedster with an integrated small garden plot behind the windshield.

The Rinspeed boss therefore challenges the martial appearance with mobile urban gardening. With its large glazed areas and shrouds on the front wheels, the refined and swift two-seat runabout looks rather futuristic and is somewhat reminiscent of a modern interpretation of famous Star Wars icon R2D2. They both can turn on their wheels with almost a zero radius. In the case of the "Oasis," thanks to a special steering angle, two in-wheel electric motors and torque vectoring, all developed by ZF on Lake Constance.

The self-driving Swiss vehicle is not a wallflower or strictly functional like the Google Car, but rather "next gen" - with a host of technical and visual treats inside. Because in keeping with a great tradition, the twenty-third Rinspeed concept car was again engineered by Swiss company 4erC and executed by Esoro.

Speaking of inside: The ultimate eye-catcher is the small garden with enough space for growing radishes or even little Bonsai trees. Automotive supplier Kostal adds the element of nature to the car to make it a true third space. "Home+Garden" becomes "Car+Garden" - brought together by a custom removable planter.

The small garden plot is just one of features that creates a new living space in the interior of the car. Armchairs, sideboard and TV provide a modern living room ambience in white. Everything looks welcoming and inviting, thanks to the efforts of the innovative Swabian textile developers at Strähle+Hess, and Dutch company Stahl, the world market leader in leather and synthetic surfaces in automotive interiors. Together, they created a remarkable ensemble of natural, functional leather with various designs and surfaces complemented by textiles with bright edging highlights. For this purpose, Schoeller Spinning Group supplied an all-new highly elastic wool yarn. Also worthy of note are the elegant aluminum seat bases from GF Automotive in bionic lightweight design, the futuristic retractable air vents, and the multi-purpose storage box from Dr. Schneider Unternehmensgruppe. The floor is made from real wood, and created by the specialists from MeisterWerke. All adhesive bonds in and on the "Oasis" are realized with innovative adhesives from Sika Automotive.

Always a step ahead: In the "Oasis," the journey becomes the destination

An eerie quiet around the football arena, but the activities on Twitter show: Injury time is almost up and tens of thousands of fans will soon flood the streets. The Rinspeed "Oasis" is equipped with Harman LIVS technologies (Life-Enhancing Intelligent Vehicle Solutions), which put it always a step ahead, and its finger on the pulse of the social web - the "Oasis" has long since planned the alternative route.

The "Oasis" lets its driver know that several Facebook friends with similar tastes have recently liked a new restaurant that just opened nearby. A quick 'Ok' signaled to the

personal assistant of the "Oasis," and the table has been reserved. That fast.

To interact with the Harman system, the occupants use a slightly curved 5K wide-screen display with voice- or gesture-control that spans the width of the "Oasis" in front of its passengers. In manual mode, it presents the most important information in condensed form. The images of the electronic rearview mirrors are dimmed when not needed.

The steering wheel from ZF folds flat and thus turns into a keyboard or work surface. The car thus becomes a self-driving office on wheels, complete with Office productivity software and Skype video telephony with live translation. The personal assistant not only knows which of the occupants is talking to it at the time, but also in what language the occupant speaks. The "Oasis" passengers are able to exchange and share interesting news on social media channels by using swiping gestures. In keeping with a ten-year tradition, a mechanical Carl F. Bucherer watch is integrated on the steering column. What is more: On the "Oasis," the new Manero Flyback is rewound by the steering motions.

The next business trip begs. After dropping its owner off at the airport, the "Oasis" chauffeurs a nice couple who had searched for a ride on Facebook into the city. After dropping them off at their destination, the "Oasis" goes on Twitter to let the owners' friends know that it is available for use at any time. They are able to summon it via WhatsApp and other social media apps. Two days later, the "Oasis" returns to the arrivals terminal of the airport, thanks to Harman LIVS punctual to the minute and unperturbed by potential flight delays, traffic jams and long lines at the baggage claim.



oasis

Curtains up for the evening entertainment with viewing enjoyment in CinemaScope, accompanied by the Harman Kardon 24-channel sound that virtually follows the passenger as the seat glides into the fully reclined position. The personal assistant takes a photo of the stunning sunset in passing - the "Oasis" keeps a diary and if desired also acts as a travel blogger to keep the Instagram followers up to date.

Feeling like taking back the wheel? Gladly - after passing an automatically administered fitness and alertness test.

By the way, the personal assistant is also at the driver's disposal outside the car. Thanks to a link to the Harman Ignite Cloud Platform, it allows controlling the owner's smart home from the "Oasis," for example. Always a step ahead, it takes care of the lights and the wellness climate as the situation demands. BlackBerry QNX supplies an integrated and certified secure and protected software platform for self-driving vehicles.

The windscreen serves as a giant display for virtual and augmented realities. Holographic laser projection technology developed by WayRay allowed to make area covered by displays significantly larger than in conventional head-up display used today. US Company Techniplas, a specialist for cognitive and networked products, developed the multi-functional rear window. It integrates not only the usual lights at the back of a car; it also serves as a display panel for the integrated clever micro delivery box. It can even be cooled or heated as needed. As a special touch, the box was sized to fit a power bank form EVA Fahrzeugtechnik, which increases the range of the "Oasis" when circumstances demand.

When it comes to automotive lighting, Rinspeed relies on proven Osram quality. The manufacturer supplies the powerful LED headlights and the two projectors in the front

surround. The LED ambience lighting with reading lights integrated into the headliner comes from Forster Rohner.

The who's who in the use of the vehicle

Who will own the car, who will operate it and what will it be used for? Rinspeed boss Rinderknecht has designed and equipped the car to keep all conceivable options open - if society is willing to share goods in a beneficial way. "Oasis" can be a shopping cart in the morning, a shipping services counter for a parcel service in the afternoon, and a pizza delivery vehicle at night. A digital access system from German supplier Huf makes it possible.

Apart from consulting firm EY, which contributed a study on the individualization of mobility, the masterminds behind the "Oasis" also include TOG-Tübitak. The Turkish research center - an institution not unlike the German Fraunhofer Institute - examines issues of tomorrow's transport in its own mobility lab.

However, even the "Oasis" does need a dash of masculinity: Futuristic 20-inch Borbet Aero Design rims with laser-engraved "Oasis" logo underscore the vehicle dynamics.

Transmitting large volumes of data and information requires perfect connections and consequently is of fundamental importance for autonomous driving in particular. The intelligent antenna systems from Vites integrated into the roof play a crucial role in this regard.

Intelligent traffic management solutions from Siemens help optimize the traffic flow and thereby are a factor in providing more comfort in traveling, minimizing emissions, and enhancing the safety of all road users - for example, by warning road users of an approaching emergency vehicle. The "Oasis" uses different sensors based on NXP technology to capture a 360-degree view of its

surroundings with pinpoint precision. Thanks to vehicle-to-vehicle communication, it can even look around corners and obstacles. This sensor fusion is then used to compute the safe driving maneuver.

An innovative app from MHP allows choosing potential passengers by interest or profession. For passionate car enthusiasts who just met, this can make the long drive to the vintage car event a sheer pleasure. The "Mini Mica" from connectivity specialist Harting is a scalable and flexible computing architecture, which uses different modules for adapting the "Oasis" to the particular requirements of the vehicle user, and installs the corresponding technology features. This makes an individualization of the "Oasis fleet" with efficient use of resources possible. The secure transmission of data and information was tested and certified by independent and impartial certification specialist Dekra. Axa Winterthur provides insurance and peace of mind if the unthinkable happens.

Urban gardening on wheels as a new trend? A little bit out there? Maybe. But as always, the creation of Swiss mobility innovator Frank M. Rinderknecht is an oasis for inspiration in the otherwise rather expansive automotive wasteland. On display at the CES in Las Vegas and the NAIAS in Detroit in January 2017, and in spring 2017 - in a manner of speaking, in the Swiss national own front garden - at the Geneva Motor Show. As always, put in the best light by Vollmond Advertising Agency from Saarland, Germany.





TECHNICAL DATA

MEASUREMENTS BASE VEHICLE

Length	3'602 mm
Width	1'917 mm
Height	1'517 mm
Wheelbase base vehicle	2'360 mm
Empty weight	1100kg

POWERTRAIN

Power	ZF 2 x 40 kW
Steering angle / turning circle	ZF - ca. 70o / 6'750 mm
System torque	2 x 45 Nm
Power train	rear axle
Battery	12kWh LiFePO4
Power Banks	EVA Fahrzeugtechnik

PERFORMANCES

Top speed	> 130 km/h
Acceleration 0-100 km/h	9.7 s
ELECTRIC RANGE	100km

VEHICLE SETUP

Body	Composite with steel chassis
Places	2
Antenna technology	Vites
Lighting panels	Techniplas
LED technology	Osram
Sealants	Sika Automotive
Interior design	Stahl / Strähle+Hess
Interior materials	Stahl / Strähle+Hess / Schoeller
Safety technologies	ZF
Mechanical watch	Carl F. Bucherer
Light-weight seat support	GF Automotive

TIRES

Front and rear tires	155/55 R14 + 215/45-R20
Front and rear wheels	Borbet 5xJ14" + Aero 7x20"

MISCELLANEOUS

Multimedia/Infotainment	Harman
Laser projection	Wayray
Intelligent Transport System	Siemens
Software platform	Blackberry QNX
Access system	Huf
Computing architecture	Harting
Semiconductor solutions	NXP
Mobility Gardening	Kostal
Air vents	Dr. Schneider Unternehmensgruppe

All data without guarantee



4ERC GMBH
CREATIVE - CLEAN - CAR - CONCEPTS
the company of Peter Kägi

For 18 years, Peter Kägi is the leading project manager and the technical father of the Rinspeed motor show projects, Frank M. Rinderknecht and him connect many creative moments.

For 30 Years, the owner of 4erC works with electric vehicles, the range goes from a power of a few kilowatts up to several hundred kilowatts.

The consulting and development company 4erC works on vehicle projects for OEM and industry. Focus on: concept, project management, package, lightweight construction and fiber composite.

Do you want to invest in this area and you have open question?

Ask us.

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Contact:
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RINSPEED AND AXA WINTERTHUR – TOGETHER WE ARE PUTTING OUR STAMP ON THE FUTURE OF MOBILITY

Nowadays we are surrounded by change – and that includes people’s mobility. The driver of these changes is on the one hand new technologies, and on the other hand also the recognition that the current form of mobility is essentially no longer feasible for ecological reasons.

In the past, insurance customers were happy “just” to be offered car insurance. Today, they expect a lot more – convenience, advice and communication across all channels as well as digital and straightforward processes are a basic prerequisite. Customers no longer just compare what they themselves have experienced at different insurers; they also make comparisons using Facebook, Amazon, Apple, etc.

Matters are complicated even more due to people’s ever changing needs concerning mobility. Technological progress such as self-driving cars, connected cars and driver assistance systems will fundamentally change the insurance business model, and new types of claims and liability will arise. Individual user behavior will also change, with more and more mobility providers (for both cars and for example e-bikes) and car-sharing offers. Mobility is becoming increasingly multi-modal – more and more people are deciding which type of mobility they need on a case-by-case basis, i.e. how they combine their use of public and private transportation.

AXA Winterthur is therefore focusing on cooperation both in and beyond the sector – because we are convinced that tomorrow’s problems can only be solved if we bring together the best minds. Together, we want to understand how these changes – not just

in technology – will impact society and the environment. The key question is what role we as an insurer will have in the world of future mobility.

Today’s traditional motor vehicle insurance continues to be satisfied with its position right at the end of the customer journey, with the sale of a policy and the handling of claims. The insurance still has no role to play in any of the previous stages (selection of vehicle, financing). The danger here is that the future policy will soon be included as part of the vehicle package (if, for example, manufacturer XY automatically registers all vehicles with a selected insurer) and the insurance companies are left simply handling the claims. And once the vehicle has been acquired, insurers sadly leave the car driver alone in many aspects such as maintenance, value preservation, resale, and refinancing. That worked for decades – but, in the foreseeable future, it will no longer be enough.

In the past, if a claim was not covered, it was the customer’s problem whether and how to conduct the repair. Today, AXA Winterthur has offers like DriveAgain (www.driveagain.ch) whereby the customer conveniently receives 3 offers from repair garages within 48 hours. This doesn’t just make it easier to find a suitable garage – the customer also benefits from the transparency of seeing what a repair

really costs. Hence, repairs and services can be carried out quickly and with a good feeling.

And who says that in the event of a claim a replacement vehicle is always necessary? Why don’t we, as an insurer, expand our offering with mobility services, short-term public transportation subscriptions, or services like UBER? There are lots of open questions and even more possibilities.

Hence, for AXA Winterthur, it’s important to no longer concern itself with just insurance policies for motor vehicles; it must also become a relevant and reliable partner in all matters concerning mobility. AXA Group’s goal is to relieve its customers of certain worries and create free space for them. If we are to reach this goal, we must understand the changes that are taking place, and how these are impacting society and the environment. That’s why we are investing in the ecosystem mobility and in a collaboration with Rinspeed.

It’s all about looking at the theme of mobility in its entirety and in particular from the viewpoint of the customer. Today’s customer interacts with a whole series of sources and providers during the selection, acquisition and financing stages. But what if the customer only had to interact with one big, reliable partner? Would this give the customer the free space that we at AXA want to create for him? We are therefo-

re focusing on innovative ideas, collaborations and pilots in the field of mobility – in order to gather experience and to be in a position to develop forward-looking offerings that are both relevant and interesting for the customer.

ABOUT THE AXA GROUP

Some two million customers trust AXA Winterthur. They rely on AXA’s experience and advice in personal, property, liability and life insurance as well as occupational benefits insurance, and every 5th vehicle is covered with the biggest all-lines insurer. Moreover, AXA Winterthur is the only insurer in Switzerland with its own accident research and prevention unit. The nine employees of the unit carry out basic professional research in the analysis of accidents, as well as promoting and launching measures for improved prevention in road traffic. In this respect, it examines the development of new technologies.

AXA BREAKS NEW GROUND WITH 360-DEGREE TECHNOLOGY

At this year’s crash tests in Dübendorf, there was a premiere from AXA Winterthur: Switzerland’s biggest motor vehicle insurer presented for the first time at the AXA crash tests in Dübendorf the 360-degree video “One Second Away” that shows, from a variety of

angles, how the accident researchers at AXA Winterthur carry out a crash test. A 360-degree video of a head-to-tail crash includes various perspectives of the driver, allowing us to experience the crash and its consequences ourselves, as if we were there. With its 360-degree video, AXA Winterthur is breaking new ground in its prevention efforts: “Being present during an accident is a key factor for successful prevention, as our experience has shown. With the help of virtual reality, this experience reaches an entirely new dimension; the 360-degree video allows the viewer to become immersed in the situation,” explains Bettina Zahnd, Head of Accident Research & Prevention at AXA Winterthur



BORBET

LEICHTMETALLRÄDER

The easiest way to predict the future is to shape it. With the Oasis, Rinspeed has proven that breaking the standard moulds can sometimes pay off. The Swiss company's latest innovation combines a range of concepts that depart from the norm, coming together to achieve a total and integrated redefinition of the car. This approach is also reflected in the light alloy wheels. The BORBET wheels are distinctive, combining an impressive turbine look with fantastic aerodynamic qualities.

BORBET, a family company now in its fourth generation, has been working in metal processing for more than 135 years. Since 1977 its accumulated expertise has been exclusively deployed in the production of light alloy wheels. 10 years after that decision, the first BORBET brand wheel arrived: the legendary BORBET A. Today, it is still considered a beloved classic and a landmark in the light alloy wheel production.

Now BORBET is one of the leading light alloy wheel producers worldwide with over 4,600 employees, 9 state-of-the-art sites across three continents, and approximately 18 million wheels produced per year, as well as being partner to over 40 automotive producers and manufacturers. The company attaches enormous importance to prioritising customer needs to the utmost extent and on a sustainable basis, and makes engineering, production and sales processes its key points of focus. Their approach offers many benefits for the supply chains of automotive producers, as has been recognised with a wide variety of supply awards; so it's no surprise that Rinspeed also relies on the experience, flexibility and innovative production processes of the light alloy experts from the Hochsauerland region.

BORBET has provided light alloy wheels to a Rinspeed concept study for the fourth time in a row. This time, it focused on the Rinspeed Oasis. The fact that this is a coherent vehicle concept is clear even just from the look of this electric speedster. The newest version of this compact, self-driving Swiss car makes a first impression of being extremely futuristic, streamlined and sustainable.

