



Virtual **LIVE**  
20-21 April 2021

International Summit

Next Generation

# Steering Systems Europe 2021

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# Next Generation Steering Systems Europe 2021

20-21 APRIL 2021 | Virtual LIVE

Dear colleague,

I am happy to welcome you to the first annual **Next Generation Steering Systems Virtual EU** summit, which will be hosted by the **Robert Bosch** company. Robert Bosch, our company founder was a pioneer in automotive technology driven by customer centric anticipation of future needs of his customers.

As the latest steering conferences have been focusing on advanced technology (e.g. Steer-by-Wire) or future advanced vehicle architecture trends (e.g. 48V) we want to shape this conference by focusing on mid-term challenges our steering industry is faced with today.

With you we would like to take a journey through impacts for steering system based on new requirements evolving **from Level 2 Hands-Free** functionalities, the **impact of the electrification** on the multiple domains of EPS systems and how **SW and controls partitions are changing** between OEMs and suppliers. Day 1 has been orchestrated around those real-life challenges for in-depth discussions. For Day 2 we are actively searching for your additions and thoughts, driving your mid-term business which you want to address. We are looking forward for your topics to be shared and discussed. I am looking forward to welcome you in April at our virtual event.

**Matthias Joos**

## CONFERENCE CHAIRMAN



**Matthias Joos**  
Global Product Management Electric Power Steering Rack, Vice President  
*Robert Bosch Automotive Steering GmbH*

## CONFIRMED SPEAKERS AND GUESTS



**Giampaolo Maschietti**  
Advanced Technology & Pre-Development Programs Global System Responsible  
*STEERING Maserati*



**M.Sc. Volker Ewald**  
Consultant (Strategic Consulting & Engineering)  
*IPG Automotive*



**Prof. Dr.-Ing. Reinhard Reichel**  
Director of the Institute of Aircraft Systems  
*University of Stuttgart*



**Markus Weber**  
Project Manager Steering Control Unit  
*Robert Bosch Automotive Steering GmbH*



**Armin Köhler**  
Systems Engineer/Functional Safety-Automotive Electronics, Product Area Energy Management  
*Powernet-Architecture Robert Bosch GmbH*



**Dr. Matthias Klomp**  
Solution Architect - Chassis Systems  
*Volvo Cars*



**Casper Christiansen**  
System Engineer  
*Husqvarna Construction*



**Viktor Alkelin**  
Former Thesis Worker, Steering  
*Volvo Cars*



**Kristof Polmans**  
Senior Vice President Research & Advanced Engineering  
*thyssenkrupp Steering*



**Dr. Carlos Nuno Veiga Barbosa**  
Research and Development Manager  
*Nylacast Automotive*

## ADVISORY BOARD



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Advanced and Core Steering/TE  
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Steering Technical Expert  
*General Motors*



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**Sebastian Pelludat**  
Senior Expert Steering System Development  
*Robert Bosch Automotive Steering GmbH*



**Alexander Ein Waldt**  
Technical Expert Steering System Engineering  
*Ford Motor Company*



**Armin Schymczyk**  
Core Steering Supervisor  
*Ford Motor Company*



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Steering Tuning and Development & Tuning of Chassis Controller  
*Mercedes-Benz AG*



**Dr. Anton Uselmann**  
Project Manager and Development Engineer for Steering Systems  
*Mercedes AMG GmbH*



**Oliver Nehls**  
Senior Engineer Advanced Steering Systems  
*Ford Motor Company*



**Tim Diez**  
Chassis Electrical Technical Expert  
*Ford Motor Company*



**Timo Seitz**  
Senior Manager Systems Engineering  
*Robert Bosch Automotive Steering GmbH*



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## DURING THE TWO DAY CONFERENCE YOU WILL

- Find out current challenges and developments of **EPS architectures** for **SAE Level 2 hands-free driving**
- Hear about the **impact of passenger car electrification** on **future EPS systems**
- Identify **trends and use cases** for **intelligent real wheel steering**
- Get to know **new simulation methods** to save development costs and **raise system performance**
- Discuss **current technology challenges** for steering systems based on the **automotive trends** Personalized – Automated – Connected – Electrified: PACE
- Understand the **impact of Human Machine Interface (HMI)** on steering systems
- Find out how to **bridge the path towards autonomous driving**
- Get a deeper understanding and learn **from aerospace industry** about **advanced integrated avionic platform**
- Gain insight into **future electrical board net architectures** for **cost optimal steering gears**

## WHAT YOU WILL EXPERIENCE ON SITE



### AUDIENCE Q&A

Interact with conference speakers and moderators to ensure all of your questions are answered during these sessions.



