



International Summit

HIGH VOLTAGE

Co-located with:
**Next Generation
48V in Automotive**

October 1 – 2, 2019 | DRIVE. Volkswagen Group Forum | Berlin, Germany

CONFIRMED SPEAKERS AND GUESTS:



Dr. Daniel Kok
Senior Technical Leader,
Electrified Powertrain Systems
Engineering
Ford Motor Company



Dr. Cedric Rouaud
Global Technical Expert –
Thermal Systems
Ricardo



Philippe Dupuy
Senior Project Manager
EV/HEV Charging
Infrastructure
Groupe Renault



Dr. Chris Hilton
Chief Technology Officer
Protean Electric



Dr. Marcin Seredynski
Head of Innovation and
Research
E-Bus Competence Center



Uwe Likar
Senior Manager Advanced
Engineering Planning
*Mitsubishi Motor R&D Europe
GmbH*



Thank you to past conferences` attending experts:



Partner & Sponsors:





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CONFIRMED SPEAKERS AND GUESTS



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Senior Technical
Leader, Electrified
Powertrain Systems
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Ford Motor Company



Tamara Baksht
CEO
VisiC Technologies



Dr. Chris Hilton
Chief Technology
Officer
Protean Electric



Uwe Likar
Senior Manager
Advanced Engineering
Planning
*Mitsubishi Motor R&D
Europe GmbH*



Walter Sackl
Director Product
Management
Magna Powertrain



Terence Kearns
Manager Business
Development
WEVO-CHEMIE GmbH



Dr.-Ing. Gerhard Rizzo
Senior Research Engi-
neer Battery, Institute
for the Development
of Mechatronic
Systems – EMS
*Interstate University
of Applied Sciences
of Technology
Buchs – NTB*



**Dr.-Ing. Bernd
Eckardt**
Head of Vehicle
Electronics
Fraunhofer IISB



Jochen Frank
Head of Research
and Development
WEVO-Chemie GmbH



Dr. Cedric Rouaud
Global Technical
Expert – Thermal
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Philippe Dupuy
Senior Project
Manager
EV/HEV Charging
Infrastructure
Group Renault



Daniel Goretti
Ph.D. Student/
Research Engineer
*McMaster University/
McMaster Automotive
Research Center*



Simon Franz Heindl
University Project
Assistant, Vehicle
Safety Institute
*Graz University of
Technology*



Clemens Dünser
University Project
Assistant, Vehicle
Safety Institute
*Graz University of
Technology*



Carsten Scholz
IT Project Leader
*MAN Truck &
Bus SE*

For attendance and sponsorship (such as agenda contributions, exhibiting, logo displays, evening event etc.) please contact:

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For speaking opportunities, please contact: Simone Lange | simone.lange@redcabin.de | Office: +49 30 99 40 489 13 | Mobile: +49 162 108 98 41



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THIS IS WHAT EXPERTS OF OUR PAST AUTOMOTIVE EVENTS EXPERIENCED

"Well organized, good speakers, really high level representatives."

Executive Chief Engineer Base Powertrain, AVL List GmbH

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

48V Power Supply System Owner, Jaguar Land Rover Ltd.

"Lots of relevant presentations with good information and interesting attendees to discuss with."

Control Systems Technical Specialist Powertrain Control and Electronics, Changan UK R&D Centre Ltd.

"The organization and the location was very good."

Senior Engineer, Daimler AG

"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

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

Global Chief Engineer Electric Steering Applications, ZF Group

"Great agenda topics. Smooth transition between agenda. Small group discussion is very interactive."

BOM Family Owner - Controlled Steering Systems, General Motors

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

Global Steering Technical Leader, General Motors

"A good, diverse set of topics. Stimulating discussions. RedCabin did a terrific job organizing this conference. They organized a heterogenous set of topics that included systems, hardware and software. I was able to interface with a number of managers and engineers with diverse backgrounds and ended up learning a lot about the challenges faced by automotive designers."

