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TO ATTEND
TRADE FAIR!



**electric
& hybrid**
vehicle technology expo

europa
2019

7 - 9 May 2019 // Stuttgart, Germany

Show. Preview

Your essential guide to **Electric & Hybrid
Vehicle Technology Expo Europe 2019**

120+ SPEAKERS

450+ EXHIBITORS

8000+ ATTENDEES

Participating companies include:



DAIMLER



Continental

WILLIAMS | SPARCIO



CATL

GRUPE RENAULT



LORD

MAHLE



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Show Highlights

Co-located with

THE BATTERY SHOW
EUROPE 2019

www.evtechexpo.eu
info@evtechexpo.eu



PARACLETE ENERGY

Recent efforts in silicon electrodes have been limited by the U.S. silicon supply chain. Paraclete Energy, as a source for silicon materials, has provided multiple samples for evaluation and screening. Encouraging aspects of working with Paraclete Energy are that they have demonstrated their ability to control particle size and customize processing steps to target surface chemistries. Electrochemical data is comparable to our best electrode performance and more importantly the silicon source provides a dependable and repeatable silicon powder from batch to batch.

from Vehicle Technologies Office, Office of Energy Efficiency & Renewable Energy, U.S. Department of Energy, *Batteries: 2017 Annual Progress Report*

Visit Booth 520

Welcome

Welcome to the Show Preview for Electric & Hybrid Vehicle Technology Expo Europe 2019, co-located with The Battery Show Europe.

It has been another great year for the electric and hybrid vehicle industry, and this was reflected in the success of Electric & Hybrid Vehicle Technology Expo Europe in Hannover last May. We are looking forward to continuing the success and growth of the event in Stuttgart this year. European vehicle manufacturers continue to increase their investment in the design and assembly of power systems for HEV vehicles. Forecasts show that the trend is very much on an upward curve for the next few years.

Electric & Hybrid Vehicle Technology Expo Europe, alongside The Battery Show Europe, is a comprehensive meeting place for the full industry supply chain, with support from the OEMs.

With over 450 exhibitors occupying almost 25,000m² of exhibition space, Electric & Hybrid Vehicle Technology Expo Europe has quickly become the must-attend event for this sector.

The conference has also increased in size and scope, with excellent speakers and pre-conference workshops allowing us to delve deeper into the hottest topics in the fields of EV R&D, manufacturing and next-generation technologies.

Full details along with some of the key highlights of the show are contained within this preview. Make sure you register in advance through the website – the exhibition is free to attend and there are discounts available for the conference if you book by Friday 12 April.

I look forward to seeing you in Stuttgart.



Robin Shelton
Event Director

“Electric & Hybrid Vehicle Technology Expo Europe has quickly become the **must-attend event** for this sector”

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Exhibitor List & Floor Plan



europa
2019



THE BATTERY SHOW
EUROPE 2019

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3M Deutschland GmbH	1113
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Floor plan
sponsored by

LORD

Just a few of our

HIGHLIGHTS

PRODUCT
SHOWCASE

25+
LIVE DEMOS

Featured demos include:

Continental	stand 532
Elaphe	stand 241
Henkel	stand 1025
HUBER+SUHNER	stand 318
Rockwell Automation	stand 366
TE Connectivity	stand 940

FEATURED SPEAKERS



Andreas Hintennach
Senior Manager,
Daimler AG

DAIMLER



Maja Bakran Marcich
Deputy Director General,
Mobility & Transport,
European Commission



Roland Biberger,
System Architect
Electronics HV-Battery,
Audi



Holger Opfer,
Manager E-Traction Technology,
Volkswagen



Yuan Li,
Director of Powertrain,
BAIC Motor Company



SOLUTIONS FOR EVERY H/EV APPLICATION

Powertrain • Thermal Management
• Automotive Components •
Automation Software • Cabling
and Connectors • Testing • Battery
Management Systems • Motors

Find out more in our Tech
Preview (page 11)

NETWORKING RECEPTIONS

Where:
In the exhibition hall

When:
Tuesday from 16:30
Sponsored by

LORD

Wednesday from 16:30



DAY 3
EV TRACK
14:00

VOLVO INTERVIEW!