### PANEL DISCUSSION

Benefit from deeper insights by attending panel discussions. Share your ideas and thoughts with peers and receive feedback from dedicated industry experts in this interactive session.



### WORKING GROUPS

Discuss the latest challenges and developments in AM with moderators and peers in these highly interactive sessions. You are welcome to share your ideas and experiences in the working groups.



### NETWORKING RECEPTION

Enjoy an informal evening get-together with speakers and peers to discuss the outcome of the first conference day and expand your network in a relaxed environment.



### CROSS-INDUSTRY SESSIONS

Enjoy our cross-industry sessions to get an insight in the state of the art of steering systems of aviation, agricultural machinery and automotive industries.

Attendees' Profile: AUTOMOTIVE – OFF-HIGHWAY – AEROSPACE

CTO | CIO | CDO | VP | DIRECTOR | CHIEF ENGINEER | PRINCIPAL KEY EXPERT | HEAD OF | TEAM LEAD | DESIGN LEAD | SUBSYSTEM LEAD ENGINEER | PROJECT MANAGER

Engineering R&D, Systems & Control, EPS, Chassis Control, Chassis and Vehicle Dynamics, Steering Controls, Flight Controls, X-by-Wire Systems, Autonomous Steering and Comfort, Autonomous Steering Controls, Autonomous Steering Electronics, Vehicle Dynamics, Electrical Engineering, Electric Steering Applications, Development Steering Systems, Suspension, Axles & Steering, Technology and Innovation, System Safety and Integration, System Architect, Multi Sense and Vehicle Control, Advanced Data Analysis and Applications, Autonomous Vehicle and ADAS, Automation, Sales, Marketing and Business Development





# Next Generation Steering Systems Europe 2021

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## THIS IS WHAT EXPERTS OF OUR PAST EVENTS EXPERIENCED

"I really enjoyed meeting so many people from the industry."

*Global Steering Technical Leader, General Motors*

"Very good agenda. Good subject presentations. Great interaction."

*Global Chief Engineer Electric Steering Applications, ZF*

"Excellent cross-industry discussion. Relevant presentations. Engaging Workshops."

*Subsystem Lead Engineer Autonomous Steering Electronics, General Motors*

"Great forum to understand automotive industry trends and ability to network."

*Power Systems Lead, John Deere*

"Perfect opportunity to get a better understanding and further learning about the future of the technology."

*48V Power Supply Systems Owner, Jaguar Land Rover Ltd.*

"Very well done."

*Division Head Cross Value Division, Panasonic Industry Europe GmbH*

"Inspiring two days, which served as an ideal platform to exchange ideas regarding the upcoming technology trends, as well as the future challenges to overcome as an industry/sector. Unbeatable location and great atmosphere for discussion and networking, thanks also to the participation of numerous OEMs and leading tier 1 suppliers."

*Automotive Steering, Director Product Engineering,  
Robert Bosch Automotive Steering LLC*

"Good organization and interesting content."

*CTO E/E Competence Center, thyssenkrupp*

"Great job assembling important players in industry, broad range of topics covered."

*MOLYKOTE® Application Engineer, DuPont*

"Very well organized, excellent topics and presentations covered. Nice friendly environment to meet peers and exchange ideas. The working groups were great."

*Controls Development Engineer Vehicle Dynamics, GM Canada*





# Next Generation Steering Systems Europe 2021

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CONFERENCE DAY 1 | TUESDAY 20 APRIL 2021

## 08:40 Welcome by Simone Lange, Program Director Automotive, RedCabin GmbH

**Matthias Joos** – Global Product Management Electric Power Steering Rack, Vice President, *Robert Bosch Automotive Steering GmbH*

CURRENT CHALLENGES FOR STEERING SYSTEMS WITHIN AUTOMOTIVE INDUSTRY

## 09:00 EPS Architecture for SAE L2 Hands-Free Driving

- Additional safety requirements and Impact on EPS architecture and function
- Driver interaction during SAE L2 Hands-Free driving
- Transition Handling in normal mode and failure operation

**Sebastian Pelludat** – Senior Expert Steering System Development, *Robert Bosch Automotive Steering GmbH*

## 09:30 Impact of Passenger Car Electrification on Future EPS Systems

- How new technological trends will change steering system in the future
- New EPS system requirements due to electrification and future trends
- Future developments and solutions

