

CES Las Vegas 2020: Rinspeed's "MetroSnap" displays innovative solution for the key question of modular vehicle systems and mobility options:

Clever modular concept solves the issue of cost

Frank M. Rinderknecht: "The crucial step towards series production has now been taken."

As the first company in the world, Swiss powerhouse of ideas Rinspeed demonstrated the "Snap" and the "microSNAP" at the CES in Las Vegas in the past two years, vehicles whose chassis and bodies go their own ways. With the revolutionary separation of the two vehicle components, Rinspeed confronts the increasingly diverging life cycles of hardware and software. And by doing so, creates a sustainable foundation for the transport of people and goods in the world of tomorrow.

The future belongs to modular mobility systems. That is evident in the number of imitators in the industry that have picked up Rinspeed's ingenious idea. However, the systems also have to make economic sense in order to gain broad acceptance. And that is precisely where Rinspeed is now once more taking a crucial step ahead: In the "MetroSnap", Rinspeed presents a simple, fast, safe and inexpensive swapping system for the vehicle bodies for which the Swiss company has filed for patent protection.

Modular vehicles can help solve a majority of the problems and questions posed by modern mobility that arise as the result of new IT technologies such as autonomous driving and of traffic congestion and the associated inefficiency and air pollution. Due to the flexible use of different vehicle bodies, these vehicles not only reduce the number of tremendously expensive and systemically short-lived automated vehicles, they also satisfy - depending on the time of day and current needs - the different transport requirements of people and goods.

Thanks to the unique swapping system - inspired by aviation, and tried and tested there around the world in all weather conditions - entirely new applications become possible. Among other things, the desired service now comes to the customer quickly and simply, regardless where he or she may be at the time - at home or at work. This can be customer-accessible parcel stations that are dropped off in the customer's neighborhood for a certain period. Even combinations with a "corner health food shop" are conceivable. Limited business hours, long drives and the endless and unpopular courier caravans are thus things of the past. And quite as an aside: no more unattended packages, no more thefts and failed delivery attempts - and no more associated pollution and traffic burden. And the really great thing about it is: This innovative way of getting parcels to the customer faster and easier can already be used today with a human driver. Parcel stations on wheels, right around the corner.

Because the batteries are split up between the "Pod" (vehicle body) and the "Skateboard" (chassis), the vehicle does not need to be parked for charging. The charging process takes place elegantly and without wasted time while cleaning or loading the "Pod." The Swiss drivers of innovation refer to this as "Hot Swap", the swapping of the vehicle bodies including the batteries in a matter of seconds - the vehicle is ready to go almost as quickly as a racecar after a pit stop.

The unique "MetroSnap" concept, which fuses together smart city, supply chain and passenger transport, is meeting with very strong interest in the industry even before its actual premiere. The Rinspeed motto at the CES 2020 is 'customer focus.' The customer - and thus people - take center stage. Because Rinspeed boss Frank M. Rinderknecht is sure: "People desire ever more convenience and simplicity in their lives, and we want to make this possible with our innovative transport

solutions.”

The electric vehicle - as always when Rinderknecht is at work - is full of technical and visual treats contributed by a reputable network of companies from around the world. In keeping with a proven tradition, Rinspeed's 26th concept car was designed by Swiss company 4erC and constructed and realized technically at Esoro.

When it comes to electric mobility, special attention is on the batteries. The heat conducting Kebablend/TC plastics from Barlog Group based in the German town of Overath ensure optimized battery cooling. The 'Clean Energy Pack,' the modular and scalable battery system of the "MetroSnap" skateboard, comes from Clean Energy Global based in Berlin. Speaking of energy supply: Thermal management specialist Eberspächer controls the temperature in the "Pax Pod" with its heating and cooling solutions by app and provides powerful heated and refrigerated containers for the "Cargo Pod" - both with autonomous power supply thanks to accumulators. A clever interface/plug-in connector from Harting ensures the transfer of data, signals and power as soon as "Pod" and vehicle body are interlocked.

Various partners contribute the digital services for the "MetroSnap." MHP focuses on the intelligent mobility ecosystem for automated multi-modal transport solutions. SAP provides a digital platform, which orchestrates and optimizes future mobility concepts and transportation through data analysis, machine learning and the IoT. EY ensures the automated use-based settlement of transactions between platform participants as well as transparency on and trust in the supply chains with solutions based on blockchain technology. ESG Mobility focuses on smart connectivity apps, a fleet management system supported by AI, and on the development of the electronics architecture for swappable vehicle components.

When it comes to easy, fast and secure payment and its processing, Wirecard from Aschheim comes into play. Thanks to state-of-the-art palm vein recognition, the access system is considered to provide ultimate security. Zürich Insurance Group is thinking intensively about new business models of the digital future. They include time- and use-dependent models for insurance premiums as well as insurance coverage as a service model.