Meet Volvo's Specialist in Electric
Traction and Electromagnetism ahead
of his speaking session (page 22)

RICARDO DISCUSSES THE FUTURE OF EVS



Exhibitor interview:
We caught up with Christopher Allen,
Technical Business Manager, Ricardo (page 6)



THERMAL MANAGEMENT

Find your heat control solutions.
Featured exhibitors include:

3M

AVL

DANA

Fujipoly

Henkel

LORD

VOSS

WACKER

48V TECHNOLOGY

Join the debate on current and
future 48V systems



Michael Bassett, Chief Engineer -
Research & Advanced Engineering,
MAHLE Powertrain Limited



Bastian Hartmann, Research Engineer
Advanced Power Supply and Energy
Management, Ford Motor Company



Grégory Godefroy, Belt e-Machine
RFQ & Advanced projects Platform
Manager, Valeo

DAY 1
TRACK 3
16:15

35+

CONFERENCE SESSIONS

Insights & strategies:

- EV markets & forecasts
- Electric motor technology
- Automotive battery design
- Fast charging
- Powertrain efficiencies
- Examining architectures
- Race track to road
- Heavy vehicle powertrain development

WORKSHOPS

Fast charging and XFC

- Infrastructure, evolution and impact
- V2G technology
- Standards and technical challenges

MONDAY
6 MAY

FIND NEXT-GEN POWERTRAIN COMPONENTS

Featured components suppliers: Aradex • Continental •
Curtiss-Wright • Dana • Hongfa • John Deere • LEONI
• MANN+HUMMEL • Semikron • Stäubli • Three Bond •
Würth Elektronik

Exhibitor Spotlight

Christopher Allen,
Technical Business Manager,
Ricardo



Ahead of The Battery Show and Electric & Hybrid Vehicle Technology Expo Europe 2019, Christopher Allen, Technical Business Manager at Ricardo, shares details of the company's current projects and offers his perspective on what the future of electric vehicles looks like – from further calibration work to meet changes in real driving emissions legislation, to faster-paced developments in automated driving technologies.

Could you please tell us something about R-Intelect – what it means and what it encompasses?

R-Intelect is an approach we have developed to better meet the increased complexity faced by our clients in developing xEV applications, and the increased interdependency of the vehicle systems. Our product development organisation has evolved in this regard to a greater focus on delivering an integrated functional system engineering solution for our clients. This approach is based on the following pillars:

1. Integrated functional system engineering approach

The product development discipline that exists to optimise the combination of subsystems for overall powertrain or vehicle delivery of a given function.

2. Development of the vehicle architecture through integrated simulation

Integrated simulation and CAE tools to meet the increasingly complex nature of electrified vehicle and fuel-cell based powertrains – comprised of systems linked by highly sophisticated control technology.

What is Ricardo's main approach when it comes to optimum process modelling?

Our integrated model-based development (IMBD) environment forms the basis, providing a framework for the exchange of data and information between analysis and simulation operations, and offering a hierarchy of tools that can be applied through the development V-cycle.

Our flexibility and experience allow for modelling to be considered at a system or vehicle level, for instance:

FuVA – future vehicle architecture design – considers vehicle package, body design, chassis, thermal management and EDU selection.

AIM – architecture independent modelling – explores conventional and xEV propulsion system configurations with simplified battery models, and allows quick assessment of alternative architectures.

VETHERM – explores energy management across the vehicle thermal systems such as e-motor, battery and cabin HVAC.

Considering EU auto emission targets for 2021, how strong do you think the impact will be on electrified powertrain vehicles, both commercially and technically?

There are two legislative changes coming into force between 2019 and 2021. The first is application of Euro 6d final, which requires robustness of emissions over a wider operating range, including real-

Read the full interview online at www.evtechexpo.eu

VOLTABOX[®]

electrifies!

Hall 1, Booth 818

advanced battery systems
voltagebox.ag

Product Showcase

A series of **LIVE** demos taking place on the show floor

Attendees at Electric & Hybrid Vehicle Technology Expo enjoy the rare opportunity to discover the latest EV innovations. Here, a few of the trade fair's market-leading exhibitors detail the solutions they'll be bringing to Stuttgart this 7-9 May.



Day 1 - Tuesday 7 May

10:30

Stand: 532



Complete solutions for vehicle electrification and powertrain

Alex Rupprecht, Director Business Segment Driveline & Electrification, Continental Engineering Services GmbH

11:00

Stand: 1008



CMS Cell Monitoring System

Joel Sylvester, CTO, Dukosi

11:30

Stand: 241



High-performance, lightweight and modular powertrain platform for the next generation of electric and hybrid mobility

Luka Ambrozic, Head of Sales and Marketing, Elaphe Propulsion Technologies

12:30

Stand: 1113



Cure-in-place thermal management solutions for EV batteries

Ralph Oeliden, Senior Specialist Application Engineering EMEA, 3M Electronics Materials Solutions Division