**Giampaolo Maschietti** – Advanced Technology & Pre-Development Programs Global System Responsible STEERING, *Maserati*

10:00 *Networking Coffee Break*

## 10:30 Control of a Redundantly Actuated Steer-By-Wire-System

- Steer-by-Wire
- Model-Matching
- Test Bed

**M.Sc. Volker Ewald** – Consultant (Strategic Consulting & Engineering), *IPG Automotive*

## 11:00 Future Electrical Board Net Architectures for cost optimal Steering Gears

- Latest concepts for cost optimized power supply system architectures
- Enhanced functionality on component level – Electric Power Steering
- Next generation: fail operational powernet topology designs

**Armin Köhler** – Systems Engineer/Functional Safety – Automotive Electronics, Product Area Energy Management Powernet – Architecture, *Robert Bosch GmbH*

**Markus Weber** – Project Manager Steering Control Unit, *Robert Bosch Automotive Steering GmbH*

## 11:30 Engineered Polymer Solutions to solve the Challenges of Steer by Wire Applications

- The evolution of engineered polymers within EPS architectures



# Next Generation Steering Systems Europe 2021

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CONFERENCE DAY 1 | TUESDAY 20 APRIL 2021

- Emerging market trends within steer by wire applications
- Utilizing engineered polymers to meet market demands

**Dr. Carlos Nuno Veiga Barbosa** – Research and Development Manager, *Nylacast Automotive*



Interactive session: Q&A Session

12:00 Interact with conference speakers and moderators to ensure all of your questions are answered during these sessions.

12:30 *Networking Lunch*



Interactive sessions: WORKING GROUPS

13:30 Discuss latest challenges and developments in steering systems with moderators and peers in these highly interactive sessions. You are welcome to share your ideas and experiences in the working groups. The audience will be divided into 3 groups. Each group will attend all 3 interactive working groups.



WORKING GROUP – 1

## 13:30 EPS Architectures and Functions for SAE Level 2 Hands-free and Hands-on Driving

- EPS architecture and functions for SAE L2 hands-free vs. hands-on driving
- Driver interaction during SAE L2 hands-free driving
- Transition handling (manual to assisted) in normal mode and failure operation

- Safety requirements applicable to SAE L2 hands-free driving

HOSTED BY: **Sebastian Pelludat** – Senior Expert Steering System Development, *Robert Bosch Automotive Steering GmbH*



WORKING GROUP – 2

## 13:30 Impact of Passenger Car Electrification on Future EPS systems

HOSTED BY: **Timo Seitz** – Senior Manager Systems Engineering, *Robert Bosch Automotive Steering GmbH*



WORKING GROUP – 3

## 13:30 Robustness and Reliability Requirements for Steer-by-Wire Actuators

- Enhanced performance requirements against environment (temperature and voltage degradation)
- Higher reliability for critical components (design, process and process control)
- Water ingress management
- Electrical diversity (ECU layout, components, software and EMC)

HOSTED BY: **Alexander Ein Waldt** – Technical Expert Steering System Engineering, *Ford Motor Company*

**Oliver Nehls** – Senior Engineer Advanced Steering Systems, *Ford Motor Company*





# Next Generation Steering Systems Europe 2021

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CONFERENCE DAY 1 | TUESDAY 20 APRIL 2021

15:30 *Networking Coffee Break*

16:00 **Continuing with WORKING GROUPS 1, 2 and 3**

17:00 **Results of the WORKING GROUPS presented by the Moderators**



Interactive session: PANEL DISCUSSION

Benefit from deeper insights by attending panel discussions. Share your ideas and thoughts with peers and receive feedback from dedicated industry experts in this interactive session.

17:15 **Current Technology Challenges for Steering Systems based on the Automotive Trends PACE (Personalized - Automated - Connected - Electrified)**

MODERATOR: **Matthias Joos** – Global Product Management Electric Power Steering Rack, Vice President, *Robert Bosch Automotive Steering GmbH*

PANELISTS: **Dr. Matthijs Klomp** – Solution Architect - Chassis Systems, *Volvo Cars*

**Tim Diez** – Chassis Electrical Technical Expert, *Ford Motor Company*

**Kristof Polmans** – Senior Vice President Research & Advanced Engineerin, *thyssenkrupp Steering*

**Dr. Anton Uselmann** – Project Manager and Development Engineer for Steering Systems, *Mercedes AMG GmbH*

**Ade Badiru** – Steering Technical Expert, *General Motors*

18:00 **Closing Remarks by the Conference Chairman Matthias Joos**

END OF DAY 1





# Next Generation Steering Systems Europe 2021

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CONFERENCE DAY 2 | WEDNESDAY 21 APRIL 2021