Vice President of Sales, Marketing & Business Development, Verocel Inc.

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

Subsystem Lead Engineer Autonomous Steering Electronics, General Motors





Co-located with: **Next Generation 48V in Automotive**

1 – 2 October 2019 | DRIVE. Volkswagen Group Forum | Berlin, Germany

DURING THIS TWO DAY CONFERENCE YOU WILL

- Discover high voltage technology for future vehicles in the context of automated drive
- Find out about next generation e-machine technology
- Explore advanced drive train topologies for high voltage vehicles
- Discuss how to optimize architectures for electric and hybrid electric vehicles
- Evaluate innovations on thermal management to prolong lifetime of electric vehicle powertrain and efficiency improvement
- Learn about the latest achievements of in-wheel electric motor technology
- Get to know innovations on battery cell chemistry development
- Discuss battery management systems for high voltage li-ion batteries
- Understand to reduce costs while keeping up system efficiency
- Get updated on latest achievements in fuel cell technology development for electrified vehicles

WHAT YOU WILL EXPERIENCE ON SITE



RELATION BOARD Get in touch with other experts before the conference starts. Take a look at the business cards and photos while enjoying your first conversations and networking experience.



MEET AND GREET Make new business acquaintances in short 1:1 meetings. Exchange your business cards in this fast paced ice breaking session. Make sure you bring enough to not run out.



AUDIENCE Q&A Interact with our conference speakers and moderators and ensure, that all of your questions are answered during these sessions.



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



INTRODUCTION LECTURE / BASIC CLASS Get into the technology or check your knowledge. Are you still up-to-date?



WORKING GROUPS Discuss with our moderators and your peers latest challenges and developments of high voltage systems and further high voltage related topics in this interactive sessions. You are welcomed to share your ideas and experiences in the working groups.



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

Attendees' Profile: CTO | VP | DIRECTOR | CHIEF ENGINEER | TEAM LEAD | HEAD OF | MANAGER OF

High Voltage Vehicle Technology | Hybrid Vehicle Technology | High Voltage Electrification | Hybrid Electrification | Energy Storage | Battery Systems | Battery System Integration | Energy Management | Electric Powertrain | Electrical Design | Electrical Drives | Electrified Powertrain Systems | Engine Management Systems | E/E Architecture | E/E Systems | Regulatory Affairs | Engineering R&D | EV/HEV/BEV/PHEV Development | Power Electronics and EMC E/E | Thermal Management | Safety System | Electric Machine Design | Electric Propulsion Architectures



CONFERENCE DAY 1 | TUESDAY 1 OCTOBER 2019

08:30 *Registration and refreshments*



Interactive session: RELATION BOARD

Get in touch with other experts before the conference starts. Take a look at the business cards and photos while enjoying your first conversations and networking experience.

09:00 Welcome and introduction presentation by the conference chairman

Dr.-Ing. Bernd Eckardt – Head of Vehicle Electronics, *Fraunhofer IISB*

INNOVATION OF HIGH VOLTAGE TECHNOLOGY

09:15 Matching the High-Voltage Electrified Powertrain architecture to vehicle attribute needs

- Fuel consumption, driving smoothness, towing and interior space
- Attribute trade-offs driving topology / architecture choices
- Latest FWD and RWD Hybrid and Plug-in Hybrid architectures

Dr. Daniel Kok – Senior Technical Leader, Electrified Powertrain Systems Engineering, *Ford Motor Company*



Interactive session: MEET AND GREET

09:55 *Make new business acquaintances in short 1:1 meetings. Exchange your business cards in this fast paced ice breaking session. Make sure you bring enough to not run out.*

10:30 *Refreshment break and networking*

11:00 Mitsubishi Motor Outlander PHEV Long distance endurance test for HV Components