Qualities that are also reflected in the light alloy wheels. From first glance the BORBET AeroTec light alloy wheels, tell you that this wheel is built around an extraordinary approach. The 20-inch light alloy wheel features a broadly closed look. The five wide spokes have level

contrasts, giving the wheel diverse accents with complete streamlining. Compact, diagonally offset recesses allow onlookers to view the vehicle components beneath. The well-thought-out shape feels fresh and futuristic, whilst also offering aerodynamic benefits: in this design, flow resistances are reduced and air turbulence is optimised. As well as the vehicle running quietly, this primarily achieves increased energy efficiency.

The surface processing completes the appearance of the BORBET AeroTec, in every sense of the word. The generous surfaces are perfect for finishing with the exclusive BORBET ExaPeel process. For this wheel, the OASIS lettering has been deliberately emphasised on a spoke. With this innovative finishing process, the wheel is painted in layers with up to 3 different colours. At the required points, a laser precisely burns off the upper layers of paint in such a way that the colours beneath appear point by point. This process enables graphics, logos, writing, adornments and much more to be visualised with incredibly crisp outlines - even in very small impressions! Combined with other surface treatments such as high-gloss turning, it creates entirely new options for wheel design and vehicle presentation and customisation.

What's more, the results of the ExaPeel process are 100% colourfast and weatherproof. BORBET quality - tried, tested and proven a million times over - is also reflected in the BORBET AeroTec.





CARL F. BUCHERER

LUCERNE 1888

VISIONARY PARTNERS.

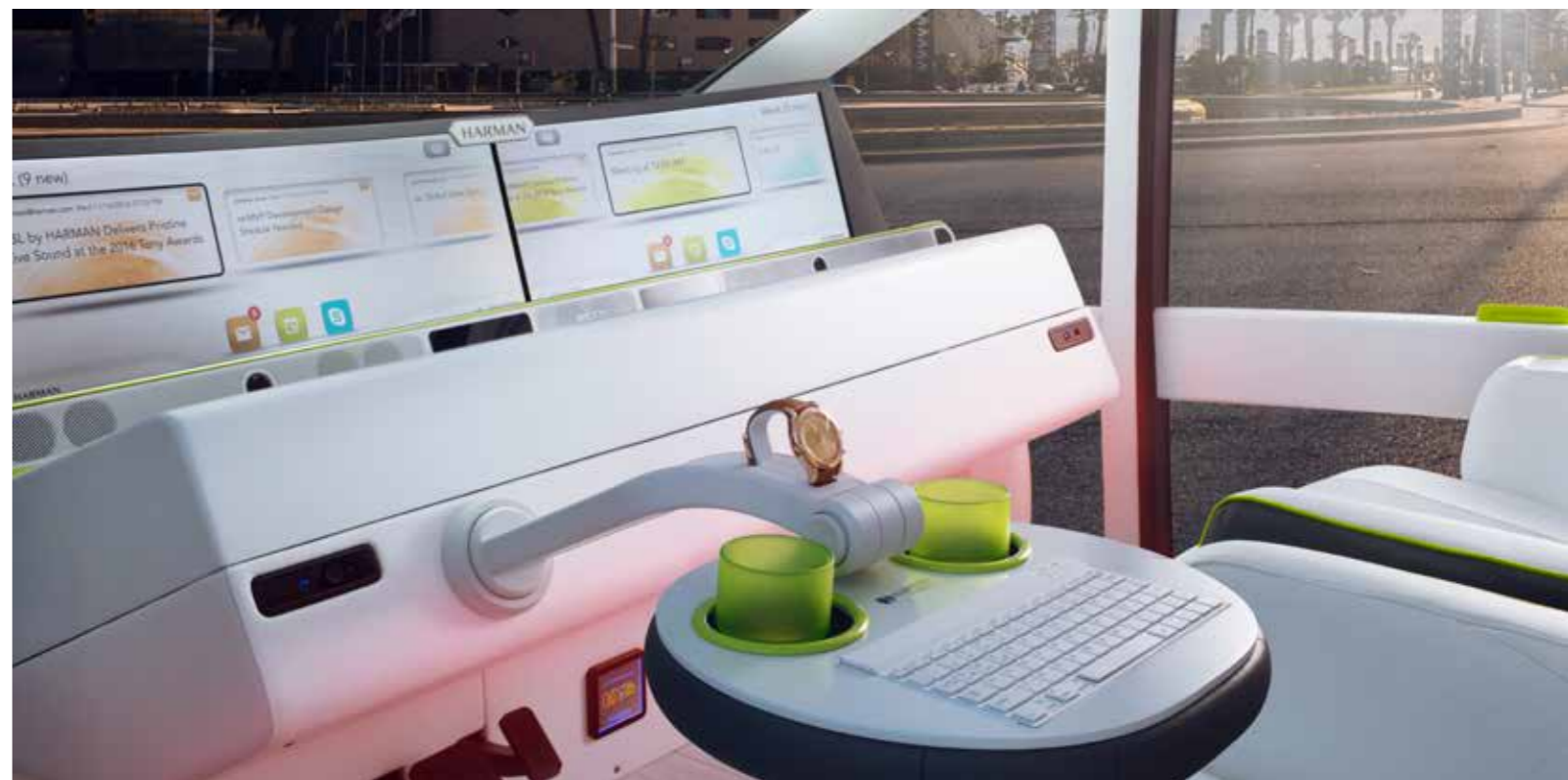
Creative technology and futuristic design - Carl F. Bucherer and Rinspeed together make a mark for progress.

For ten years already, a strong partnership exists between the watch manufacture Carl F. Bucherer and Rinspeed. The two companies are not only bound by their Swiss roots, but also by their philosophy: Always striving for new solutions and ideas to further innovative technologies. In the new concept car Oasis by Rinspeed, Carl F. Bucherer exclusively reveals the first novelty for Baselworld 2017, the worldwide largest watches and jewelry trade fair. The new Manero Flyback is embedded in the steering column of the concept car that winds up the timepiece with every movement, supplying energy. This way, Oasis acts as an extraordinary watch winder. "We are proud of this anniversary - a ten year partnership shows the successful combination of mechanical craftsmanship and modern, future-oriented thinking", emphasizes Sascha Moeri, CEO at Carl F. Bucherer.

Within the classic, round case of the Manero Flyback, there is a sophisticated automatic chronograph movement. By pressing the push piece, it is possible to measure various time periods subsequently, nearly without any delay. For in the background, the wheels of the chronograph continue to move and restart the hands as soon as the push piece is let go - a big difference to conventional chronographs that require pressing the push piece three times for a reset. The Manero Flyback brilliantly stands out from the interior of Oasis. The champagne color of the dial is harmoniously completed by the cognac hue of the leather wristband. A truly elegant mechanical timepiece for a modern, innovative driver's cabin - Gentlemen, wear your engine!

A Swiss Story of Tradition.

The story of Carl F. Bucherer begins 1888 in Lucerne, when Carl Friedrich Bucherer opened his first jewelry and watches store. Within a short time, his name became synonymous with exclusivity and originality. Carl F. Bucherer today is an internationally successful manufacture brand. One milestone are the manufacture's own movement families that are partly driven by a peripheral rotor - Carl F. Bucherer was the first manufacture brand to put this concept into series production. With more than 125 years of history, Carl F. Bucherer stands for incomparable design, intricate details and highest manufacturing quality from the heart of Switzerland. carl-f-bucherer.com





SAFETY FROM A SINGLE SOURCE

DEKRA has been committed to safety for over 90 years. What was founded in 1925 in Berlin under the name of Deutscher Kraft-fahrzeug-Überwachungsverein e.V. is today one of the world's leading expert organizations. The company currently employs over 37,000 people in more than 50 countries on all five continents. Our vision is for DEKRA to be the global partner for a safer world. This is important for many different areas of life. These include safety on the road, at work and at home. The „Internet of Things“ is increasingly becoming a focus of all these areas.

Therefore, it is no surprise that DEKRA is on board with the Rinspeed Oasis. Safety in this living room on wheels must be ensured in a variety of ways. The key words in the context of the autonomous and networked car of the future are: secure wireless connection, interoperability and electromagnetic compatibility, cyber security, and functional safety.

However, the product safety of the individual components comes right at the start. These will be independently tested and correspondingly certified by DEKRA experts in their laboratories around the world.

DEKRA has a number of laboratories, in Arnhem (the Netherlands), Malaga (Spain), Taiwan, and China, for testing electromagnetic compatibility (EMC), with regard to individual components and with regard to the vehicle as a whole. It is essential that neither the individual elements nor the system as a whole mutually impair other products in the area when functioning. This also applies in the interaction of different devices and systems within a vehicle, and in communication

between the vehicle and the environment. The responsibility of testing this in advance is a core element in the work of the DEKRA experts in the Product Testing and Certification business unit.

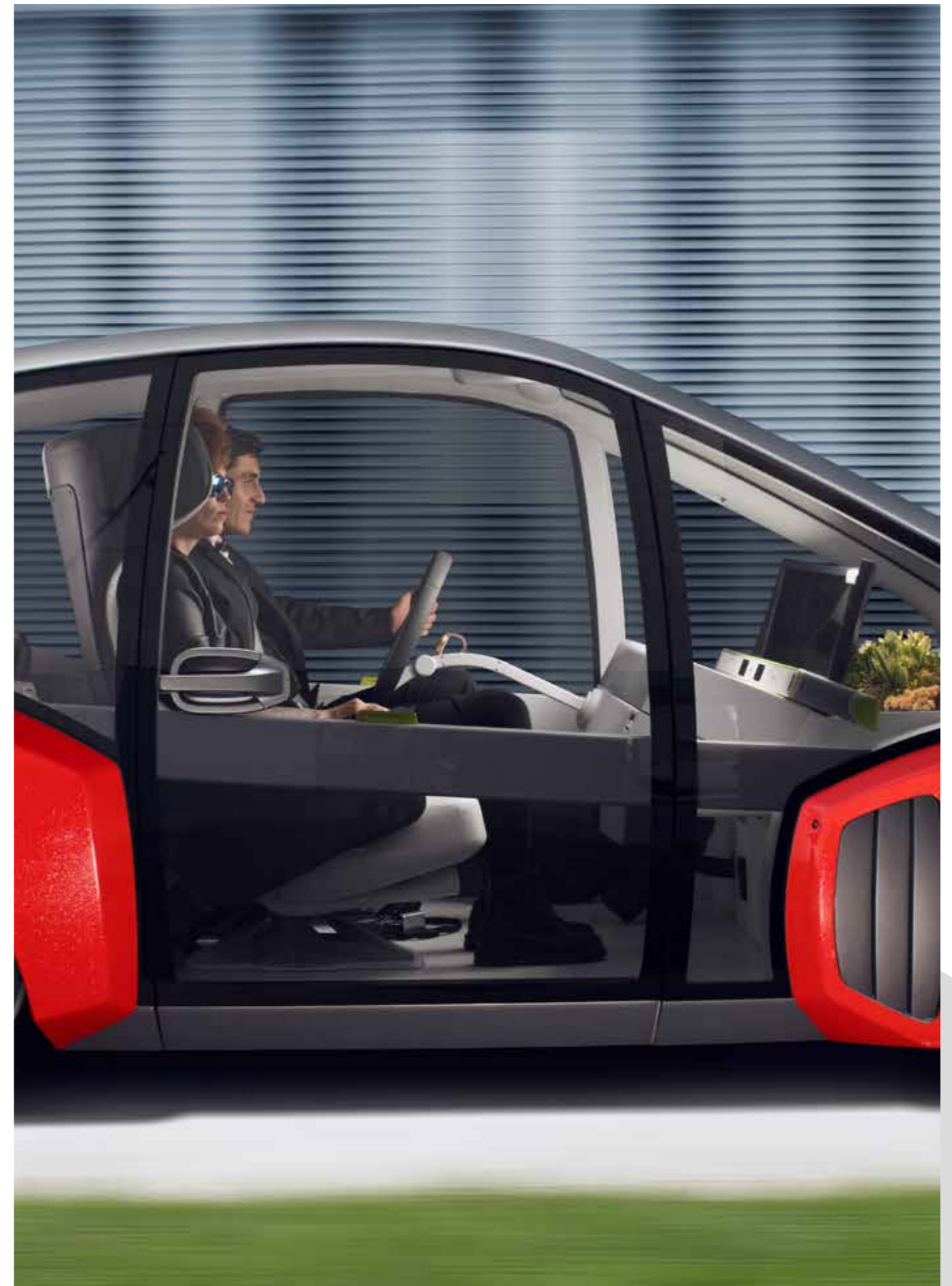
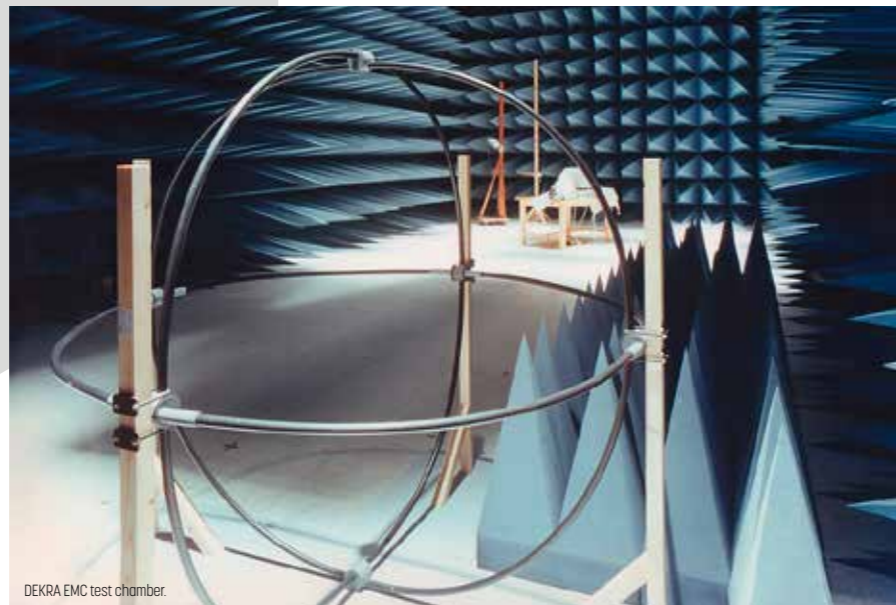
Secure wireless connection is what the interconnected world lives on. The DEKRA subsidiary, AT4 wireless, offers the corresponding services with their complete offer in certifying and testing wireless connections. They offer complete coverage in different technologies (GSM/GPRS/EDGE, WCDMA, HSPA, LTE, WiMAX™, Bluetooth®, Wi-Fi®, RFID, and NFC) and offer other services including conformance, regulatory, and interoperability testing.

Alongside the individual considerations of various safety aspects, DEKRA experts also deal with the overall functional safety of systems. This includes avoiding risk of injury to people caused by possible malfunctions

of systems or controls. The interaction of hardware and software as a whole is the focus of testing here.

In addition, DEKRA's competence in the „classic“ automotive sector comes into play. As the global number one, DEKRA carries out approximately 26 million vehicle inspections annually. In terms of homologation and type testing, DEKRA experts in several countries ensure that new vehicle models conform to regulations and are therefore safe to be on the roads.

In this way, not only in the Rinspeed Oasis, DEKRA offers safety from a single source



MAKING A LIVING SPACE MORE LIVABLE

Dr. Schneider products in the Oasis concept car

The movement from a pure vehicle towards more of a feel-good living space. This is the development in automotive interiors that the Dr. Schneider Unternehmensgruppe has been driving forward with their innovations. The automotive supplier, headquartered in Kronach-Neuses (Germany/Bavaria) follows three essential basic thoughts in doing so: A feel-good space captivates through its high-quality, uncluttered stylish design. It possesses a clever, multifunctional storage system and satisfies with completely new possibilities when it comes to climate control and ambience design.

Dr. Schneider has integrated four product ideas into the new Rinspeed "Oasis" concept vehicle, which implement these essentials ideally.

The most conspicuous new development in Oasis is a rotatable steering wheel table, which fully redefines the steering wheel as the control center. A keyboard is integrated into the front side of the marble-like surface of the table. The flip side is a writing desk with a built-in pen holder. This "behind-the-wheel" work place is made perfect by two bionically functioning cup holders.

Dr. Schneider's newly developed satellite vents are also on board, which together with the discreet rear broadband air vents create a kind of surround-air-system. This creates an individualized ventilation atmosphere, in the same manner as a sound system that has specially adjusted for a specific room.

