Virtual Development and Virtual Conference – 12th chassis.tech plus 2021

For the second time, the chassis.tech plus conference took place online due to the Covid-19 pandemic. However, the 250 participants were still able to share experiences and took the opportunity to network as usual in the presentations and forums. The six keynote speeches covered the latest technology trends, including the virtual development of chassis systems and the use of driving simulators for testing purposes.

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“Nowadays we have to develop chassis for vehicles that can both drive themselves and be driven by us.” With these words, Conference Director Prof. Peter E. Pfeffer from the Munich University of Applied Sciences opened this year’s chassis.tech plus and highlighted the balancing act expected of today’s developers. The 12th international Munich chassis symposium was held on June 29 and 30, 2021 for the second time in virtual form because of the Covid-19 pandemic. Nevertheless, Dr. Alexander Heintzel, Editor in Chief of the ATZ/MTZ Group, welcomed more than 250 participants from 18 countries to the event.

A total of 30 % of them came from non-German-speaking countries, which represents a record for international visitors. The number of participants was up by 25 % on the previous year. Here we will give you an overview of the six keynote speeches and the two short interviews.

DEVELOPING ELECTRIC VEHICLE WHEELS AS DIGITAL TWINS

In the first keynote speech of the first day, Peter Langen from BMW highlighted the major progress made in chassis development over recent years, which has been heavily influenced by trends

such as electrification, digitization and automated driving. Langen described the characteristics of BMW’s electric models the iX and i4, which had development processes that were very different from those of their predecessors and of conventional cars. He focused on the development of the tires and wheels for electric cars and in particular on their smooth running and streamlining.

INTEGRATING MORE SERVICES INTO CARS

In the second of four plenary speeches on the first day, Dr. Moo Sang Kim from Hyundai Motor Company explained the company’s strategy and described the challenges facing a smart mobility service provider. The goal is to incorporate an increasing number of services into products that will be more integrated and connected. Although Hyundai is a car manufacturer, the contribution of digital systems to the cars’ added value is growing. This is a development that the company needs to face up to. At the same time, the main challenges for the chassis can be found in the changing

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In two brief interviews during the breaks, Editor in Chief of the ATZ/MTZ Group Dr. Alexander Heintzel spoke with a selection of experts, here Jennifer Endres from Bosch

environments of electrification, autonomous driving, new mobility solutions and intelligent factories.

A MIX OF MECHANICAL BRAKING AND RECUPERATION

The third keynote speech began with the question: "It's only the powertrain that's changing, why does the chassis need to be modified?" Ingo Albers from Porsche considered the differences in the way that BEVs are developed, with a focus on the design of the chassis for the electric Taycan sports car. Especially when decelerating, it is important to use the right mix of electric braking (energy recovery) and mechanical braking. Porsche is taking the route of one-pedal braking and not, like many other manufacturers, adopting the strategy of one-pedal driving.

CROSSING BOUNDARIES WITH PRE-INTEGRATED SOLUTIONS

The last keynote speech of the first day, entitled "Beyond borders – connected and pre-integrated solutions for a new mobility era," was given by Jennifer Endres and Dr. Gero Nenninger, both from Bosch. In an entertaining question and answer game, the two experts highlighted new development methods and processes, such as agile development and systems engineering. These offer the only solutions for reliably designing the many connected systems and solutions and testing them in detail. The boundaries between departments and disciplines need to be broken down so that pre-developed modules can be used to supply products to carmakers and end customers more quickly.

ADAPTING ACC AND ABS FOR MOTORCYCLES

Two more keynote presentations were held at the end of the symposium the subjects of motorcycles and sports cars. Markus Hamm from BMW Motorrad made an interesting comparison between assistance systems for motorcycles and for cars. Many functions from cars can be integrated directly into bikes, but other systems need to be adapted. For example, ACC in motorcycles has no camera or stop-and-go function, and the blind spot assistant

is based on the radar system from cars. The challenges involved in the ABS-IMU system included designing a compact, vibration-resistant radar system that could be integrated into the cockpit fairing. Because of the gyroscopic effect, motorcycles never travel in a straight line and this has a negative impact on the representation of objects between 100 and 120 m away. As a result, the radar image has to be adjusted by the computer.

COMBINING PERFORMANCE AND EVERYDAY USABILITY

Steffen Bamberger from Audi Sport discussed the special approaches and methods used to design sports cars. "We combine maximum performance with everyday usability. Regardless of whether the car has an electric powertrain or a ten-cylinder combustion engine, we aim to offer both." As an example, he highlighted the torque splitter, a powertrain and chassis component that replaces the differential and ensures the fully variable torque distribution to the rear axle. This has given the new Audi RS3 prototype its high level of driving dynamics.

FAREWELL OF TWO MEMBERS OF THE BOARD

At the end of the event, Conference Director Pfeffer thanked the long-standing Advisory Board Members Veit Held (Opel) and Karl Friedrich Wörsdörfer (Continental). Both were given a warm farewell; they have successfully headed

QUOTES

Peter Langen, BMW:
"The use of digital twins brought further improvements to the design of the Air Performance wheels."

Ingo Albers, Porsche:
"In BEVs, the mechanical brake must always be ready for action."

Moo Sang Kim, Hyundai:
"The contribution of digital systems to our cars' added value is growing."

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the chassis.tech and brake.tech sections respectively for many years and are now leaving their companies to begin their retirement. The date for the next chassis.tech plus has already been set: It will be held at the Bayerischer Hof in Munich (Germany) on July 5 and 6, 2022.

Michael Reichenbach

Conference Director Prof. Peter E. Pfeffer from Munich University of Applied Sciences introducing the two keynote speakers Markus Hamm from BMW Motorrad and Steffen Bamberger from Audi Sport on the second day