## 08:55 Welcome by the Conference Chairman

**Matthias Joos** – Global Product Management Electric Power Steering Rack, Vice President, *Robert Bosch Automotive Steering GmbH*

## VALIDATION METHODS

### 09:00 A Holistic Integrated Chassis safety Concept for X-by-wire Systems

- Safety and redundancy related challenges for SbW and AD
- Alternative steering functions
- Vehicle Motion Control and redundancies
- Modular vehicle platform for development
- Use of Driving simulators for VMC development

**Kristof Polmans** – Senior Vice President Research & Advanced Engineering, *thyssenkrupp Steering*

### 09:30 Alternative Input Devices for Steer-by-Wire Systems

**Casper Christiansen** – System Engineer, *Husqvarna Construction*

**Viktor Alkelin** – Former Thesis Worker, Steering, *Volvo Cars*

10:00 *Networking Coffee Break*

### 10:30 Steer-by-Wire Development Process at Ford

- Development scope
- Value equation (total system cost vs. customer and OEM benefits)

- Use cases, customer clinics and requirements development
- Functional safety and reliability/availability
- In-house vs. supplier software development

**Alexander Ein Waldt** – Technical Expert Steering System Engineering, *Ford Motor Company*



## Interactive session: CROSS-INDUSTRY SESSION

Enjoy our cross-industry sessions to get an insight in the state of the art of steering systems of aviation, agricultural machinery and automotive industries.

### 11:00 Advanced Integrated Avionics Platform

- Highly fault tolerant and integrated avionics architecture for fly-by-wire applications
- Avionics System management realized as Middle-/Side-Ware (highly safety critical applications run in a virtual simplex environment)
- AAA-process for a highly automated instantiation and qualification of the avionics platform
- Exemplary applications

**Prof. Dr.-Ing. Reinhard Reichel** – Director of the Institute of Aircraft Systems, *University of Stuttgart*



## Interactive session: Q&A Session

11:30 Interact with conference speakers and moderators to ensure all of your questions are answered during these sessions.





# Next Generation Steering Systems Europe 2021

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CONFERENCE DAY 2 | WEDNESDAY 21 APRIL 2021

12:00 *Networking Lunch*



Interactive sessions: WORKING GROUPS

13:00 Discuss latest challenges and developments in steering systems with moderators and peers in these highly interactive sessions. You are welcome to share your ideas and experiences in the working groups. The audience will be divided into 3 groups. Each group will attend all 3 interactive working groups.



WORKING GROUP – 1

## 13:00 **Alternative Input Devices for Steer-by-Wire Systems**

HOSTED BY: **Dr. Matthijs Klomp** – Solution Architect – Chassis Systems, *Volvo Cars*



WORKING GROUP – 2

## 13:00 **Overall Vehicle Safety Concept for Steer-by-Wire**

- Customer expectation for availability (leading to higher requirement compared to safety requirements)
- Redundancy within Steering System
- Other Actuators to steer the vehicle (steer by torque/brakes, rear wheel steering)
- Implications for other vehicle systems (power supply, communication)
- Automotive standardization initiatives

HOSTED BY: **Armin Schymczyk** – Core Steering Supervisor,

*Ford Motor Company*

**Oliver Nehls** – Senior Engineer Advanced Steering Systems, *Ford Motor Company*



WORKING GROUP – 3

## 13:00 **Steer-by-Wire Steering Systems as Possibility for New Driving-Dynamics Experiences in High Performance Cars**

HOSTED BY: **Dr. Anton Uselmann** – Project Manager and Development Engineer for Steering Systems, *Mercedes AMG GmbH*

15:00 *Networking Coffee Break*

## 15:30 **Continuing with WORKING GROUPS 1, 2 and 3**

## 16:30 **Results of the WORKING GROUPS presented by the Moderators**

## 16:45 **Closing Remarks by the Conference Chairman Matthias Joos**

END OF CONFERENCE



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DATE	2 DAY CONFERENCE INVESTEMENT
INVESTMENT PER DELEGATE	1.500 € + VAT

## The delegate fee includes the following services:

- Access to the purchased conference packages
- Conference documentation

## Contact Director of Business Development Automotive:

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## SPONSOR

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components. This comprises materials development, application engineering, product testing and validation that creates real value for Customers and launches many exciting new products every year.

Nylacast Automotive collaborates with its customers in four key focus areas: Electronic Power Steering, Electric Braking Systems, Transmissions, Turbocharging applications.