The noise-optimized satellite vents and the broadband air vent grills perform a wide range of functions. The satellite vent is touch-sensor controlled and thanks to its flexibility (330°-rotation, height-adjustable) can be used as a front and side window defroster or aimed directly at the passengers. The air output

can be selectively regulated in two ways. In breeze-mode, the air comes in irregular intervals and varying intensity like an ocean breeze. In the almost completely closed mode: simply diffused. And: the satellite vent is "on demand", which is to say it is only visible when in use. In contrast, the rear broadband air vents are a strong visual element. Thanks to its wide design, the air flows along the entire rear window (defrosting it at the same time) and then wafts gently down onto the passengers from above.

Dr. Schneider has also installed an example of their new, intelligent storage system into the Rinspeed 2017 concept vehicle. In the center console, there is a visually unobtrusive garbage can whose functionality is well thought out - right down to the last detail. There is a compartment for moist wipes integrated into the underside of the lid. A clamping frame for a garbage bag is built in, as well as a reservoir for an extra roll of garbage bags. The innovative automotive supplier has installed a compartment with a hinged flap above the garbage can. Upon opening the cover, a series of convenient storage spaces, similar to the compartments of toolbox, can be accessed for all the objects of everyday life in this rolling living space: pens, notes, sunglasses, coins, tissues, smart phones, whatever. Just close the flap and the storage compartments disappear, leaving the interior neat and secure.

"All the modules we develop here at Dr. Schneider, offer a high level of flexibility and of course are freely configurable," explains Markus Langbein, Vice President Sales & Marketing at Dr. Schneider. The elements can be moved using motors, using gestures or touch-panels, remotely remote via the vehicle controls or through the integration of camera systems. "We focus on implementing the solution that best helps the OEM achieve their high standards." As a



full service supplier, Dr. Schneider also strives for the highest of standards: to combine robust product technology and high-quality surface finishes with practical functions in order to create added value for the interior and the driver. We are driven by our motto: "We make the car the best place in the world".

The Dr. Schneider Unternehmensgruppe is a premium development partner to the modern automotive industry. The family-owned automotive supplier headquartered in Kronach-Neuses, Germany has over 3600 employees worldwide. We produce highly innovative products for automotive interiors in seven of our own production facilities. Dr. Schneider is one of the world market leaders in the premium segment for ventilation systems and window frame trims. (www.dr-schneider.com).

The company, which generated revenues of 500 million Euros in 2015, is renowned for strong innovation, quality and great flexibility. With their commitment and know-how, the loyal, highly motivated workforce forms the foundation for developments which can quickly find their way into vehicles and impress our customers all over the world.



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OASIS: “WHISPERING PEOPLE”, PUSHING BOUNDARIES AND MERGING LIVING SPACES

The latest developments coming out of Silicon Valley regarding new services by taxi or courier firms prove that, for decades, people have been paying for services they were not even happy with. Why have mobility customers accepted for so long that they do not know the person transporting them - and indeed cannot get to know them in advance? That the car itself may not live up to their expectations regarding cleanliness? Not to mention the (often correct) feeling that the chosen route may not actually be the cheapest solution for the mobility customer? And then, suddenly, “people whisperers” from California appear, with a new transport service concept that takes things to another level: carriers are no longer anonymous, cars are clean because carriers take care of “their” car, and the fare is fixed prior to the journey. From a macro-economic standpoint, what is happening here is a merging of singular sectors with the automobile, e.g. taxi businesses with (formerly rather inactive) providers of mobility services, such as IT, portables etc. Ultimately, boundaries are being dissolved and living spaces are blending into one another; in this case, mobility is merging with the home and work environments.

But what does this signify for the (auto-) mobility of the future? We need cars that can, on the one hand, offer “unlimited” mobility, but will, on the other hand, better realize mankind’s desire for freedom. The trend towards zero-emission and autonomous driving provides significant support for this cause. Why should people travel from point A to point B wedged into seats that nobody would ever put in their own living room? If a car is ultimately transformed into an optional robot

car, traditional structures in the interior can be changed. Drivers will no longer be forced to focus all their attention on the steering wheel and oncoming traffic; rather, they will be able to lie back and relax in their new oasis of well-being - in their actual Oasis, for example - and put their precious time to better use. This, of course, begs the question of what passengers will do with their extra time. Will cars be the new living rooms?

Due to this development, living spaces which were formerly experienced in a singular way now blend into one another. Boundaries are transcended, allowing not only for a new experience of mobility, but also for an exceptional fusion of technologies like IT and cars.

However, it is not only the home and work environments which are moving closer together and dissolving boundaries. With new mobility concepts such as car sharing, there is a risk of depersonalization, precisely because mobility customers no longer own the cars and therefore have no - or only limited - means of tailoring fittings to their individual demands. It is possible to imagine changing a car’s exterior color using new LED technology. But it would be far more difficult to do this in the interior, even though it is conceivable to have changing color effects in the cockpit or on the interior doors.

This raises the question to which extent and in which manner a car can and should be personalized. Is it the friendly yet ever-same voice greeting the passenger as they get into the car? Or are we indeed talking about a new form of personalization? Let us examine another living space, which most people



also know very well: hotels, also known as the „fourth living space“. Usually, when a guest enters a hotel room, the television is already switched on, and showing a welcome message. This greeting is always the same, regardless of the guest - with the possible exception of the guest’s name (which has hopefully been spelled correctly!). Does this message convey that the hotel manager has really thought about their guest? How much better would it be if, upon entering the room, guests were welcomed by their favorite drink or food? In this case, one could be certain that the hotel manager had put a good deal of thought into making the guest’s welcome as personal as possible.

Considerations like these ultimately influence new car designs, too. Personalization or even individualization are no longer confined to a stereotyped greeting by a generic voice

coming from the speakers; instead, seat positions, interior illumination etc. are set to the user’s individual preferences as soon as the car is opened by chipcard or code. Neither our PC nor our notebook, tablet or smartphone greets us. So why should things suddenly be different in respect to cars?

Will the car of the future be a sort of “crossover artist”, because its new inner life is basically trying to work out how to transfer the living room into the car? Or will the innovative providers of new mobility services such as car or ride sharing become provocateurs of singular institutions such as taxi businesses? Isn’t it rather all about the other focal point that these new players have - to concentrate not on the product but on the person? Should these companies therefore be considered disruptive? The logical consequence is that cars, and therefore the mobility of the future, will evolve into “people whisperers”. For users, this will ultimately lead to the creation of new added value in cars and a formerly unknown feeling of well-being in a mobile oasis, such as the Oasis.

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SWISS MADE

ESORO - your experienced and innovative engineering partner for product developments, lightweight composite parts and clean car developments for cars and trucks.

As the concept vehicle "Oasis" with electric drive and autopilot represents the megatrend of ongoing electrification and implementation of the digital world it will be presented at the CES in Las Vegas, the new place to be also for the leading automotive manufacturers and suppliers. Oasis is a clear alternative concept to the martial appearance on urban asphalt. The exquisite two-seat runabout looks pretty futuristic with its large glazed areas and front wheel spats. Kind of like a trendy buddy of Star Wars icon R2D2. Both are capable of turning on their own axis with almost zero radius. A real next generation approach - with host of technical and visual treats inside.

"Oasis" is the 18th project, which ESORO realized for Rinspeed. ESORO has been responsible for the manufacture of the chassis, all composite interior and exterior body panels and fames, which includes also the doors and the innovative code-protected "drawer" in the rear, which also can be cooled or heated as needed. ESORO has also been responsible for the development and realization of the energy management system, the vehicle batteries including battery management system and harness of the vehicle. Additionally, ESORO implemented and adopted several different technologies and innovations of the project partners for the interior and exterior. Last but not least, ESORO was responsible for the final assembly of the interior and exterior of the Oasis.

ESORO has now 26 years of experience as engineering partner for product developments, concept vehicles and components focused on lightweight construction, alternative drivetrains and mobility. During this time ESORO has gained a well-deserved reputation for excellent efficiency and innovative solutions, which is demonstrated by numerous prototypes and serial products.

Since 1990 ESORO has been working intensively in the field of conception, implementation and tests of clean car concepts and drive systems. ESORO is thus one of the few companies in the world with well-founded experience in development and operation of electric, plug-in-hybrid and fuel cell drives. These activities are our core competence. ESORO therefore realizes EV projects in close cooperation with well known OEM's starting with the initial conception and the prototype through to the serial project phase.

In 2016 ESORO has developed for COOP world's first fuel cell truck in the 34t class (18t truck with a 16 t trailer) which has been presented on November 4th 2016 during the opening of Switzerland's first public Hydrogen fueling station, which is operated from COOP and get's delivered the Hydrogen from the close by CO2 free production from H2 Energy at a river power station. The ESORO 34t fuel cell truck has a range of 400 km and can be refilled in

less than 10 minutes. Therefore the truck can meet the very high requirements for the COOP logistics without CO2 emissions.

ESORO is also developing fiber reinforced components from initial conception up to pre-production samples. In-house specialists optimize the component properties and characteristics throughout the entire development process. Important steps are non-linear, orthotropic Finite Element Analysis and simulation.

Another development from ESORO is the E-LFT production technology developed for Weber Automotive. E-LFT makes large scale production of high-strength and lightweight composite parts affordable. E-LFT composite parts weigh more than 30 percent less than comparable steel parts. For the development of the smart fortwo tailgate, which now has been produced 800'000 times with the E-LFT process, ESORO received the highly recognized JEC Innovation Automotive Award 2008.

> more: www.esoro.ch



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From mobile to stationary energy storage: EVA Fahrzeugtechnik GmbH is powering the energy transition

Innovations dealing with electric mobility and renewable energies go hand in hand at EVA Fahrzeugtechnik GmbH. This is because this engineering development partner and supplier to renowned automotive manufacturers is setting its sights well beyond the automobile: On the one hand, it works towards ongoing optimization of energy storage. On the other, it looks for solutions for later re-use when the capacity is no longer sufficient for use in the vehicle. The Munich company is currently unifying mobile and stationary energy storage into a future-oriented overall concept, including some hot topics for this concept.

Energy storage systems for electric vehicles come with some very strict requirements: They must be extremely robust and temperature-resistant, enable longer and longer ranges and they cannot be either too heavy or too expensive. Many engineers have been working intensively for many years on this topic alone. Particularly because development is so demanding and complex, it's certainly worth looking at the „afterlife“. EVA Fahrzeugtechnik GmbH does just that and thus is covering the range from mobile to stationary energy supply. It is creating new solutions for the energy supply of tomorrow from energy storage systems that no longer provide sufficient capacity. Thus it has developed prototypes for classic single family homes, along with complex megawatt systems that store renewable energy, keeping it ready for use upon demand.

Green light for green power

In this way, the innovative company tackles a major hurdle on the path towards energy transition. Because as the number of wind and solar energy systems fortunately continue to increase in Germany: Their power generation is and remains dependent on the time of day and the time of year so that this fluctuates sharply. Through the use of discarded batteries from electric vehicles, it is possible to store this environmentally-friendly energy independent of these external factors, as well as meet the energy demand at will and last but not least, make a significant contribution to environmental protection. Currently, solar power that is generated from one's very own roof top is usually cheaper than the „power from the grid“. If this power were always available from everywhere, then it would be unbeatable in terms of price, performance and sustainability.

Energy supply gets smart

The yield obtainable from a home's solar power system is easily predictable these days. In order to ensure efficient interaction between power generation, power storage and consumption, the house system of the future will need to exhibit a certain level of intelligence. In this kind of smart home, the green electricity will always be delivered from storage to the location of use - whether it's charging the electric vehicle, controlling the electric heat pump or operating the stove and washing machine. On a larger scale, there are also so-called smart grids that store the decentralized-generated power and provide it as intelligent, interactive power networks so that the massive expansion of power lines is unnecessary. Networked stationary energy storage systems can thus perform completely different tasks in these kinds of modern supply concepts: They compensate for peaks

in consumption, store the generation surplus from the wind and sun as cost-efficient off-peak electricity and thus make a significant contribution to grid stability.

Increased e-mobility at all times

Like an electric vehicle which always has its energy supply on board, entire houses and localities could be supplied with power almost autonomously. While smart grids certainly can compensate for peak loads and over-supply, the power source and thus the range of e-mobility is limited. EVA Fahrzeugtechnik GmbH offers a „smart“ solution via an extra battery that can be easily installed at home. It communicates independently with the vehicle regarding charge status, capacity and performance so that the additional range can be displayed reliably. Normally, the built-in battery is sufficient for the daily routine; however, the energy level can be individually

adjusted for long distances in this way. An important advantage here is that the weight of the vehicle is not increased unnecessarily. In addition, the operating life of the energy storage system is increased due to demand-oriented use.

Mobile and autonomous everywhere

Energy supply and electric mobility have reached a level of independence today that was a distant reality just a few years ago. EVA Fahrzeugtechnik GmbH continues to drive this development to its limits. With its innovative powerpack, it has created a mobile power source that offers almost unlimited possibilities in the private sphere. It is a practical energy storage system that can be used as an autonomous vehicle component anywhere and always where it's required. This powerful battery can also be moved back and forth using a transport cart to where it's requi-

red independent of the car: from the home charging station to the vehicle or to any place of use in the great outdoors. For outdoor activities, for example, it can be used to operate grill stations, sound systems and coolers, or charge smartphones and tablets. The powerpack ensures the operation of important electrical devices as an emergency power generator. And it even supplies green energy to entire weekend houses whenever it's required and can then be later returned to its place in the rear of the electric vehicle.





PASSION FOR YOUR LIGHTER FUTURE

Lightweighting with the right material & bionic design

As a development and manufacturing partner, we are one of the top addresses for the global automotive and commercial vehicle industry. We contribute with intelligent, high performance lightweight casting solutions to the reduction of weight of modern cars and with that to the reduction of fuel consumption and CO2 emission and range increase. Whether with bionic design, advanced materials or manufacturing technologies - we are exploring new directions in order to achieve ambitious targets around weight, function, quality, safety and sustainability. Around 5,200 employees at ten locations worldwide are working with passion for the „lighter future“ of cars and trucks.

Castings are used under high loads and are often classified as safety components. To achieve the maximum possible weight reduction with bionic design, that means the use of shapes and patterns derived from nature, materials with improved mechanical properties are applied.

The manufacturing process of castings is very suitable for lightweight components. Due to the fact that the metal is formed in a liquid state, almost any cross section and shape is producible on a large scale safely and in a minimum of time. Using cores makes even hollow profiles possible - an important design freedom to design highly stressed components. At the same time, the wall thicknesses can be easily adapted to the loads. The material is only used where it makes sense - an important key for lightweighting.

Due to the possible choices of material and processes, application of castings are very broad and flexible. Depending on the application and quantities lost sand molds or permanent steel molds are used. Aluminum and magnesium offer with their low material density an excellent lightweight potential. High-strength ductile iron allows to produce highly stressable thin-walled structures.

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#OASISSOCIAL

The Urban Car 2.0 in touch with the social web

While the streets around the stadium are quiet now, Twitter is abuzz that overtime will soon be over and tens of thousands of fans will soon be flood out into the streets and into their cars. The Rinspeed Oasis vehicle, with its HARMAN LIVS technologies (Life-enhancing Intelligent Vehicle Solutions), is connected and one step ahead, anticipating the need for an alternate route to make a smooth exit. After leaving, you receive a personalized notification that a new restaurant has opened up nearby which your Facebook friends have given rave reviews. A simple "OK" to the Oasis' personal assistant and your reservation is secured.

This is all possible thanks to the connectivity provided through HARMAN's compute platform. Human-machine Interaction with the HARMAN system is done via the 5K widescreen display, controlled via voice or gesture and spread out in a gently curving screen before the Oasis passengers. In manual driving mode, only the key information is displayed; the electronic rearview mirrors are dimmed as long as they are not required - gaze tracking makes this possible.

The rolling office during the autonomous drive

Shift into autonomous mode, and a flick of the wrist transforms the steering wheel into a keyboard. The car becomes an in-vehicle office - complete with Office suite and Skype video calls with live translation function. At any given moment, the personal assistant recognizes which of the vehicle's passengers is talking - and his or her mother tongue. With a swipe of the hand, news can be exchanged and shared in the cockpit of the car via social channels.

Traveling for business? After the drop-off at the airport, the Oasis can chauffeur a couple who sought a carpool opportunity via Facebook. On Twitter, the Oasis can announce its availability to friends of the owner, who can summon it via WhatsApp. Two days later, the Oasis will drive up to arrivals, punctual to the minute thanks to HARMAN LIVS, and undisturbed by delayed flights, traffic tie-ups, or the line waiting at baggage reclaims.

