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Integrated urban solutions are the core driver of user-oriented ad-hoc mobility

Our society is experiencing a new multi-vehicle era of mobility: urban mobility is becoming more and more connected, digital and efficient. Mobility patterns are gaining in complexity. The needs profiles, expectations and requirements of people are shifting. Modern society is facing a similar transformation as 125 years ago when the car was invented.

Urban centres account for approximately 75% of the world's global energy consumption, and for 80% of greenhouse gas emissions. Besides providing multiple vehicles for mobility, the big players in the market offer various mobility services. Siemens AG, a leading producer of high-speed trains, has been gaining

experience and know-how in project management for the last 160 years.

Getting ready for the change with an integrated mobility concept

Besides the hardware, Siemens offers integrated urban mobility solutions for conurbations such as SiMobility Connect, a platform enabling the integration of the mobility services of various providers into a single-source portfolio for the user. A rail service provider in south-eastern Switzerland

uses SiMobility Connect to give travellers access to mobility services across the entire country and integrate several new transportation modes such as car-sharing schemes, for instance.

State-of-the-art trains have to cater to different passenger and baggage solutions and at the same time provide a high level of comfort and flexibility. Composites materials can enhance the drive for weight reduction and space saving. □

More information: www.xxxx

interview

JOSHUA HESTERBERG,
ENGINEERING – HIGH SPEED AND
COMMUTER RAIL INTERIORS
SIEMENS AG



After completing his mechanical engineering studies in the US, Joshua Hesterberg came to Germany and worked in the automotive industry before joining Siemens AG five years ago. Since then, he has been involved in the continuous optimization of high-speed and commuter rail interiors.

Could you outline your experience with composite materials in your sector and how they are enhancing your concepts?

JOSHUA HESTERBERG: Composite materials have accompanied me during my entire professional career, from simple cladding and covers to structural parts and components. They are fascinating, since there is always something new coming up that enables us to refine our developments by applying these new materials and manufacturing processes. For example, we use fibre-reinforced plastics in ceilings, wall covers, and air-conditioning

DB Cargo AG commissioned Siemens to equip its locomotive fleet for condition-based predictive maintenance. The telemetric systems continually collect data on the condition of the locomotives. With this data, experts at Siemens' Mobility Data Services Centre will work with DB Cargo to develop identified applications and data analytics models (Copyright Siemens)





The Siemens Avenio tram for Doha, in the Emirate of Qatar, was honoured with the prestigious Red Dot Award for Product Design 2017. The interior's bright and airy ambiance, subtly styled seat upholstery and elegantly designed grab poles underscore the tram's modern character (Copyright Siemens)

ducts, or honeycomb panels and foam cores in the floors of our high-speed trains. 3D-printed parts where we can integrate different materials and fibre types are also very interesting for new developments.

What are the major advantages of these materials? What makes them so unique in these applications?

J. H.: Above all, it is the weight-saving aspect that makes them so unique and in most cases, we can save installation space. They help us cope with our customers' high demands. Cabin space for passengers should be ample and allow a flexible design, while we consistently have less space available for our components.

The great benefit of composite materials is their hybrid character. The focused blend of different properties and features is extremely interesting for us. We can replace traditional materials like aluminium and steel, or wood panels, with new hybrid materials. The upside is that they fulfil our mechanical,

thermal, and acoustic requirements in an excellent way, so that we do not need additional insulation or cladding. This is particularly important for our high-speed trains. Extremely interesting are opportunities with new composites using foamed materials such as PIR (polyisocyanurate) and PE (polyethylene), which offer additional benefits for heating insulation. They show outstanding positive effects when applied to glass-fibre reinforced materials as well as aluminium. Such materials allow us to save overall weight and costs.

Which trends or new requirements do you foresee for the years to come?

J. H.: Health, safety, and environmental protection are becoming more and more important. At the same time, we need to save weight. The option to reduce weight is extremely promising, but still very expensive. When we look at the different means of transportation, the ranking begins of course with aviation, followed by automotive, and then flows down to trains and other

modes of public transportation. The most expensive materials can only be economically applied in aviation. Currently, they are also very important in our high-speed trains, however we still need to balance costs with benefits. It is the same with carbon fibres. We only use them for special purposes.

Do you have a message for composite producers as far as the development of new materials is concerned? Where you are looking for new solutions?

J. H.: I would like to summarize with the statement: affordable lightweight construction. Since cost pressure is steadily increasing and we are facing more global competition, we need materials that are within our cost/benefit margins. Our good reputation is based on a good track record and quality products, which our customers recognize (we even won a contract when faced with predatory pricing), but this will change in the future. In the long run, we need to strive for cost reduction while maintaining our high level of quality. □