Harman is actively helping to shape the transformation of mobility with innovative user experiences. The focus of the advanced digital cockpit solutions is on greater safety and comfort as well as on productivity and entertainment.

The latest project, the "MetroSnap", runs on Borbet wheels, too. The perfectly shaped Y design of the 18-inch rims captivates in every aspect. Also, not commonplace on a concept vehicle: The "MetroSnap" uses a 'Space Drive' drive-by-wire system from Schaeffler-Paravan Technologie Company. Street-legal and triple-redundant steering and braking systems guarantee maximum safety. Ibeo Automotive Systems, the world leader in laser scanner sensors for the automotive field, with its Lidar sensors ensures that obstacles and people are detected early and correctly – while the vehicle is moving and during the "Pod" swap - and that the "MetroSnap" is traveling the roads safely in autonomous mode.

The lighting technology comes from Osram. The exterior lights - for example the digital license plate - are used to communicate with other road users. In addition to no-dazzle high beams, the micro-pixel LED Eviyos also make it possible to project warning symbols onto the road. The interior lights are adapted to the mood of the driver with the help of health tracking functions. With regard to the

headlights of the “MetroSnap”, Rinspeed relies on state-of-the-art LED technology as well as on the innovative product solutions from Prettl Lighting & Interior based in Pfullingen, which also make the visual messaging with other road users possible.

Dekra, a globally leading experts’ organization, tested the security and proper functioning of the data and information transfer. TTTech Auto from Vienna contributes crucial components: Their In-Car Compute Platform (ICCP) combines all vehicle functions in a single high-performance control unit and in this way advances the transition to the software-based vehicle of the future.

Rinspeed devotes great attention to the feel-good appointments of the interior. FoamPartner is the perfect address for this. The company contributes its expertise in acoustically and thermally effective foams. With Tencel fibers for automotive interiors in the “MetroSnap”, Austrian company Lenzing commits to the joint creation of an innovative transport concept of the future that strikes out in new directions in matters of sustainability, while elevating comfort to a new level at the same time. South Korean manufacturer Kolon Glotech sets visually appealing highlights with traditional Korean Sanggam printing on the center console, the interior trim panels and on the “Skateboard” shrouds. Dutch chemical company Stahl, a specialist for sustainable leather, textile and various plastic surfaces in automotive interiors, likewise contributes its expertise.

When it comes to innovative textile products, Rinspeed has been justifiably relying on its coalition partner Strähle+Hess for years. The knitted fabric used in the vehicle seat was manufactured from recycled PES. Stratasys from Rheinmünster supplies innovative single-operation 3D printing on various materials for interior and exterior components.

The new mobility requires new networks and innovative mobility trade shows. Hypermotion in Frankfurt is the innovative pioneer in matters of mobility and logistics.

The world premiere of the “MetroSnap” will be on January 7, 2020, at the CES in Las Vegas. The unusual creation of Swiss mobility visionary Frank M. Rinderknecht is on display on the **Osram booth # 8516 in the North Hall of the LVCC** (Las Vegas Convention Center / Tech East). In spring 2020, the “MetroSnap” can then be admired at the Mobile World Congress in Barcelona and at the Geneva Motor Show - professionally staged by Kern advertising and printing agency from Saarland.

The partners in the “MetroSnap” are:

4erC GmbH - www.4erc.ch

Barlog Group - www.barlog.de

Borbet GmbH - www.borbet.de

Clean Energy Global - www.clean-energy-global.com

Dekra SE - www.dekra.com

Eberspächer Climate Control Systems GmbH & Co. KG - www.eberspaecher.com

ESG Mobility GmbH - www.esg-mobility.com

Esozo AG - www.esoro.ch

Ernst & Young GmbH - www.de.ey.com/automotive

FoamPartner - www.foampartner.com

Harman - a Samsung Company - car.harman.com

Harting Technology Group - www.harting.com

Hypermotion - www.hypermotion.com

Ibeo Automotive Systems GmbH - www.ibeo-as.com

Kern GmbH - www.kerndruck.de
Kolon Glotech Inc. - www.kolonglotech.co.kr
Lenzing Group - www.lenzingindustrial.com/Application/automotive
MHP - A Porsche Company - www.mhp.com
Osram GmbH - www.osram.com
Prettl Lighting & Interior GmbH - www.prettl.com
SAP SE - www.sap.com
Schaeffler Paravan Technologie GmbH & Co. KG - www.schaeffler-paravan.de
Stahl Holdings BV - www.stahl.com
Strähle+Hess GmbH - www.straehle-hess.de
Stratasys - www.stratasys.com
TTTech Auto AG - www.tttech-auto.com
Wirecard AG - www.wirecard.com
Zurich Insurance Group - www.zurich.com