Shifting into entertainment mode, passengers can watch movies in CinemaScope format with Harman Kardon 24-channel sound, which follows the passenger virtually as the seat glides into the relax position. The vehicle's personal assistant can capture images of picturesque sunsets - the Oasis keeps a photo log and can post to Instagram to keep followers up to speed in real time. And of course, when finally ready to switch out of autonomous mode, an automatic fitness and concentration test is conducted to ensure a safe transition.

Always at your service proactively: The personal assistant

The personal assistant always lends the driver a helping hand, even outside the vehicle. Being connected to the HARMAN Cloud platform, it can control your connected home and arrange lighting for you before you arrive home. It also allows for remote insights into and out of the car - to keep your car safe and accessible only to trusted people.



HARMAN LIVS brings the Oasis to life

The centerpiece of the Oasis are the HARMAN LIVS technologies (Life-enhancing Intelligent Vehicle Solutions), based upon the comprising competency as well as the long-term leadership in innovation of the company in the areas Infotainment, Navigation, Connected Car and Connected Services.

HARMAN integrates all these components for the way to autonomous driving in order to achieve a seamless total experience:

- Scalable infotainment platforms, which can be adapted individually to the needs of automakers, vehicle segments and types
- Personal assistant which is continuously learning and thus always one step ahead
- Complete Office Suite including Skype video calls for a maximum of productivity
- Modular connectivity solutions, which provide the high-speed networking interface to the outside and within the car
- A large number of new, useful connected services such as car sharing, social media, weather, parking and reservations on the basis of the HARMAN Cloud Platform
- Controlling of the Connected Home as well as seamless integration into the Internet of Things (IoT)
- State-of-the-art camera-based Advanced Driver Assistance Systems (ADAS), which monitor, record and assess the surroundings of the entire vehicle
- High-resolution 3D maps (HD mapping) for the required high-precision positioning system as well as learning navigation
- ADASIS e-Horizon as an extended range of perception beyond the driver's visible horizon using V2X technology
- The comprehensive HARMAN 5+1 cyber security architecture with hypervisor and firewall as indispensable basis for all technologies and services, including OTA (Over the Air) update capability.

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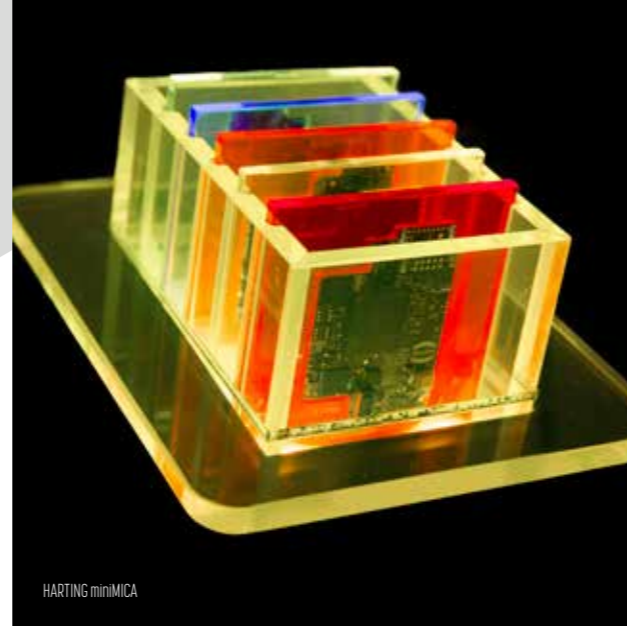
Pushing Performance

THE "OASIS" CONCEPT CAR AND HARTING'S MINIMICA:

Focussing on the requirements of individual vehicle users

Rinspeed and the HARTING Technology Group – these two innovative players complement each other perfectly. For more than 35 years, Frank M. Rinderknecht and his team have been making dreams of the future come true. With visionary mobility concepts and futuristic vehicles, the Swiss Rinspeed company is changing the automotive industry.

HARTING too, with its innovative product portfolio in the area of Connectivity & Networks has been keeping pace with the times for over 70 years now. As a pioneer for Industry 4.0, the Technology Group offers customers tailor-made solutions for the intelligent, flexible and networked products of tomorrow. One of these solutions is the HARTING miniMICA.



HARTING miniMICA



HAI4YOU Factory

THE EVOLUTIONARY AND ENVIRONMENTALLY FRIENDLY MICA SYSTEM

Rinspeed and HARTING worked together successfully last year since when the MICA, with which HARTING won the prestigious HERMES AWARD in April 2016, has been fitted in the „EtoS“ vehicles to provide independent emission and status monitoring.

This year, HARTING is providing support to Rinspeed's „Oasis“ car in the form of another component in the evolutionary and environment-friendly MICA system: the miniMICA. A pluggable module, the miniMICA has been used to create a scalable and flexible architecture which allows computing components to be connected in various different ways. The components themselves and the configuration of the system can be tailored to the application in question. For example, there are components for performing calculations, for communication and for connecting sensors. The Rinspeed vehicle „Oasis“ is based completely on new mobility concepts in response to a rising demand from users for individual mobility solutions for the transport of people and goods. The crucial questions are who will own the vehicle, who will operate it and what will they use it for?

Thanks to the flexible architecture and the use of different modules, the „Oasis“ can be adapted to the requirements of each vehicle user. „This means that the Oasis fleet can be individualised with an efficient use of resources,“ says Dr. Lutz Tröger, Head of Corporate Technology Development at HARTING.

For the HARTING Technology Group, for over 70 years one of the most innovative companies in industrial connectivity, the miniMICA represents a convincing example of the growing portfolio of products, components and software solutions for Industry 4.0 applications, which HARTING markets under the claim HAI4YOU (HARTING Integrated Industry 4 You) and thus puts customer benefit in the focus.

Because the economy and society are on the threshold of a profound change: the digitisation of production technologies and operational sequences on to intelligent, autonomous production systems on horizontal and vertical levels lead to a paradigm change in industrial production. In the „fourth industrial revolution“, Industry 4.0, production will become more flexible, more economic, more efficient with resources, and enable a strong individualisation

of products and the integration of different business and value creation processes.

The „Internet of Things and Services“, the networking of individual devices and machines with implemented information technology, is the technological basis of what is known as Integrated Industry. It improves the competitiveness of companies in decisive areas.



Philipp Harting, CEO of the HARTING Technology Group.



Dr. Lutz Tröger, Head of Corporate Technology Development at HARTING.

SHAPING THE FUTURE WITH TECHNOLOGIES FOR PEOPLE

HARTING thus underlines its claim as an innovative driver of technological development. The HARTING Technology Group in Espelkamp (Minden-Lübbecke district) is visionary, thought leader and pioneer of this development. The owner-run family company develops and produces electric, electronic and optical connection, transmission and network technology and software. Under one roof, tailor-made solutions corresponding to customer desires and offers for all levels - from innovative components to specific applications and services and on to system solutions and consulting arise in accordance with the HARTING vision „We want to shape the future with technologies for people“. Thus the Technology Group is globally leading in future markets such as machinery, traffic and automation, E-mobility, and wind generators. In addition, HARTING produces electromagnetic

components for the automotive industry. E-mobility solutions are also increasingly gaining in importance at HARTING, because the automotive business area is registering a strongly rising demand for solutions in this area.

The company develops and produces charging equipment for electric and plug-in hybrid vehicles. Customers can apply the equipment in accordance with their own requirements, since the HARTING vehicle charging cables are available in all the three globally used plug system versions (with the corresponding approvals) for the usual AC charge interfaces. For DC charging HARTING offers the new COMBO-Highpower. The COMBO-Highpower offers a charging capacity up to 200 KW (200 A) with no active cooling. This means rapid charging without the need for additional cooling units.

HARTING ON A COURSE OF DYNAMIC GROWTH

The HARTING Technology Group is a worldwide leading provider of industrial connection technology for the three lifelines of „Power, Signals and Data“ with a total of 13 production locations, as well as business units and representations in 43 countries. The company also produces cash desks and checkout systems for retail outlets, electromagnetic actuators for serial production in the automotive and industrial sectors and hardware and software for customers and applications in automation technology, robotics and transport engineering. In the 2014/15 business year, some 4200 employees generated sales of EUR 567 million.

HARTING places great importance on the recruitment of skilled employees and management staff and offers them top career opportunities. Family friendliness, a multicultural perspective and a cross-generational approach form the principles of our Human Resources marketing.

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ACCESS SHARES

Innovative Huf access systems in the Rinspeed concept vehicle OASIS allow new sharing concepts

Rinspeed picks up on trends such as digital worlds, new mobility concepts and ownership versus sharing, and addresses them with the concept vehicle OASIS in a holistic approach. The basic idea is „mobility fuses with IT and living spaces.“ OASIS shows various options for using and sharing a vehicle. The car of the future also combines the various living spaces. Thus the home, the hotel, the office or the car become a unit with the OASIS. A vehicle that fuses the various living spaces. You can work in the OASIS thanks to the comfortable armchair and integrated green space, or simply drive. Without IT and visionary digital technologies, such a concept would be unthinkable.

The OASIS illustrates various sharing models. First it is sourced and booked like a classical car-sharing vehicle. The driver then shares the journey with a passenger. The OASIS is also used as a delivery vehicle. On the route a pizza is delivered to the box and later taken out again. The vehicle is thus shared again. In order to share a vehicle in this way, it has to be ensured who can use it when and how. The authorized user, whether it is the driver or the pizza delivery guy, needs a car key for a certain amount of time. For practical purposes, he should receive it without a personal or manual handover. But in a secure fashion. In the OASIS these criteria are fulfilled with the SixSense solution from Huf Secure Mobile.

The solution involves a mobile app that allows the sourcing and booking of a vehicle. The special feature of SixSense, however, is the digital key. Usage rights are granted and transferred digitally on a person and time-related basis. Once these rights are transferred, the vehicle can be opened and locked and, in particular, started by Smartphone. No need for the classical key. Because this is now transferred digitally. The driver then finds it in the mobile app in his key ring. He uses the app to unlock and start the vehicle. The Smartphone itself is just a means to an end and is readily interchangeable. It can be any Smartphone, some other mobile device or even a wearable. The key goes to the person, i.e. to his digital identity.

The digital SixSense access integrated in the OASIS makes it possible to share a vehicle round the clock, twenty-four hours a day. The driver receives the digital key with all rights for a certain period of time. The pizza delivery guy only receives it for opening and closing the box.

Sharing a vehicle also means that you have to know which vehicle is where and when. The added value for driver, owner, renter and other users consists, after all, in the optimum sharing of a vehicle and a wide range of different routes. This is why SixSense combines the granting of the digital access and authorization



with telematic and fleet services. Because behind every shared vehicle there is an owner or fleet manager who has to manage the vehicle and the drivers. SixSense offers all the necessary services as a one-stop shop. With a special focus on the security aspect. The security experts from Huf Secure Mobile are concerned not only with the digital encoding. The interior detection system in the OASIS only allows a journey when the authorized driver is actually in the vehicle.

The core competence „digital vehicle access“ of Huf Secure Mobile feeds from the parent company, the Huf Group, which has been developing and producing mechanical vehicle access and drive authorization systems for the automotive industry for more than 90 years. This is why the OASIS was also equipped with an intuitive, electronic, exterior door handle from Huf.

The door handle is rigidly recessed in the door and equipped with an innovative sensor concept. The handle responds to very light operation pressure to open and lock the vehicle so that a light pull on the handle is sufficient for the built-in sensors to open the door. The improved fastening concept of the door handle gives it a tighter seal, so that neither water, air, nor dust can penetrate through the door, and the aeroacoustics are improved. Another advantage of the door



handle is the weight reduction which allows the realization of energy and cost-saving potentials. Crash safety is also increased compared with a conventional system by the concept of the fixed exterior door handle. A fixed handle will not lead to the undesired opening of a door due to metal deformation in a crash insofar as the sensor is deactivated.

„Mobility Greening“ is what Rinspeed calls the green space integrated in OASIS with various plants. Access to the green area is via a concealed proximity sensor integrated in the flap under the windscreen. The sensor responds to a hand movement over the flap and opens it within a few seconds. Integrated software algorithms avoid incorrect responses of the sensor so that the plants are always well protected in the OASIS.

The whole vehicle access of the concept car OASIS was thus realized entirely with products from the Huf Group.

The Huf Group employs around 7,400 people worldwide in Europe, America and Asia. Around 600 thereof work in the Huf development centres in Germany, Romania, China, USA, Korea and India. More than 1,400 persons are employed at the headquarters in Velbert. In 2015 the Huf Group achieved a turnover of more than 1.3 billion euro.



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KOSTAL

THE MOBILE GARDEN IN THE CAR

Well-Greening

For modern man in his urban environment there is still one link to nature. The presence of plants creates a pleasant atmosphere which significantly increases the feeling of well-being.

Plants are also known to be good for the health. As a natural climate control system they exert a positive influence on humidity, they create oxygen and they filter dust and other harmful substances from the air we breathe.

An Oasis in the Car

With the study „The mobile garden in the car“ KOSTAL has set itself the task of also making it possible to experience the beneficial effects of plants in the car. To achieve this a large surface module containing sedum is arranged under the car windscreen.

Automatic watering is provided via humidity sensors in the plant substrate. A pump delivers water from a source designed in garden architectural form, with water trickling as if in a small stream. The water drains through the bed of the stream into the plant substrate and thus reaches the roots of the plants.

Other sensors in the earth surrounding the roots of the plants monitor the nutrient content.

Garten to Go

Plants are establishing themselves more and more as friends and daily companions - in the garden, in the house, at work and now, even on the road, whether we travel on two wheels or four.

To implement this trend an area has been created in the car, where a „plant to go“ can be located. To personalize the arrangement the plants can be combined with health-giving mechatronics. A scent-providing system with its own control panel is integrated in a plant pot produced in high-quality material, so that the driver can take this personal atmosphere anywhere - in the office or the hotel. At home a docking station will hold a variety of personal choices.

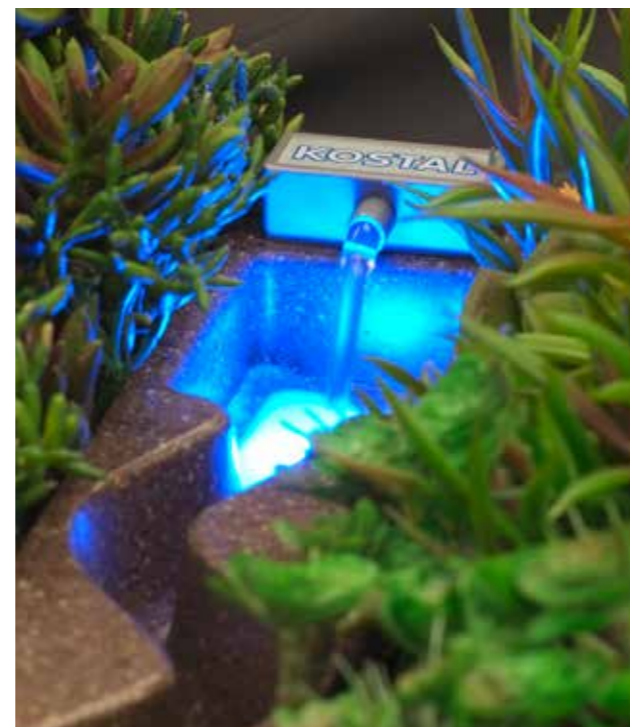
Tiredness and headaches become less of a problem and our powers of concentrations are enhanced.

In addition, gardening, tending our plants and seeing how they grow add to the contentment of mankind and these activities are seen by many as thoroughly wholesome.

This enables a lack of nutrients to be signalled to the car owner at an early stage. Integrated, low-energy lighting provides the plants with light - for example, if the car is in the garage. LEDs are used for this, in the same way as they are used for artificial lighting in professional gardening centres.

Automatic maintenance is enhanced with a smart-phone app providing communication between the owner and the oasis.

The „smart garden“ is becoming a positive experience for all the driver's senses and makes a lasting contribution to a feeling of well-being.



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MHP

A PORSCHE COMPANY

FROM CAR SHARING TO SOCIAL CARS

Mobility of the future will bring about a dramatic change - in particular, in the way people use vehicles. MHP has developed a concept for the OASIS that turns the car into a social spot.

The mobility of the future has become a big topic in public debate. This is not a coincidence or merely a zeitgeist phenomenon. In fact, a general transition is currently underway - and, more precisely, it affects many fields that have a reciprocal effect. For instance, digitalization and the connecting of cars have already gained quite an impetus. It will not be long, until connected cars are the standard in our streets. Although electrical mobility evolves a little bit more slowly, many news from the recent months suggest, that we may soon reach the tipping point. And: car ownership is not important anymore to a growing number of people. Instead, they want a smart, simple and fun means of transport. This is reflected by the recent large increase of car sharing models available.