- Principle of the Outlander PHEV propulsion system (comment: optional if time allows)
- Overview Electrical components of Mitsubishi Outlander PHEV
- Test procedure Mitsubishi Outlander PHEV- 300000km component duration test
- Test result Mitsubishi Outlander PHEV duration test

Uwe Likar – Senior Manager Advanced Engineering Planning, *Mitsubishi Motor R&D Europe GmbH*

E-MOTOR TECHNOLOGY

11:40 A Highly Integrated In-Wheel Electric Drive System

- Protean Electric has spent over a decade developing a high voltage in-wheel electric motor system suitable for passenger cars, light-commercial vehicles and future urban mobility solutions.
- An in-wheel powertrain has advantages over alternative electric drive architectures.



CONFERENCE DAY 1 | TUESDAY 1 OCTOBER 2019

- The confined space and in-wheel environment present particular design challenges.
- Protean's solution incorporates a direct drive motor, inverter, control, monitoring and a friction brake and has been comprehensively validated.

Dr. Chris Hilton – Chief Technology Officer, *Protean Electric*

12:20 Scalable electrified Powertrain solutions - Satisfying the bandwidth of customer demands with reduced complexity

- Future Regulation triggers electrification
- Considering segmentation of the market several solutions from Mild Hybrid up to BEV will need to satisfy different consumer expectation
- Complexity of powertrain solutions
- The obvious increase of Powertrain solutions needs to be managed
- How Magna sees the reduction in complexity by our scalability approach: from Mild hybrid to BEV with scalable building blocks

Walter Sackl – Director Product Management, *Magna Powertrain*

13:00 GaN devices for compact, cool and efficient xEV powertrains

- The advantages of GaN in the EV powertrain
- GaN reliability fundamental
- GaN vs Other technologies

Tamara Baksht – CEO, *VisIC Technologies*

13:40 *Networking Lunch*

TOPOLOGIES



Interactive session: **PANEL DISCUSSION**

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

14:40 Optimizing architectures for electric and hybrid electric vehicles

- How many voltage levels in the system will be reasonable? 2-Voltage network or 3-voltage network? Pros and Cons
- Network interactions and how to guarantee safety
- Model base design engineering and simulation supporting the propulsion system architecture design
- Convergence of the electrified architectures to a main stream (for example: PO and P1 mHEV and BEV's?), what is the best approach to get scale and reduce costs?

MODERATION: **Daniel Goretti** – Ph.D. Student/Research Engineer, *McMaster University/McMaster Automotive Research Center*

PANELLISTS: **Walter Sackl** – Director Product Management, *Magna Powertrain*

Dr.-Ing. Bernd Eckardt – Head of Vehicle Electronics, *Fraunhofer IISB*



CONFERENCE DAY 1 | TUESDAY 1 OCTOBER 2019

Dr.-Ing. Gerhard Rizzo – Senior Research Engineer Battery, Institute for the Development of Mechatronic Systems – EMS, Interstate University of Applied Sciences of Technology Buchs – NTB

Uwe Likar – Senior Manager Advanced Engineering Planning, Mitsubishi Motor R&D Europe GmbH



Interactive sessions: WORKING GROUPS

15:40 Discuss with our moderators and your peers latest challenges and developments of high voltage systems and further high voltage related topics in this interactive sessions. You are welcome to share your ideas and experiences in the working groups. The audience will be divided into 2 groups. Each group will attend all 2 interactive working groups.