The management und IT consulting agency MHP has reinvented the kind of use for OASIS, the current Rinspeed concept vehicle : car sharing will be replaced by the "social car", from sharing to networking. The underlying idea is simple. For example, if I am at home and wish to see a movie premiere, I take my smartphone and use the "Share a Date - Date a Ride" app to book one of the numerous OASIS cars that drive around in my neighbor-

hood. The car will pick me up at the right time and will take me to my destination. Up to this point, we might still call it an autonomously driving taxi. And that is also a highly sophisticated thing. However, the vision of MHP goes beyond this stage.

In the backoffice, an algorithm will compare the itinerary that I requested with the movements and planned itineraries of the OASIS vehicles that are nearby. In addition, the smart system will match my personal profile with the profiles of those people who will also be using the car. My smartphone will then display the available options and I can accept or decline the ride by a simple swipe. When I eventually get into the OASIS that will take me to the cinema, I will be meeting people who do not only travel a similar route, but with whom I can also have an interesting conversation during the ride.

This approach will have two desirable effects: At the socio-economic level it will help reduce the traffic load - simply because the car will be used by more than one passenger at the same time. This is of particular high importance in the rapidly sprawling metropolises. At the interpersonal level, this approach is

rewarding, because it takes the networking idea - that digital social networks such as Facebook or LinkedIn had driven forward - back into analogous life and encourages interaction between people.

The specific type of interaction depends on the personal matching settings - similar to the known platforms. So, for instance, I may use the OASIS ride to make new business contacts. Or perhaps I only feel like some small talk and updates on new restaurants. Or the shared OASIS ride is the first meeting with a new date. Another scenario: On the way to the airport I make a dream come true and meet my favorite celebrity.

All this is still a vision. Still. However, it shows already today what will be possible in the mobile future. There is only one critical pre-condition: Innovative vehicles team up with innovative business models, new technologies meet new ideas. To make this vision become real, companies from various lines of industry need to cooperate more extensively than they do today. In this process, MHP will assume the role of creative enabler that guides the innovation process and brings together the right partners.



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ARE YOU READY FOR THE 2020 DRIVING EXPERIENCE?

The automotive industry will change more in the next few years than it has over the last fifty. The way we use cars and the vast variety of other new mobility options will have a huge impact on our way of life. Clara and her grandmother, Petra, are having a conversation in 2020, a year when automotive advancements have taken hold in exciting ways.

In the following conversation, Clara and Petra chat about the benefits of a society that has become increasingly connected, one where the car has morphed into something like a robot on wheels - autonomous, fully connected and surrounded by a whole new universe of applications and new business models. In-car purchases, new car sharing opportunities and luxurious transport experiences have become part of the new autonomous vehicle lifestyle.

At the same time, high-profile hacks have taught consumers that increased connectivity means more security challenges, even in the transportation space. Fortunately, a robust and holistic security approach from NXP now protects both personal information and car safety systems from nefarious activity.

Let's listen in to their video teleconference from a fully autonomous Rinspeed vehicle.

PETRA: Good evening darling. You look beautiful, the picture seems so crisp, like you're here with me in the cottage. Are you in your new apartment?

CLARA: Nana, what a surprise! Actually, I'm in a car. It has excellent in-car bandwidth and a great video camera.

PETRA: Oh dear, I'll call you back later so you can concentrate on the road.

CLARA: It's okay, Nana. Actually now is the perfect time to chat, I'm not driving at all. I'm relaxing on the way to pick up my friends, catching up on the news and listening to a great band on this unbelievable stereo. I feel like I'm in a luxurious and comfortable bubble.

PETRA: A fully autonomous car! I've heard about them for a while now. You must be doing very well in your new job to afford such a piece of machinery! When I had my first job out of college I took the bus. You should save your money, dear.

CLARA: Actually, I don't own this car. I only use car sharing when I need it. Things in the city have changed. Since there are limited places to park, and keeping a car is so expensive, my friends and I only use cars when we need them. I summon the car on my phone and it approaches, and unlocks on my command.

PETRA: Clever girl, I'm so proud.

CLARA: That's not all. When it pulls up to my apartment building, the car morphs into my own palace on wheels. The music changes to my personal favorites, the lighting comes on the way I like it and even the carpet color changes to suit me.

PETRA: Sounds rather...extravagant. Well things are certainly different with cars in the city these days.

CLARA: For sure. My boyfriend Max actually owns part of a car share with his friend William. When they aren't using it, the car runs errands for them and even has a side gig delivering pizzas on Sunday nights.

PETRA: Extraordinary, but it's all too much for me.

CLARA: Actually, it's perfect for you. You know how you have to depend on Harvey to take you grocery shopping and to your doctor's appointments?

PETRA: Oh dear, don't remind me. He's worthless!

CLARA: Now cars can take you where you need to go and all you have to do is get in and enjoy the ride.

PETRA: Sounds very... utopian. But what about safety? I don't know if it's safe for you to be in a city with driverless, pizza delivering cars all about. Driving can be dangerous!

CLARA: No need to worry. Let me tell you about

car safety these days. Cars communicate with other cars buses, motorcycles, pedestrians and even with the roads and traffic lights to make things safer and more efficient.

PETRA: That's Vehicle-to-X Communications, right?

CLARA: Look at you Grandma! Yes, the city infrastructure also communicates with the car to relay information about traffic and hazardous road conditions and even when emergency vehicles are moving fast through the city. This information allows me to re-route the path myself, or I simply let the car figure it out autonomously. A big part of all of this is radar. Automotive radars that can "see" around corners, and they even know which objects are pedestrians and bikes.

PETRA: I don't understand how it works.

CLARA: It's as easy as "sense", "think" and "act." There are cameras and radar systems in the car that scan the environment around the car constantly. They detect the objects in the roadway and graphically represent them.

PETRA: That is sensing. But what about thinking?

CLARA: Thinking is done when all of the sensory information is fused together, that's also known as sensor fusion. This thinking is done by a BlueBox.



PETRA: A Blue what?

CLARA: A BlueBox - it "fuses" all of the sensor data together. It analyzes driving environments, assesses risk factors and then directs the car's behavior. It basically creates a 360° world model around the vehicle. This improves car safety by managing and preventing emergency situations. This makes processes like self-driving and self-parking possible. The BlueBox triggers the car to act.

PETRA: Well it all sounds good... but you know your grandfather, he is always concerned about security. He is always going on about hackers stealing account information.

CLARA: There's no need to worry.

PETRA: Oh don't be so naive, Clara. Put that college education to work!

CLARA: I know there have been a lot of high-profile hacks but these cars have all of the security needed to protect personal data and the safety systems of the car. The Rinspeed uses a holistic security approach developed by NXP.

PETRA: Hmm. Sounds technical.

CLARA: Not really. NXP secures the vehicle's

entire architecture, starting from the vehicle perimeter all the way down to the individual computers that implement the vehicle's features, ensuring there are no weak links in the chain. It can also be managed during its entire lifecycle, using, for example, active key management and secure firmware updates. Think about all of the things in a car that need to be secured!

PETRA: Let me get your grandfather so he can hear, he can be very skeptical.

CLARA: First, NXP secures the car interfaces and protects against data theft and hacks of machine to machine authentication. They also protect secure gateways, the heart of the operations between interface and networks to protect interfaces, infotainment and safety-critical systems.

PETRA: That sounds reasonable.

GRANDFATHER: What about the car's network, Clara? It's very important.

CLARA: Hello, Grandfather! NXP also secures the car's network to protect the communication between the Engine Control Units or ECUs and employing countermeasures that protect against data theft, network and message

manipulation, and inside attacks from any compromised ECU.

GRANDFATHER: Hmm.

CLARA: Finally, NXP secures the Secure Processing Units that make up the ECUs. ECUs continuously generate, process, exchange and store large amounts of valuable (sensitive) data making them an attractive target for hackers. ECUs require firmware protection and update provisioning, in the form of secure boot and secure OTA updates. NXP provides these units all of this to finish out the 4 layers of protection.

GRANDFATHER: Sounds comprehensive. You are a clever girl, just like your grandmother says.

PETRA: We'd like to come stay with you for a week in the city. How does that sound?

CLARA: It sounds great, Nana. Shall I send a car to pick you up?

PETRA: By all means! We'll give you the dates.

OSRAM

AUTOMOTIVE LIGHTING FOR THE ROAD AHEAD

OSRAM, a leading global lighting and technology company and the global number one supplier in automotive lighting, has pioneered lighting advancements and solutions for a variety of industries and applications for more than 100 years. With decades of experience, knowledge and leadership in the automotive lighting industry, OSRAM is the perfect partner to shape today's lighting technology trends for tomorrow's driver experience in Oasis, the latest concept vehicle from creative think tank and mobility lab Rinspeed.

Employing more than 20,000 employees in more than 100 countries across the globe, OSRAM has evolved from a lamp manufacturer into a source of solutions, technology and innovations for automobile manufacturers and consumers in the automotive aftermarket with its significant research and development in the realm of semiconductor, interior and exterior lighting technology.

OSRAM's knowledge and experience in automotive lighting, ranging from highly innovative opto semiconductor components to full LED modular solutions, allowed the Oasis creative team to tap into OSRAM's tireless research, innovation and passion to create a lighting experience that fully embodies the vehicle's character, inside and out.

From performance to design, OSRAM has built a reputation on solutions that offer superior luminous intensity and output, coupled with a unique, modern look for the latest models and designs. This creativity and innovation

provides manufacturers and end-users with exterior lighting options that combine safety and style in a high-quality product.

To give the Oasis a distinct look with high-performing technology, OSRAM supplied five MULTILED™ modules for each headlamp in the Rinspeed car which feature an innovative design that can be used to create a personalized, custom-built headlamp. Depending on the performance desired, low and high beams can be achieved using six to ten of the MULTILED™ modules, which also can be coupled with an electronic system to offer a broad range of animation sequences, including welcome lights as well as the ability to coordinate the headlights with other light functions of the vehicle. The flexibility is the result of the MULTILED™ modules' simplistic design, allowing them to be stacked, layered, spread out or combined to create distinctive styling while still achieving great performance. Their cube-shaped lenses also give a clean, yet radiant visual effect.

OSRAM's spectrum of infinite solutions for automotive lighting applications is the result of continuous research, diligent engineering and a passion for perfection. Always in focus: enabling customers to achieve their goals.

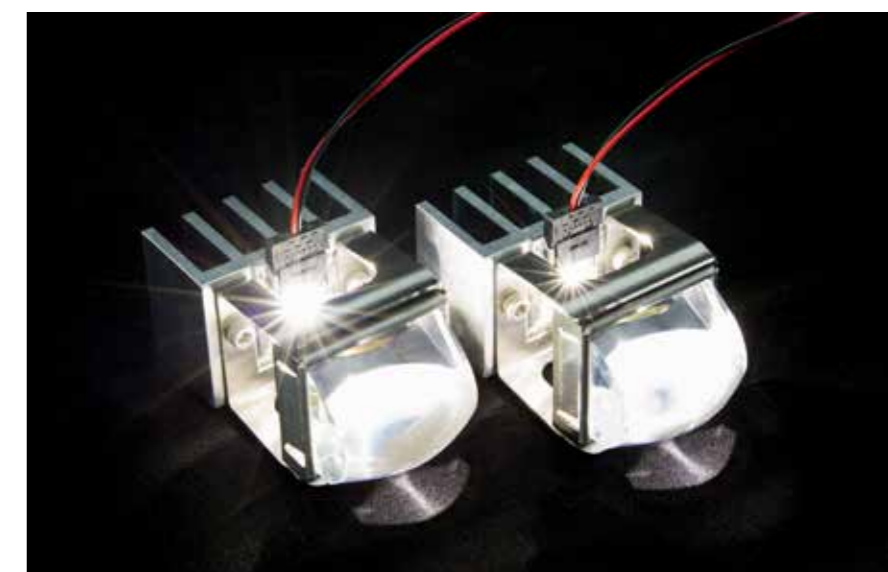
OSRAM LED technology can enable future high resolution, information rich, advanced automotive illumination experiences. In the future, this LED technology could be used to bring dynamic information and intelligent solutions to both drivers and pedestrians.

The Oasis vehicle features two auxiliary forward lighting LED projection modules for demonstrating how LED technology could be used to welcome the driver to the vehicle; provide a high-quality source of illumination at night to safely guide drivers down the road, and communicate with the outside world. For example this LED system could indicate to pedestrians that they are seen by the vehicle and aid their decision of when to cross the road. In the future, these same LED based systems could possibly provide entertainment or functional value when the vehicle is at rest, such as projecting movies, status information, or other video content onto any outside surface.

Today, contemporary automotive lighting is becoming more technical with advancements in quality and performance that allow not only for memorable designs that evoke an emotional experience, but provide improved functionality and safety for the driver and for everyone on the road.

As a trendsetter and market leader, OSRAM has been behind a multitude of industry firsts that speak to its breadth of research and development expertise. And as the world of automotive lighting evolves, OSRAM continues to hold its position at the front of the pack, forging new paths and introducing creative lighting solutions that continue to light the road ahead.

To learn more, visit <https://www.osram.com>.





POWERING THE AUTONOMOUS FUTURE

BlackBerry QNX is powering the secure, connected autonomous car of tomorrow

The automotive industry is on the verge of a tectonic shift. Advancement in autonomous drive technologies and the growth of the urban ride-sharing ownership model are trends that will reshape the industry and have far reaching consequences for personal mobility and the environment.

BlackBerry QNX is proud to be part of Rinspeed's bold vision of this future with 'Oasis', a disruptive urban vehicle designed as the third living space with a revolutionary wrap around digital user experience, sustainable drivetrain and autonomous drive capabilities.

Increasingly, the automotive industry is turning to BlackBerry QNX to provide robust end-to-end car software technologies, such

as our robust real-time operating system that provides the foundation for advanced infotainment and user experiences in the car, and advanced safety critical autonomous drive systems.

Our automotive experience provides essential capabilities for the future: Technologies that guarantee safety critical alerts, virtualization technologies that enable the in-car user experience, seamlessly blend of content and services from multiple sources and platforms and a rich, immersive user experience with world-class reliability.

Driver assist and autonomous drive systems, BlackBerry QNX's robust microkernel operating system is certified to enable automakers to build safety-critical systems to the highest

standards, while our compliance with software coding standards enables automakers to quickly move innovative code from research to production.

BlackBerry Security ensures that the system is protected from hackers, providing a safe, secure end-to-end system. Leveraging the same security software technology used by the majority of western governments around the globe, BlackBerry Security ensures that users can be confident that the car they are sitting in is protected from malicious attacks.

With 'Oasis,' BlackBerry and QNX will demonstrate a bold vision where the future transportation experience is safe, immersive and enjoyable.

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CREATING VALUE IN THE DIGITAL AUTOMOTIVE NETWORK

Inspire and shape a digital world by leveraging the internet of things (IoT) and SAP solutions to create new connected business models and deliver new experiences!

Companies in the automotive industry will use digital innovations to run their enterprise in real time and operate in a global network. They will create superior products and services providing unique, tailored customer experiences with unparalleled safety and convenience. This paves the way for exploring new mobility concepts and business models.

“Oasis” represents a vision where urban mobility combines with the broader transportation ecosystem to connect people, companies, and vehicles in real time.

THE NEW AUTOMOTIVE LANDSCAPE

The automobile has evolved. It is becoming an integral part of a new, connected, agile consumer marketplace. A vehicle is no longer solely about transportation and personal mobility, but includes elements of communication, experience, and lifestyle - much of it in real time.

Imagine giving a driver the opportunity to purchase three days of personalized insurance coverage on the fly - from the vehicle - by connecting the driver's insurance company with the car's planned route or even with its real-time location when approaching an international border. Usage-based mobility options enable optimized transportation experiences, and extend the universe of in-vehicle services that can be offered, matching individual needs and circumstances.

The automotive industry is responding to this evolution, transforming its mission from a predominantly product-centric view to one that places consumer experiences at its center.

THIS IS A MONUMENTAL TRANSITION.

After more than a century of habitual behavior, these are challenging and critical times, full of opportunities.