WORKING GROUP I

Innovations on thermal management to prolong lifetime of electric vehicles` powertrain and efficiency improvement

- Concepts to reduce motor heating for improved ev powertrain efficiency
- The role of advanced materials in the context of thermal management
- Outlook and further options of improvement

HOSTED BY: **Dr. Daniel Kok** – Senior Technical Leader, Electrified Powertrain Systems Engineering, Ford Motor Company



WORKING GROUP II

Technology and Application of In-wheel Electric Motors

- System requirements
- Integration on vehicles
- Advantages and disadvantages of adoption

HOSTED BY: **Dr. Chris Hilton** – Chief Technology Officer, Protean Electric

16:25 Refreshment break and networking

16:55 CONTINUING WITH WORKING GROUPS I AND II

17:40 Results of the WORKING GROUPS presented by the moderators

17:50 Closing remarks of the conference chairman
Dr.-Ing. Bernd Eckardt



Interactive session: NETWORKING RECEPTION

18:00 Enjoy an informal evening get-together with your peers to discuss the outcome of the first conference day and expand your network in a relaxed ambience.



CONFERENCE DAY 2 | Wednesday 2 OCTOBER 2019

08:30 *Registration and refreshments*

08:55 **Welcome by the conference chairman**

Dr.-Ing. Bernd Eckardt – Head of Vehicle Electronics,
Fraunhofer IISB

HIGH VOLTAGE ENERGY STORAGE TECHNOLOGY

09:00 **Material selection for E-Mobility applications**

- Material selection process for the assembly, placement and protection of battery cells and modules
- Explanation of the characteristics, attributes and disparities of the three main resin chemistries
- Material selection, formulated into easy to understand engineering format
- Tailor-made solutions that address customer specific needs

AUTHORS: **Terence Kearns** – Manager Business Development, *WEVO-CHEMIE GmbH*

Jochen Frank – Head of Research and Development, *WEVO-Chemie GmbH*

09:35 **xEV thermal management for HV and 48V applications**

- Development of battery pack, power electronics and electric motor for High Voltage and 48V
- Thermal analysis results
- Comparison of thermal management methods

Dr. Cedric Rouaud – Global Technical Expert – Thermal Systems, *Ricardo*

10:10 **Analysis of Li-ion pouch cells under highly dynamic mechanical loading**

- Dynamic testing of li-ion batteries up to 300g in different directions
- Localization of internal short circuit
- Post mortem cell analysis

Clemens Dünser – University Project Assistant, Vehicle Safety Institute, *Graz University of Technology*

10:45 *Networking Refreshment Break*

ELECTRIFICATION & HYBRIDIZATION

11:20 **Public transport electrification – current status and future directions. The main topics to be covered:**

- Battery electric vehicles as the most sustainable solution for the future
- Degree of hybridisation vs. societal and environmental impact
- Charging infrastructure options and strategies
- Emerging technologies supporting electromobility

Dr. Marcin Seredynski – Head of Innovation and Research, *E-Bus Competence Center*



CONFERENCE DAY 2 | Wednesday 2 OCTOBER 2019

11:55 Electrified propulsion system architecture

- Classification of the different types of architecture
- Important vehicle performances to be considered on the architecture selection process: battery electric vehicle study case
- How model base design engineering can help to develop electrified systems

Daniel Goretti – Ph.D.Student/Research Engineer,
McMaster University/McMaster Automotive Research Center

12:30 *Networking Lunch*



Interactive sessions: WORKING GROUPS

13:30 *Discuss with our moderators and your peers latest challenges and developments of high voltage systems and further high voltage related topics in this interactive sessions. You are very welcome to share your ideas and experiences in the working groups. The audience will be divided into groups. Each group will attend all interactive working groups.*



WORKING GROUP I

Battery Research Group – Thermal Management Systems from Battery Cell to System Level

- Thermal and Electrical Characterisation of Battery Cells
- Analysis of Thermal Management Systems on System-, Module- and Cell-Level

- System Integration of Traction Batteries
- Mechanical and Electrical Design of Battery Systems

HOSTED BY: **Dr.-Ing. Gerhard Rizzo** – Senior Research Engineer Battery, Institute for the Development of Mechatronic Systems – EMS, *Interstate University of Applied Sciences of Technology Buchs – NTB*



WORKING GROUP II

Future concepts of mobility in an electrified world: an OEM's perspective

- Micromobility: Smart mobility concepts for cleaner cities
- How to comply with a diversity of customer requirements
- A-car, e-scooter, Snap & Co – where are we heading to?