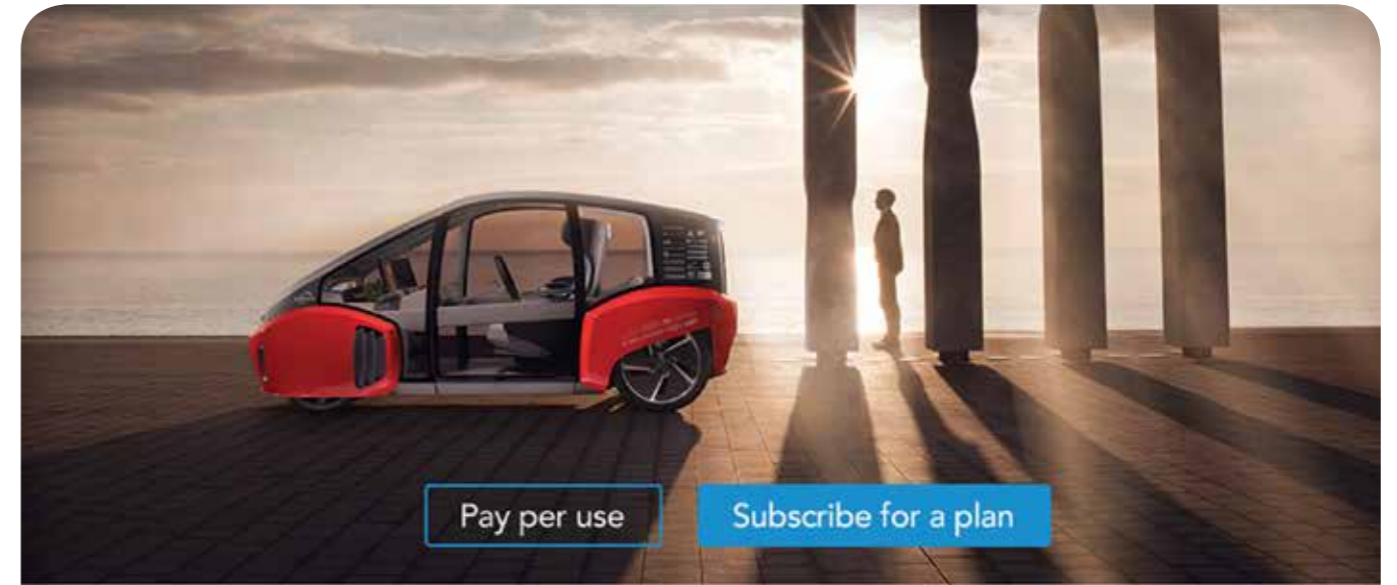
TYING IT ALL TOGETHER

Making this new form of tailored customer experience a reality requires that all of the critical components are connected, come together in real-time and work in perfect harmony.

THAT IS WHERE SAP COMES IN.

SAP software provides the platform, capabilities, and applications today that process the enormous amounts of data in real-time, enabling new business models for safe, sustainable and engaging mobility experiences.

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You're exceeding your included mileage
in 100 miles.

Driver incentives for Tristan:

Horsepower Limit: 150 hp
Speed Limit: 90 mph

Security Rewards:

Closed seat belts:	\$ 10,00	iTunes voucher	Save Settings
Tracking mode on:	\$ 25,00	taxi voucher per month	Cancel
Eco Drive level gold:	+ 100 mi	free miles	

Driver Incentives settings for Tristan

Welcome abroad!

Warning, your insurance will be limited for your time of traveling here. Be safe and easy-upgrade your insurance, including comprehensive and theft insurance.

[View temporary options](#) [Save money with our Travel-Flat](#)

You will cross the border in 30 minutes with limited insurance

Congratulations:
We give you 15% on your current service contract

YOUR ECO POINTS TOTAL

10000 15.000 20.000

10154 Next Eco-Level at 15.000 points



Eco friendly Driving helps the environment and makes you a smart person

schoeller
the spinning group

NEW INTERIOR GEOMETRIES DUE TO THE PATENTED NUYARN

In the central seating area, a new generation of yarn technology ensures a visual harmony with simultaneous excellent seat performance. This effect is reached through the application of the new patented NuYarn technology. This yarn has a core filament designed specifically to meet highest demands as to maximum strength and increased elasticity. The core is enveloped in the existing upholstery fabric by 100% merino wool. This allows the excellent thermos-physiological features of the wool in the seating area, such as for instance heat control or moisture management to develop to their full potential. The patented NuYarn technology supports the particularly pleasant haptics of merino wool. The fibre blend can be adapted to the desired properties.

Due to its high elasticity, fabrics made of NuYarn support the development of completely innovative interior geometries. And yet, the opportunities in this field are by far not yet exhausted and will significantly gain in importance, especially with regard to the autonomous driving and the resulting modified requirements for the interior design.

The Schoeller Spinning Group from Hard in Austria is one of the world's leading worsted yarn producers. Some 500 employees produce approx. 3,500 tons of yarn per year in different locations in Europe. One-and-a-half century of experience and an innovative research and development department assure that the technological lead is not only maintained but continuously enhanced. The course of development is marked by the principle of sustainability firmly enshrined in the corporate philosophy. And that's why Schoeller was the first worsted yarn spinning mill to have been awarded the comprehensive "bluesign" label, an environmental and ecological certificate. Moreover, Schoeller is actively involved in the International Association of Natural Textile Industry (IVN) and produces according to the Global Organic Textile Standards (GOTS) and the EU-Flower.

In a nutshell: sustainability + innovation = sustainnovation.

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RETHINKING MOBILITY – TRANSPORT CONCEPTS OF THE FUTURE

One hour in the car to cover a mere 10 miles? Many car users in Germany and abroad experience this frustrating situation almost daily. Especially in population centers, flexibility, efficiency and comfort of mobility as well as road safety and the environment are severely impacted by growing traffic volumes. In this context, the OASIS concept vehicle developed by Rinspeed opens up new perspectives that Siemens is already able to implement using its V2X (Vehicle to Infrastructure) communication technologies.

Already today, 64 percent of total mileage is travelled within urban areas, and the amount is expected to triple by 2050. For many years, urban transport departments have had to try and make a continuously growing number of vehicles pass through the existing road network as smoothly as possible, mostly without any changes to the confined space. In Germany alone, the economic costs of traffic congestion exceed €100 billion per year. In many cities, average traffic speed is below 12.5 miles/hour at present. In the future, urban transport infrastructure will have to cope with a whole new set of additional requirements. At the same time, the trend towards multimodal concepts based on the close integration of private travel and public transport is picking up speed.

What could the future of mobility look like?

For the successful evolution of urban areas, fast and convenient mobility with minimal environmental impact is an ever more vital factor. Companies need an efficient transport infrastructure not only to enable their logistics processes, but also to attract and retain the best staff because easy accessibility of the workplace, either by public or private transport, is a huge plus in the competition for highly qualified employees. In short, smooth traffic and good transport connections are highly relevant economic factors.

But how can we make optimum use of the existing transport networks? One solution consists in more efficient traffic control based on smart traffic management: Traffic control and telematics solutions from Siemens minimize

congestion, prevent accidents and fuel wastage and cut CO2 emissions by up to 20 percent. The targeted use of such systems makes it possible to manage rising traffic volumes intelligently. In addition, for an efficient holistic urban mobility network, the responsible authorities should also strengthen the public transport (PT) services and align them more closely with actual demand. This can be achieved by equipping the vehicles with connectivity (V2X systems, for instance, enable PT prioritization at intersections) and automated functions.

Innovative transport technology from Siemens: optimal routing of traffic flows

The modern traffic management systems offered by Siemens automatically adapt the traffic control processes to current traffic volumes and weather conditions, which helps reduce the number and extent of traffic jams and increases road safety. To this end, Siemens relies on new V2X technologies that allow the vehicles to communicate with transport infrastructure. The basic principle is cooperation between all road and transport users, from road and rail vehicles to pedestrians. They exchange information with each other, but also with infrastructure elements such as traffic lights or road signs - in real time and even while travelling at high speeds. This serves to provide the drivers and the vehicles with a wide range of information (from warnings that alert drivers to hazards such as black ice or an approaching ambulance, right through to information on available parking spaces or the remaining red or green time at intersections) that contributes to making the route to the destination faster,

safer and more convenient.

At the same time the vehicles act as mobile sensors, continuously collecting data on traffic speeds, their surroundings or preceding traffic. If the vehicles can communicate with each other and the infrastructure, they can pass on warnings about icy roads, traffic jams or similar situations to any vehicles approaching the dangerous zone. Intersections and multi-lane roads become safer places if the vehicles „keep an eye on each other“ and receive relevant information from the infrastructure. Moreover, the data need to be aggregated and analyzed and the results made available not only to the road users, but also to the traffic management systems as a solid basis for strategic and planning decisions - and as a prerequisite for the future integration of automated vehicles in the technical infrastructure systems.

Targeted expansion of public transport with (more) demand-driven services

Interconnection and automation does not only contribute to safety, efficiency and comfort in private travel, but also enables the creation of

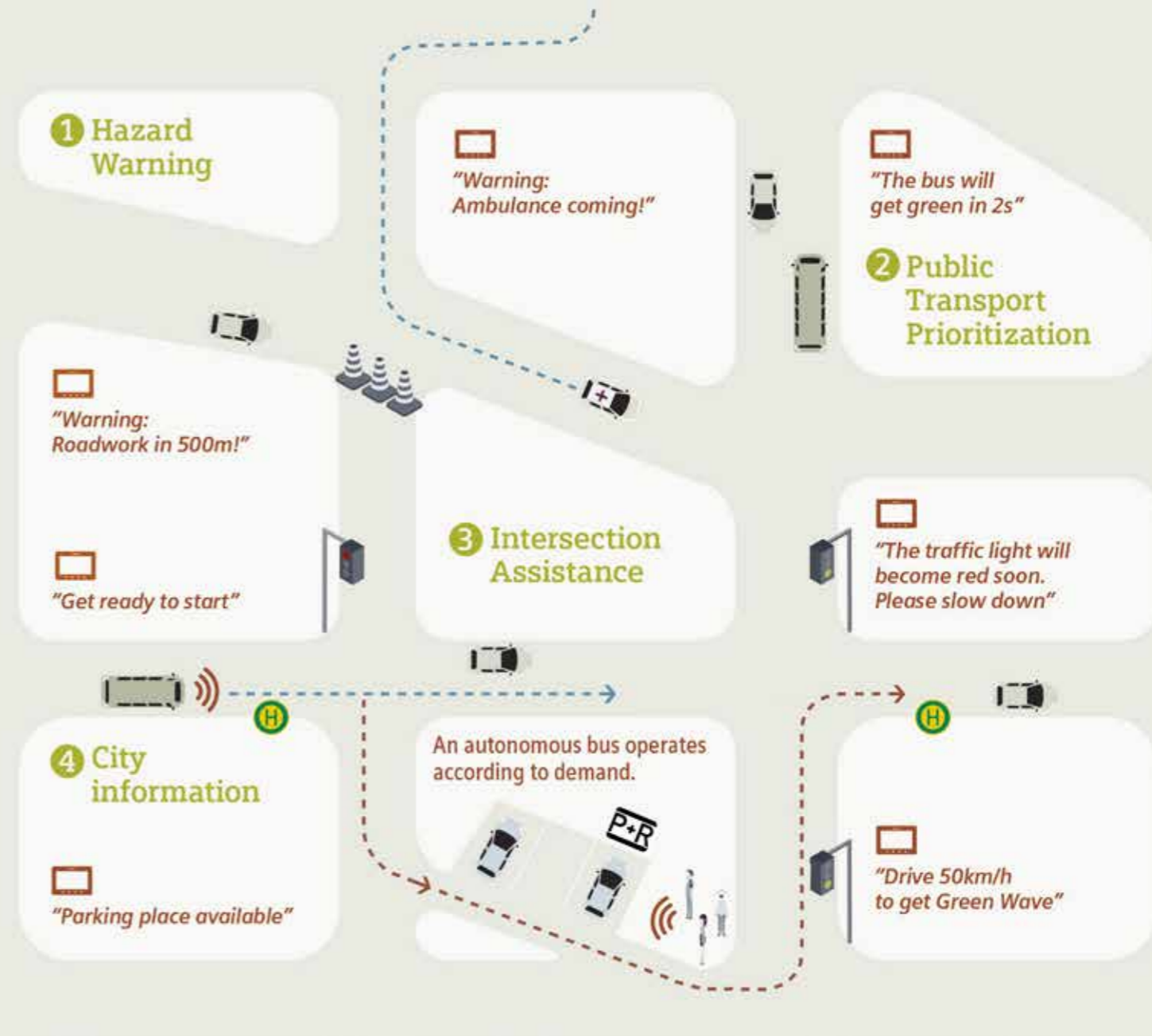
new modes of transport that bridge the gap between private travel and public transport. In a number of cities around the world, there are already pilot projects in place for testing the use of self-driving taxis as a clearly more cost-effective means of individual travel, offering mobility also to people who cannot take the wheel themselves.

The technology is opening up new opportunities for more flexible PT services that are better aligned to the passengers' needs. PT operators can for instance deploy self-driving (mini)buses to enhance the attractiveness of their services and give them an edge over private travel. In addition, the technology enables more flexible PT schedules as well as the dynamic assignment of stops to meet demand, allowing adequate service even in more sparsely populated areas. In this scenario, people can arrange for the bus to pick them up right in front of their door. If necessary, the bus can take a detour through a residential area or put in extra stops on a regular route during off-peak times. Better adaptation to demand and the resulting higher occupancy will improve the

cost structure of PT services and help keep prices low. What is more, systematic prioritization at intersections will make traveling by bus a fast option in urban traffic. This new type of public transport will better fulfill the needs of the users and provide an efficient mobility option to more people, including those with limited mobility such as children, the elderly or the visually impaired.

The mobility of the future has to be fast, flexible and convenient

Rinspeed's OASIS can provide just that: The concept vehicle perfectly meets the mobility requirements of the future because it uses V2X technology from Siemens for the targeted exchange of relevant information with the infrastructure. OASIS is a fully automated two-seater that can be flexibly deployed to meet current mobility needs. As such it is a clear instance of "rethinking mobility" for a future where public and private travel become one integrated system - for the benefit of everybody involved.



Siemens AG Mobility

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RINSPEED PROJEKT OASIS 2017

BUILDING TRUST

Sika offers specialty chemicals from the floor to the roof for the construction industry and from the chassis to the assembly line for the automotive industry. As a traditional Swiss company, we have been offering the widest range of technologies for manufacturers and end users for more than 100 years, and we place a high priority on safety and sustainability. In addition to products which have been successfully used for decades, we develop new concepts, submit numerous patents and launch innovations on the market every year.

For Sika, trust is the foundation of partnership and mutually beneficial collaboration. The Sika brand exists because we invest in building trust on a daily basis. We are delighted to be able work with Rinspeed and many other partners on a future-oriented, fully-electric concept car in 2017.

BETTER VEHICLES START WITH SIKA

As a technology leader in elastic and structural adhesives and sealants as well as acoustic systems and reinforcement solutions, Sika is already the preferred partner for leading automotive manufacturers. More than 50% of the vehicles manufactured in the world today incorporate technologies by Sika. We were also able to contribute our expertise to the Oasis project to optimally incorporate the latest trends, including lightweight construction, sustainability, crash resistance and comfort in vehicle manufacturing.

SikaPower® is used to improve stiffness, crash resistance and bonding of mixed materials in the body shell. Approximately 30 meters of SikaPower®-477R were used for structural bonding in the Oasis project. In addition, approximately 50 meters of Sika adhesive (Sikafast® and Sikaflex®) were used to bond the structure to high-strength steel, aluminum, glass fiber-reinforced plastic (GRP) and carbon fiber-reinforced plastic (CRP). Since virtually no mechanical bonding techniques were used in this concept car, the use of Sika adhesives, among other things, lightened the weight somewhat.

Sikaflex® products can be used for the optimal gluing of large front and wraparound windshields, so that the outside world and the car can be experienced as a natural third living space with the widest view possible. The Oasis project used approximately 25 meters of glass adhesive after all windows were treated with SikaPrimer®.

Other Sika product groups for the automotive industry include SikaBaffle® and SikaDamp®, which improve acoustics. These can reduce noise inside the vehicle by up to 30%. Safety is a high priority and is enhanced with the SikaReinforcer® and SikaStructure® reinforcement systems, which absorb energy during an accident.

Whether at home or in the car, Sika is „invisible“ virtually everywhere.



SIKA COMPANY PROFILE

Sika, located in Baar, Switzerland, is a leading specialty chemicals company in the development and production of systems and products for bonding, sealing, damping, reinforcement and protection in the construction sector and the automotive industry. Sika has subsidiaries in 97 countries around the world and manufactures in over 170 factories. Its more than 17,000 employees generated annual sales of CHF 5.49 billion in 2015.