HOSTED BY: **Philippe Dupuy** – Senior Project Manager EV/HEV Charging Infrastructure, *Groupe Renault*



WORKING GROUP III

Safety in xEV Development – An Important Factor in a Multi-Disciplinary Trade-Off

- Present Struggles in xEV Development
- Driving Factors for Safe E-Mobility
- Future Challenges: Let's tackle it!

HOSTED BY: **Simon Franz Heindl** – University Project Assistant, Vehicle Safety Institute, *Graz University of Technology*



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CONFERENCE DAY 2 | Wednesday 2 OCTOBER 2019

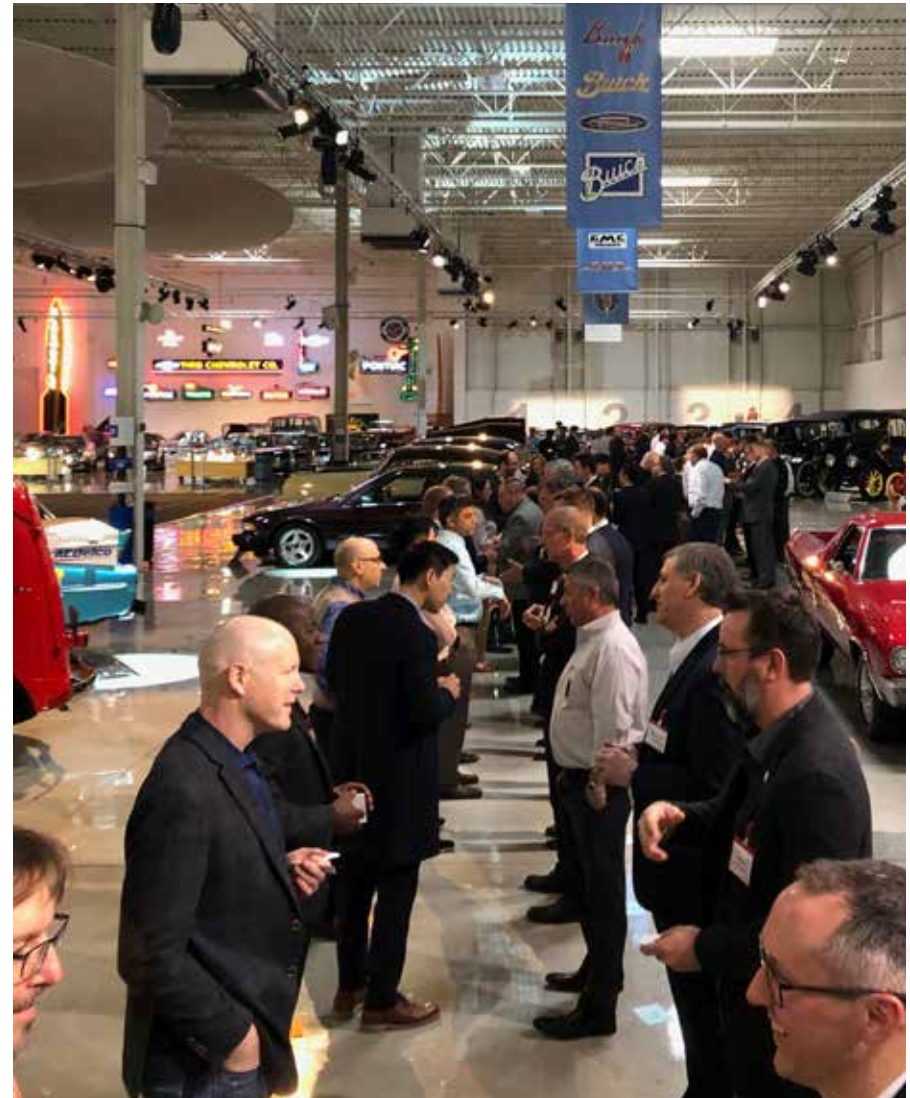
14:55 Refreshment break and networking

15:25 CONTINUING WITH WORKING GROUPS I, II AND III

16:20 Results of the WORKING GROUPS presented by the moderators

16:35 Closing remarks of the conference chairman
Dr.-Ing. Bernd Eckardt

16:45 END OF CONFERENCE





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SPONSORS:



Nippon Chemi-Con is the world's largest manufacturer of Aluminum Electrolytic Capacitors, providing the highest quality products to the market since 1931.

We are also the largest producer of Electrode foil and sealing rubbers. Through every product development project, we have our customer's needs in mind – and are dedicated to supporting them amidst an ever-evolving industry landscape.

With our worldwide production and sales network which includes 22 factories and 28 sales offices, we're providing premium service to customers in all regions of the world. What's more, our stringent, regulation-compliant environmental policy strives to minimize our – and our customers' – carbon footprint. We work to promote advanced technology – and protect the planet. One of our major markets is the Automotive Business area.

We're already supplying a huge variety of products for safety applications like Airbag and ABS, intelligent vehicle applications like ADAS and also High Power Applications like Electric Power Steering, OBC and 48V board net applications. In addition to our main market, we supply Electric Double Layer Capacitors (EDLC) for braking energy recovery systems, products for car navigation systems and drive recorders are also included in this category.



WEVO-CHEMIE GmbH are specialists in casting, bonding and sealing. Customized resin systems from Wevo for electrical and electronic components have become indispensable in the automotive, energy, household and engineering sectors. In short, Wevo products ensure safety and efficiency.

Our company history is closely entwined with the development of the automotive industry. From the introduction of the first safety features to assisted driving systems to infotainment – Wevo has been there every step of the way. The transition to hybrid and e-mobility continues to reinforce our position as an integral partner within the automotive industry.



Volkswagen We Space is the event location and physical touchpoint of Volkswagen We, the digital ecosystem for the mobility of the future. Human, inspiring and trend-setting - this is how the Volkswagen We Space presents itself. People first. Digital first. As an event location, Volkswagen We Space sees itself as a platform and host for events on digital topics with a focus on the mobility industry.

ARE YOU A SUPPLIER IN THIS FIELD?

Would any of the following help you with business goals?

- Improved visibility, exposure and market awareness
- A platform to educate customers and show thought-leadership
- Space to optimize networking and demo products

RedCabin provide relevant suppliers with the opportunity to sponsor or partner with the event in exchange for joining the program actively in a variety of different formats.

Please get in touch with

Andreas.Wibowo@redcabin.de for more details.



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DATE	2 DAY CONFERENCE INVESTMENT
ORIGINAL INVESTMENT	2.995 € + VAT

RedCabin are happy to offer OEM's and Tier 1's certain special rates. This is to reflect our commitment to building the best possible audience for our customers to achieve an optimal event. Please contact Felix.howes@redcabin.de for further details.

The delegate fee includes the following services:

- Catering during the entire conference
- Access to the purchased conference packages
- Conference documentation
- Evening event

For hotel room bookings please contact our partner hotels and mention „RedCabin“ in your booking email:

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Eurostars Berlin

Friedrichstr. 90 | 10117 Berlin
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www.eurostarshotels.de

DRIVE

VOLKSWAGEN GROUP FORUM

Conference venue:

DRIVE. Volkswagen Group Forum

Unter den Linden 21 | 10117 Berlin, Germany
DRIVE. Volkswagen Group Forum offers an exclusive atmosphere in which to enjoy the panoramic view of Boulevard Unter den Linden. You will have access to the new exhibition on Volkswagen's electric vehicle fleet and experience future visions.

For attendance and sponsorship (such as agenda contributions, exhibiting, logo displays, evening event etc.) please contact:

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