SIKA Automotive AG
www.sikaautomotive.com



DISCOVER A MORE SUSTAINABLE FUTURE FOR AUTOMOTIVE INTERIOR SOLUTIONS

Creating sustainable interior material solutions that spark innovation, brought together in the Rinspeed Oasis concept vehicle.

This year is the second time that Stahl has co-operated with Rinspeed, the leading innovator when it comes to creating inspiring and innovative concept cars. As the car interior material surfaces expert and worldwide market leader in our niche, we are inspired by working together with leading brands from the various fields, jointly moving boundaries and always striving for the best solutions. That's why we developed the various automotive surfaces used on the seats, door-trims, dashboard and the steering wheel, amongst others - all fitting Rinspeed's revolutionary vision of the 3rd living room of the future.

Partnerships as the basis for a better future

Partnership is the key element for creating new and innovative solutions and possibilities. This belief is one of our core principles throughout all of our locations. At our headquarters in Waalwijk in the Netherlands, we have even created an 'Automotive Center of Excellence' in which we invite OEMs, tiers and partners to share knowledge, passion and enthusiasm for opening up endless possibilities. This center is one of many around the globe - our way to invest in successful partnerships and a durable industry-wide future, from automotive to interior design and apparel & accessories.

The Oasis car interior - the ultimate driving experience

The interior of the Rinspeed Oasis concept car is all about innovative and sustainable solutions that inspire and surprise the user. For Stahl, this was a great challenge, which we accepted enthusiastically. That's when we decided to do what Stahl does best: push the boundaries to create sustainable solutions that can be part of a better future.

To create a long-lasting impact, we started with the first stage of the process for which we used Stahl EasyWhite Tan™, an innovative tanning technology, free of metals, and which improves sustainability credentials regarding water usage, energy and chemicals. This is all because we believe that creating an environmental friendly industry starts at the base. Along with this alternative tanning method, we used other sustainable products such as Green PolyMatte®, a bio-based finishing, to create future-proof matt surfaces.

To improve the driving experience even further, we added Stahl's new special crystal effect in color „mystic jungle“, a technology for interior materials, to reveal a new design freedom: mystically glittering surfaces that

respond to changing ambient lighting and viewing angle.

Along with sustainability and surprising elements, we took on the challenge of creating a long-lasting, pale-colored leather interior that is protected from dirt and staining. By using Stahl's latest innovations and best-in-class technology in every process step, in combination with our leading Stay Clean solution, we created an intrinsically white high-performance cover material, bringing the long desired design intent, "snow white," closer to automotive reality than ever before.

With the mobile garden incorporated in the dashboard, the first step towards a green car interior is achieved. With Stahl's next-gen interior material surfaces technologies, we contribute significantly to reduced emissions and fresh air in the car interior cabin: the perfect co-operation between nature and innovation - 'good for me, good for the world.'

These innovations are only a glimpse of the possibilities, which can be created with excellent partnership and the urge to search for the unknown.



About Stahl

Stahl is the leading company in process chemicals for leather products, performance coatings and polymers. We offer a wide range of solutions for various industries, such as automotive, apparel & accessories, home furnishing and the leisure & lifestyle industry. The company also develops solutions for industrial applications. With more than 1.800 employees in 23 countries at 13 manufacturing sites, 38 application labs and 11 R&D centers, we can keep up with the global demand for quality and performance. With our innovation power, expertise and broad range of technical solutions, Stahl is able to deliver best-in-class solutions and services. One of these services is direct and close co-operation with (potential) clients at one of our Centers of Excellence or at the Stahl Campus®. This allows us to respond even better to client needs and secure a more sustainable future.

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STRÄHLE+HESS

WE LIVE AND BREATHE FABRICS. AND HAVE DONE FOR 90 YEARS NOW.

Whereas we started out as a conventional producer of circular- and warp-knitted fabrics, today we develop special technical fabrics for the automotive industry. More than 200 employees knit and machine-knit with passion in Althengstett, Bisingen and Auburn (USA) to enhance the inner values of your car. Our young and talented designers always keep up with the latest trends. S+H fabrics turn interiors into something very special with colours, structures and materials. And, where desired, they go about their duties without anyone actually noticing them. Our employees from Solutions come up with the answers to combat any creaking and groaning.

It is no surprise that all well-known car manufacturers worldwide are customers of STRÄHLE+HESS. To get quality you need passion.

STRÄHLE+HESS GmbH

Im Langen Löchle 4
75382 Althengstett
Germany

T. +49 70 5113 02-0
www.straehle-hess.de

SOFTLY, SOFTLY ON THE CATWALK

Oasis opens up a whole new dimension. Alongside work and living, the car is increasingly becoming our third living environment. This can only work if we feel at home and secure in the car. Oasis not only drives autonomously, but also takes care of our environment. The solar panel on the roof ensures there is sufficient e-power.

SPECIALLY FOR ME

The basis of Oasis is not a series vehicle. Oasis was specially created to reflect this new lifestyle in the vehicle. The passengers feel just as contented as they would in their own VIP lounge.

LEDs have been incorporated in the fabric of the headliners as a form of functional light to permit reading or to create a cosy atmosphere. The driver is greeted by his/her Oasis with a Welcome Light.

And an individual front garden is a must - provided by an area of green that can be planted and replanted to suit the owner.

ALL DRESSED UP

Spick and span. The fabrics and their colours ensure that the car becomes an oasis of comfort.

The swivel seats are comfortable and look friendly and fresh, as well as elegant, thanks to the colour scheme. A light grey circular-knit fabric in the shade Frost was combined with leather. Piping in the luminous green of lemon grass adds a touch of freshness.

Headliners and pillars are resplendent in white warp-knitted fabric in the colour Pure, which even stays laid-back at the prospect of dirty fingers.

FEEL-GOOD CLIMATE

Nature is the best role model we can have. The natural materials used are breathable and temperature-balancing. Just as required, wool can warm your legs and arms or cool down heated spirits.

A 20 % proportion of polyamide makes sure that everything always stays in shape.

TRUE BEAUTY COMES FROM WITHIN

A successful interior creates a place of well-being.

Fabrics from STRÄHLE+HESS ensure harmony and clad all the parts that need covering such as headliners, pillars and seats. Clothes make people - and fabrics from STRÄHLE+HESS make cars.



TECHNIPLAS®

VISUAL COMMUNICATION – IN A TOTALLY NEW WAY

The vehicle is changing and so is how it is being used. In addition to transportation, cars are now a personalized mobile space for individual entertainment, visual communication and even autonomous driving. Lighting options can be decisive factors in brand selection, ambience, safety related applications and elegance.

TECHNIPLAS® creates planar or curved light sources by combining LEDs with creatively-shaped light guides. Its Swiss-based operation, WEIDPLAS®, pushes the boundaries of lighting technology and its expert engineers know how to impressively present cars and concept vehicles alike. Its elegant solutions exhibit expertise in materials, specific brightness distributions, and the seamless integration of lighting elements within vehicle components.

The homogeneity of the lighted area is an important quality feature. The challenge lies in the even dispersion of the point-source of light through a plastic surface (light guide). WEIDPLAS® achieves this by micro-structuring the surface of the light guide. The company has unique expertise in the field with its OPTIBACK software, developed specifically for this purpose. "OPTIBACK allows us to accurately define the scattering or emission characteristics of a microstructure point," explains Steffen Reuter, Vice President, TECHNIPLAS® Innovation and Technology. "Microstructure point coordinates are calculated by simulating the known light emission characteristics of each point."

This results in light guides with previously unmatched homogeneity and efficiency,

promising novel applications. The system also offers designers 3D calculation competency. Most applications, such as door sill panels, require highly homogeneous lighted surfaces. OPTIBACK also enables the creation of specific distributions of light intensity, such as partial lighting or precisely defined light patterns.

To allow a clear vehicle design at the tail end of the OASIS, the lighting functions are not generated by means of separate tail lights but rather integrated into existing surfaces. The position and size of the rear window is the ideal surface for displaying information to the environment of the vehicle.

Structured and virtually invisible light guides render the rear window transparent when not lit. If required, the requisite tail lighting functions may be achieved by means of high-powered LEDs from OSRAM Opto Semiconductors and micro-structured light emitting regions. A structure fitted across the full area of the rear window may to this end be selectively lit up using LEDs, to implement functionalities such as rear lights, indicators and braking lights.

Information to the vehicle environment need not, however, be limited to driving information but may also convey status messages and news to potential or already assigned users. These symbols may be depicted on the OASIS by means of another structured layer in the rear window. Multicolored LEDs will increase the information content and enhance communication.

During normal driving and when stationary, the large rear window creates a friendly, airy



interior ambience and clear overviews in the increasingly dense inner city traffic, without materially affecting transparency.

Information will be shown in the messaging display when customers approach and on departure or arrival at a destination. The driving functions will, during driving, be visualized by way of illuminated areas of the window. The successful combination of a large area window with hidden functionalities in a rear end design reduced to the required minimum is noteworthy here.

Lighting of defined structured areas and multicolored presentation of symbols and graphics offers a wide range of options for visual interaction.

The cognitive functionalities of vehicles will grow as the options increase for data exchange. Visual effects are an important area of communication between vehicle and environment. The OASIS rear window allows WEIDPLAS® to demonstrate the potential of microstructured light guides by combining high functionality and communication ability with clear and discreet iconography and appealing vehicle design.

To adequately satisfy these challenges, designers need innovative, customized solutions based on advanced products and superior technologies. TECHNIPLAS® has extensive experience in lighting and other forms of vehicle personalization, and works closely with its customers to develop solutions for the most demanding applications. With

a long history of collaboration with premium OEMs, TECHNIPLAS® has a unique combination of competencies in design, material selection tooling, and multicomponent manufacturing. "We develop creative solutions for many different requirements. TECHNIPLAS® is a strong partner whose ideas are often ahead of the market," says president and CEO Kim Korth.

TECHNIPLAS® has assembled some of the industry's most trusted brands to build a world-class organization that makes us nimble and scalable globally. We lead with integrity, innovate with purpose, and drive operational excellence that delivers superior customer value. Learn more about the company at www.TECHNIPLAS.com

Injection molding specialist WEIDPLAS®, headquartered in Switzerland, joined the group of TECHNIPLAS® companies in 2014. Their special know-how in the field of lighting allows the WEIDPLAS® engineers to focus on cars - be it series production or concept car.

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**TÜRK TURKISH
OTOMOBİL AUTOMOBILE
GELİŞTİRME DEVELOPMENT
MERKEZİ CENTER**

TÜBİTAK Marmara Research Center (MAM) is a research and technology development organization that makes the cutting edge technology ready for industry, bridging the gap between fundamental research and the daily life.

MAM has been a pioneer in many technological advancements in Turkey for industries from defense to energy, electronics to genetics. Since its establishment in 1972, Marmara Research Center aims to be a world leader in science and technology with its research, development and innovation capabilities.

TÜBİTAK MAM is dedicated to achieving safe and sustainable transportation for a global society. Realizing the shortcomings of the conventional solutions for tomorrow's world and the disruptive leap on the mobility technologies, MAM has set out to propose and showcase the new possibilities with future technologies.

Turkey has set itself the goal of becoming the lead market and provider for Smart Mobility by 2023 as part of its national car development vision and long-term zero emission mobility vision.

Seeing mobility is not just about cars and batteries but an ecosystem and a culture; the MAM Team, started to explore local and international collaborations to extend and cover the full spectrum of smart transportation. Our partners are leaders and pioneers in their respective areas. Istanbul Municipality, TÜBİTAK BILGEM, and Rinspeed are our main collaborators. Together we believe we can solve the mobility problems of today for a better tomorrow and make Turkey a leading player in the mobility industry.

THE LARGEST ENERGY R&D INFRASTRUCTURE OF TURKEY

- Coal and Biomass Combustion and Gasification Pilot Plant and Laboratory-Scale Systems
- Automotive Excellence Center
- Internal Combustion Engine Excellence Center
- Solid and Liquid Fuel Technologies Laboratory
- Power Electronics Technologies Laboratory
- Gas Technologies Excellence Center
- Energy Storage Laboratory Lithium Ion Battery Production Line
- Fuel Cell Technologies Laboratory
- Low and Medium Voltage Laboratories
- Underwater Vehicle Technologies Laboratory

APPLIED R&D ACTIVITIES

TRANSPORTATION TECHNOLOGIES

- Hybrid and electric drive systems
- Electric motor and drive technologies
- Battery and battery management systems
- Vehicle modelling, simulation and dynamic analyses
- Vehicle control systems
- Power inverter and charger systems
- Range extender systems
- Advanced driver assistance systems (ADAS)
- Internal combustion engine technologies
- Traction system, train control and management systems for rail vehicles
- Special vehicle design and applications (remotely operated underwater vehicle (ROV), remotely operated mine robot, etc.)

HYDROGEN AND FUEL CELL TECHNOLOGIES

- Hydrocarbon based hydrogen production and conditioning
- Catalytic burners, reactors and catalysts
- Fuel cell based micro-cogeneration systems
- As part of fuel cell technologies research:
- Fuel cell stack and system sub-components
- Fuel cell system integration, power conditioning and control
- Fuel cell component and stack tests
- Sodium borohydride based hydrogen production and fuel cell applications
- Stationary and portable applications
- Transportation and intelligence applications

ENERGY STORAGE

- Cells, stacks and batteries for electric vehicles and portable devices
- Electrode development for lithium-ion, lithium-air and lithiumsulphur battery applications
- Designing and manufacturing thermal and electrical battery management systems
- Pilot scale lithium-ion battery production
- Magnesium-copper iodide battery
- Super-capacitor development
- Energy storage systems for electricity grid stabilization applications
- Thermal storage systems



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VITES GmbH

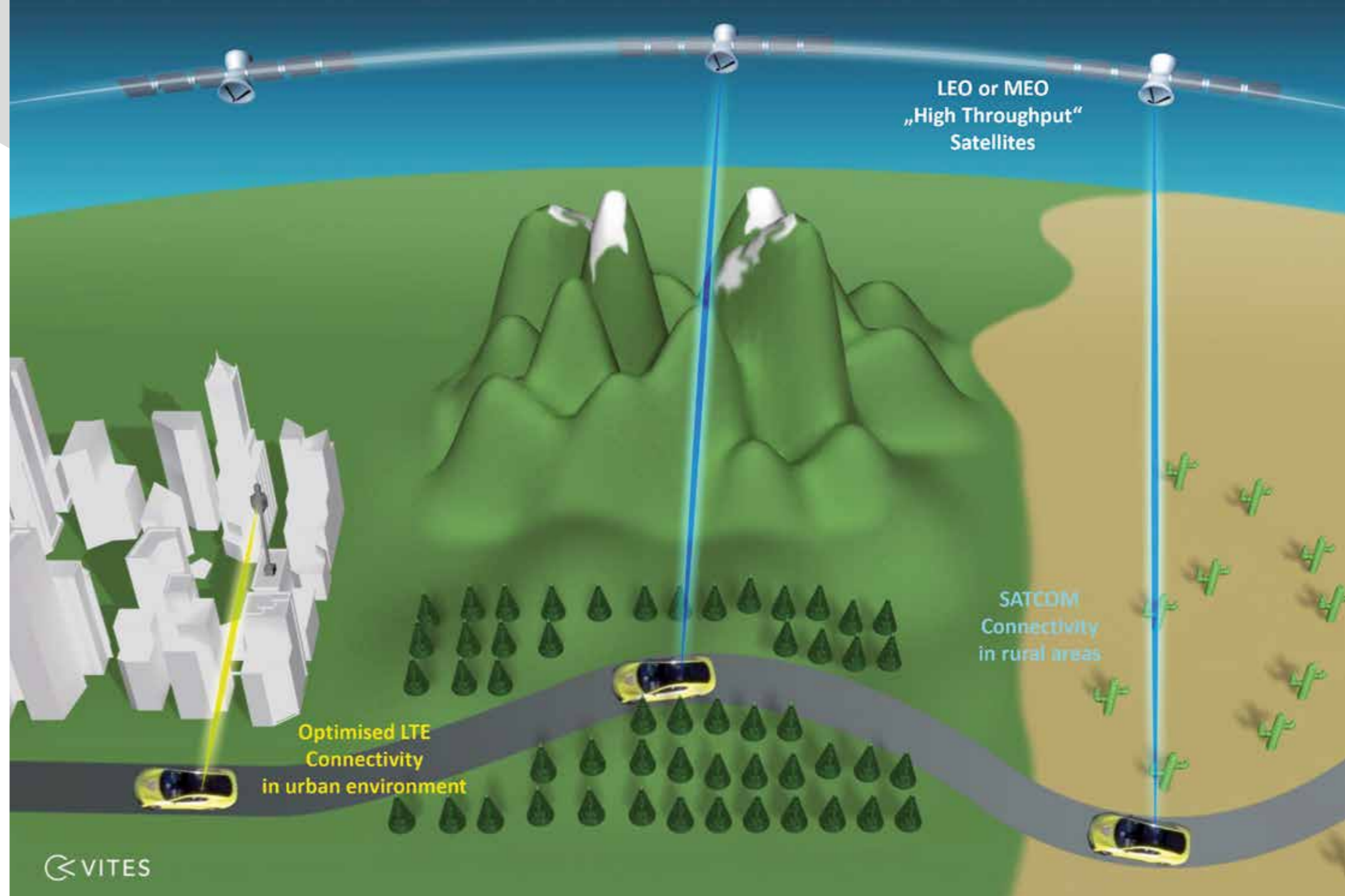
Vehicle connectivity using intelligent car roof systems

In 2016, the dynamics of the megatrends in the area of mobility have increased significantly. The automotive industry and politics are driving the development of e-mobility, autonomous driving and interconnectivity of vehicles as well as traffic digitization stronger than ever before. New and in particular intermodal mobility concepts are strongly gaining prominence. The International Motor Show Frankfurt (IAA) has confirmed the importance of network connectivity, automated driving as well as the mobile Internet in the vehicle and their the disruptive potentials for increasing transport efficiency and traffic safety while reducing emissions have been highlighted. Germany, as a leading location for automotive and infrastructure technology, sees the opportunity to strengthen the economic momentum through vehicle innovations. A lot has already been done at the political level: End of 2015, the German Federal Ministry of Transport has presented the autobahn A9 between Munich and Ingolstadt as official testing track for highly automated driving and issued a determined strategy for automated and connected driving. Various additional urban open test fields for autonomous driving are planned. In this context, the car industry will closely cooperate with research institutions.

The revolution in Car2X communication is being pushed forward on these test fields. Innovative vehicle and mobility concepts cannot be realized without optimized connectivity. The amount of data collected, processed and exchanged in autonomous driving is enormous. The requirement for an extremely short latency can hardly be met by the existing mobile communications infrastructure. Three-dimensional HD Live Maps, which are the nervous system of autonomous driving and intelligent traffic systems, have to be kept up-to-date in real-time. Connecting virtually all traffic users in real-time and giving them access

to cloud-based, high-resolution, up-to-date 3D-maps is an enormous challenge, not only for the CAR2X infrastructure, but also for the connectivity technology integrated in cars. The vehicle becomes a data collector, even a moving measuring station. It transmits sensor data with information about traffic flow, weather and road conditions as well as charging status of the car battery etc. to the infrastructure. The data of the total fleet are collected and evaluated by a Big Data System and then returned to all vehicles as traffic-, hazard-information, safety notifications and environmental information. However, the data exchange between vehicles and the cloud is not the only thing to be taken care of: also the mobile Internet, i.e. the connectivity of the vehicle passengers must be ensured. The occupants of an autonomous vehicle need to be online during their journey in order to work, communicate or be entertained. The resulting data throughput, which is generated by CAR2X and personal communication, need not only be processed by the connectivity technology of the vehicle, but must also be transmitted to the infrastructure by means of mobile communications. Since the capacity of the radio channel is limited and the signal quality greatly fluctuates while moving, the transmission parameters have to be adapted continuously to the circumstances in order to optimize the data throughput.

VITES is pushing vehicle connectivity with innovative technologies. The company, whose core competence is radio- and wireless technology for professional applications, is member of the IABG group and is located in Germany close to Munich. Based on the combination of intelligent antennas and software-defined radio modems, products and solutions are developed that optimize the transmission and reception of data and thus maximize the transmission capacity. Already in the „Ztos“, the Rinspeed vehicle of the previous year, VITES was represented with an



innovative communication solution. Under the glass roof of the Ztos, there were two SATCOM-On-The-Move systems with phased array antennas which, with full electronic adaptive beam steering, never lose connectivity to the satellite system while driving, thus enabling broadband communication beyond the coverage of mobile communications networks. However, while satellite communication satisfies the increasing connectivity demands in the rural areas of the large nations and emerging countries, the connectivity to the mobile communication networks like LTE and - in future - 5G needs to be optimized in the urban environment in order to achieve higher bandwidths and lower latencies. Also this can be achieved with VITES technology. With the components called „INTELLIROOF“ designed for intelligent and highly integrated vehicle roofs, VITES presents

a concept that allows a connectivity that automatically adapts itself to the circumstances. In an urban environment, the LTE connection is optimized using MIMO and Beamforming. When the vehicle is traveling in rural areas, where no mobile communication network is available, SATCOM is automatically switched on. All this comes without „shark fins“ or other visible antennas disturbing the vehicle design. The flat INTELLIROOF systems are integrated into the roof and can be adapted to the connectivity requirements of the OEM or Tier-1.

Projekt OASIS

The INTELLIROOF concept is visualized impressively in the OASIS project of Rinspeed, to which VITES participates as a partner. Two flat panels embedded in the roof of the vehicle demonstrate the possibilities of beam steering, which is used in the systems. VITES' technology is pioneering optimized LTE or 5G mobile connectivity, which is required for autonomous driving and the provision of data-based mobility services. Moreover, it provides SATCOM-On-The-MOVE based broadband connectivity in rural areas. Due to its flexibility,

compact shape and outstanding performance, as well as the globally usable technology, it has huge potential to become the solution for global broadband communication across all classes of cars and vehicles.

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Only one thing remains the same - advertising!

As a full-service partner, the Vollmond Advertising Agency has been developing promotional communication solutions in the print and non-print area since 2004. We are proud of supporting Rinspeed in the areas of brand communication as well as print and online media.

Vollmond inspires and unites people with companies. We are convinced that success is measurable and we want to thank all our customers for being able to prove this every day.

Vollmond provides safe and honest advice, planning and implementation. Thanks to national and international experience, we demonstrate our ability in the areas of advertising, marketing, design, search engine

optimization and programming over and over again by acting in a loyal and reliable manner. Among our customers are renowned representatives of various economic sectors.

We do not distinguish by the amount of the budget, but we are happy about every new challenge, about our customers' success and the good feeling of having achieved something. In dealing with our customers, we rely on the human touch, trust and reliability. This ensures a smooth process flow and provides optimal results.

In other words: each of us spares no effort to perform more than you expect - day after day.

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WAYRAY: AUGMENTED REALITY FOR FUTURE TRANSPORTATION

Introducing the first and world's largest AR head-up display for vehicles

Since its formation in 2012, WayRay has been committed to making every driver's experience on the road comfortable and safe. We focused on one of the most common causes of accidents - distracted driving - and undertook to reduce the necessity for looking at a phone or navigator screen while at the wheel.

Our solution was to display all essential information directly where drivers need it - in front of their eyes. This would be possible if the information were projected through the windshield right on the road ahead.

At the time, there was no existing technology with a large enough FOV and small enough system volume, so the WayRay team set to work on a new one. After a few years of R&D, we learned how to make transparent displays using holographic optical elements, and created our flagship product - WayRay Navion, an AR car navigation system. The technology behind it was designed to change the future of the automotive world.

With WayRay Navion, users can benefit from actual augmented reality without special eyewear or headgear. From a technical perspective, the WayRay AR navigation system includes a mini projector that displays images through the car windshield and a holographic optical element applied to the windshield surface. The latter feature allowed us to reduce the size

of the projection system dramatically, make the virtual image much larger, and place it ahead of the car - at any distance.

The innovation behind Navion became a conversation starter for WayRay and Rinspeed, and the idea for a very ambitious project was born: to make the world's largest HUD that acts like a non-wearable AR device, and to integrate it into the new Rinspeed "Oasis" concept car.

A distinctive feature of the system is its capacity to show different information to driver and passenger.

The person at the wheel will see only useful driving-related data, like speed and route directions. Meanwhile, the passenger will see favorite places, remarkable attractions and other points of interest. We call it "infotainment mode." All the information will be displayed ahead of the vehicle at a comfortable distance for the eyes.

The innovative technology and interface of WayRay HUDs eliminate the need to refocus one's eyes, unlike closely placed traditional navigation systems, and guarantee more comfortable driving. The infotainment capabilities of WayRay HUDs make them the essential solution for the global self-driving vehicles industry making the

first step towards wider use of mixed reality.

The idea of mixed reality - merging real and virtual worlds - once crossed a genius's mind long ago. WayRay pioneered the unique non-wearable technology that made possible the integration of virtual reality advantages into real life situations. Now that this technology exists, many things once considered to be science fiction are possible. In the case of WayRay HUDs, physical and digital objects naturally coexist and interact in real time, giving users a firsthand experience of mixed reality.

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ZF PRESENTS INTELLIGENT, NETWORKED ELECTRIC VEHICLE PLATFORM FOR THE RINSPEED "OASIS"

- "Intelligent Rolling Chassis" (IRC) from ZF offers highly flexible platform for any type of urban electric vehicle.
- IRC installed for the first time in the Rinspeed concept vehicle "Oasis"
- HMI ideas expand steering wheel and occupant safety system functions during automated driving

The Oasis is the first vehicle worldwide based on ZF's "Intelligent Rolling Chassis" (IRC). It is a ready-to-operate platform concept designed for urban passenger and transport vehicles, powered by an all-electric drive and equipped with an innovative chassis and steering system. The IRC features zero local emissions, is incredibly agile thanks to a new kind of front axle kinematics and intelligently networked to accommodate autonomous driving in city traffic of the future. All of these features make it the perfect basic platform for innovative vehicle concepts, for both well-established and new mobility suppliers. ZF wants to ensure safe interaction between the occupants and the vehicle and achieve greater comfort during automated driving. To this end, the company has equipped the newest Rinspeed concept vehicle with an interactive, button/knob-free single-spoke steering wheel and active occupant safety systems that function as human-machine interfaces (HMI).

The Rinspeed „Oasis“ is a visionary electric car developed jointly by the Swiss e-mobility think tank Rinspeed and technology company ZF Friedrichshafen AG. It embodies their vision of what the future of urban transport could look like: A compact vehicle powered by an electric drive, equipped with automated driving and integrated safety functions, but agile and flexible enough to meet the diverse needs and demands of its users. ZF's Intelligent Rolling Chassis featuring intelligently networked mechanical systems was developed exclusively – with the exception of the energy accumulator – and independently by ZF. It serves as the underlying platform for this revolutionary vehicle.

ELECTRIFIED MECHANICAL SYSTEMS REDESIGNED

The Electric Twist Beam (eTB) is located on the rear axle of the Intelligent Rolling Chassis. It consists of a twist beam axle and two 40-kW, close-to-the-wheel electric motors. These electric motors are housed together with one single-speed transmission each in aluminum housings. This weight and space-saving design thus enables the Rinspeed "Oasis" to accelerate to 100 km/h in roughly 9 seconds and, if needed, up to a speed of 150 km. This makes the eTB an efficient and dynamic drive that will facilitate the transport of both passengers and goods in an urban environment.

The IRC front axle is based on an innovative dual control arm independent suspension design. It is the main mechanical requirement for increasing the steering angle up to 75 degrees

in conjunction with the ZF electro-mechanical steering system. As a point of comparison, standard front axles allow for a maximum turning angle of 50 degrees. With this improved steering angle, turning and parking maneuvers will be easier than ever. Greater agility in the vehicle will benefit both passenger and transport vehicles especially in traffic-prone city driving. Parking in a normal parking place or in a loading zone, space is tight in city centers and urban areas.

The IRC Domain ECU (electronic control unit) acts as the electronic brain for all chassis functions. In addition, it controls the driving strategy, meaning all of the platform's longitudinal and transverse dynamic functions. It also includes controlling the other ZF systems such as service brakes as well as power electronics in the Rinspeed "Oasis." Moreover, the IRC Domain ECU has a torque-vectoring

function which distributes the driving power between both electric motors, separately when required. This is the only way vehicles can drive off from a standstill at an almost 90-degree angle, which is perfect for parking and turning in tight spaces. Lastly, the control unit comes with all the interfaces required for advanced assistance systems, which makes ZF's IRC very attractive as the basic platform for highly automated or autonomous driving in urban transport. The IRC has even more to offer. In addition to connecting the front and rear axles, its flat bottom, the "skateboard," allows for the most diverse, simple and needs-based vehicle configurations and interior concepts, from the lifestyle-focused two-seater to a reliable delivery vehicle.

ZF technology is also prominent in the Rinspeed "Oasis" interior, as it features innovative HMI functions to facilitate automated driving.



REINVENTING THE STEERING WHEEL

If the driver wants to actuate the direction indicator on the steering wheel, they will immediately notice the missing levers. Their functions have been integrated directly into ZF's button/knob-free single-spoke steering wheel system. Perfectly in line with Rinspeed's concept car design, which is intended to meet the multi-purpose needs of the drivers by keeping the vehicle's interior design minimalist, the wheel rim itself is equipped with Hands ON/OFF Detection. 10 capacitive sensor fields immediately detect whether, where and how the driver is touching the wheel. This ability to detect the driver's contact with the wheel represents an essential requirement for safe automated driving functions. In addition, the sensor fields can be assigned the most diverse commands – and the corresponding triggering gestures. Depending on which section of the steering wheel the driver touches or swipes, the right or left turn signal is activated, the horn is actuated or the infotainment and navigation systems are started up.

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This high-tech wheel also comes with yet another unique feature that ZF has developed especially for automated driving. As long as the vehicle is in automated driving mode, the steering wheel can actually fold down like a folding table, thus making room for other activities. For example, a tablet PC, a keyboard or a customized table, perhaps with a cup holder, can be snapped into place instead. The driver's airbag is thus no longer housed in the steering wheel. It will rather be installed in the headliner above the front windshield.

RESTRAINT MEETS FREEDOM OF MOVEMENT

The two-seater "Oasis" also offers great comfort gains along with maximum protection. Its active ZF seat belt system is designed with an exclusive "Relax" mode that activates during automated driving. In addition to the Active Control Retractor, the Active Buckle Lifter has been combined for the first time with a completely new anchor plate on the other side of the seat which is equipped with an electric height adjuster. This new seat belt system will increase comfort enormously

during automated driving mode. The Relax mode allows the seat belt to lift somewhat off the lap of the driver or passengers so that they have more freedom of movement during active auto pilot. If the networked safety systems detect a potentially dangerous situation, the belt tightens again very quickly. The belt-tightening simultaneously serves as a highly effective, clearly noticeable warning for the driver to refocus on what's happening on the road and to take control of the wheel. The restraint system already interacts with the driver and passengers when getting in the car. The anchor plate and the Active Buckle Lifter move automatically to politely and effectively remind the passengers to buckle up. In the Rinspeed "Oasis," this is even more prominent and more comfortable. When its doors open, all the seats rotate to face the doors, almost inviting the driver and passengers to get in.

ZF is a global leader in driveline and chassis technology as well as active and passive safety technology. The company acquired TRW Automotive on May 15, 2015, which was then integrated within the organization as the Active & Passive Safety Technology Division. The combined company reported sales of €29.2 billion in 2015 and now has a global workforce of around 135,000 with approximately 230 locations in some 40 countries. ZF annually invests approximately five percent of its sales in Research & Development (€1.4 billion in 2015) ensuring continued success through the design and engineering of innovative technologies. ZF is one of the largest automotive suppliers worldwide. For additional press information and photo material, please visit www.zf.com

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car
concepts

AXA winterthur

BORBET
LEICHTMETALLRÄDER


CARL F. BUCHERER
LUCERNE 1888

 **DEKRA**

 **DR. SCHNEIDER**
UNTERNEHMENSGRUPPE

 **EY** Building a better
working world

ESORO INNOVATION
ENGINEERING
PROTOTYPING

EVA Fahrzeugtechnik

+GF+


HARMAN


Pushing Performance


Huf

KOSTAL


A PORSCHE COMPANY

NXP

OSRAM

 BlackBerry | **QNX**


SAP


schoeller
the spinning group

SIEMENS


Sika


stahl

STRÄHLE + HESS

TECHNIPLAS


TÖG
TÜRK TURKISH
OTOMOBİL AUTOMOBİLİ
GELİŞTİRME DEVELOPME
MERKEZİ CENTER

 **VITES**

VOIIMOND
marketing . communication


WAYRAY


ZF