13:00

Stand: 639



Fast charging and monitoring

Presenter TBC, LEONI

13:30

Stand: 314



Connections: a key link in e-mobility

Presenter TBC, Stäubli Faverges SCA

14:00

Stand: 924



Innovative battery cell filling

Christian Weiler, Project Manager, IP PowerSystems GmbH

14:30

Stand: 318



Charging with 500A

Max Goeldi LF Market Manager Industry, HUBER+SUHNER

15:00

Stand: 1126



Resonant Acoustic Mixing (RAM)

Andrew de Padey, Sales Engineer, Resodyn Europe

Day 2 - Wednesday 8 May

10:30

Stand: 540



Virtual reality

Chris Allen, Technical Business Manager, Ricardo

11:00

Stand: 632



Digital enterprise for stable and flexible mass production of batteries with highest quality

Marc Deyda, Global Business Development Battery Manufacturing, Siemens AG

11:30

Stand: 940



AMP+ HVA 1200 high-voltage terminal and connector system for hybrid and electric vehicle systems

Niranjan Thirunavukkarasu, Product Manager – Automotive HV Terminals & Connectors, TE Connectivity Germany GmbH

12:30

Stand: 721



Multiple product line enables a new dimension of flexibility in battery production

Presenter TBC - Bosch Rexroth AG

13:00

Stand: 366



Flexible, scalable, smart manufacturing

Presenter TBC - Rockwell Automation

13:30

Stand: 1025



Conductive liquid gap filler and the processing for efficient assembly

Nicolas Riem, Technical Service Thermal Interface Materials, Henkel

14:00

Stand: 424



High-performance cast rotors – how to achieve automotive quality

Péter Szilágyi, CEO, breuckmann eMobility GmbH

14:30

Stand: 818



Next generation of lithium-ion bus batteries

Dr Patrick Ries, Head of Sales, Voltapower

15:00

Stand: 602



Real-drive power analysis of electric vehicles

Dipl.-Ing. Bernhard Grasel, Product Manager E-Mobility, DEWESoft GmbH

15:30

Stand: 365



Scalable aftermarket packaging for lithium batteries

Niklas Zenk, Global Project Manager Lithium Battery Packaging, and Uwe Rottenberg, Operations & Engineering Manager, Nefab AB

Day 3 - Thursday 9 May

10:00

Stand: 410



Mitsubishi robotic and automation solutions for LiB production
Michael Grondowski, Mitsubishi Electric Europe BV

10:30

Stand: 136



High-performance integrated electric motor and inverter
Jason King, Business Development Director, Integral Powertrain

11:00

Stand: 510



Multi-material battery pack solutions
Christophe Van Herreweghe, Global Marketing Manager - Body & Exterior, and Giacomo Parisi, Global Marketing Manager - Automotive Electrical, Electronics & Safety, DuPont

11:30

Stand: 265



Fuses and junction boxes – protecting your HV electrical architecture
Ludovic Frelin or Jean-Baptiste Delcroix, product managers, Würth Elektronik ICS GmbH & Co KG

Tech Preview



Determining efficiency in electric vehicles

Dewesoft's power analyser has a sampling rate of up to 15MS/s and application in determining the efficiency of electric vehicles.



HybridADC combines the advantages of high-speed SAR (15MS/s) and alias-free Sigma-delta ADC (1MS/s) and stores all raw data to disc.

The instrument allows completely synchronous data acquisition of any other signal, such as electrical, mechanical, temperature, video, GPS or CAN data. The flexible, high-accuracy hardware and powerful software combine the functionalities of a power analyser, scope, FFT analyser, combustion analyser, datalogger, transient recorder and power-quality analyser in one instrument.

Visit Dewesoft at Stand 602

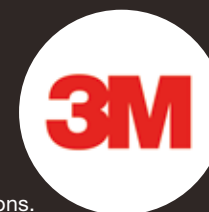


Solutions to delay thermal runaway

Following the publication of the UN's Global Technical Regulation on Electric Vehicle Safety (GTR 20), automobile manufacturers are equipping battery covers of current and new production vehicles with fire-protection solutions. Developments from 3M include a thin endothermic insulation mat capable of delaying thermal runaway in a neighbouring cell for more than 15 minutes or even stopping it, and a high-temperature-resistant, lightweight, flexible and high-strength ceramic-fibre mat designed to prevent the aluminium battery cover from burning through.

3M advanced these developments with leading German manufacturers and renowned research institutes. Testing with manufacturers and suppliers is currently under way.

Visit 3M at Stand 1113



Record-breaking mobility solutions

Elaphe Propulsion Technologies produces in-wheel electric drive products for the next generation of mobility.

Its products boast the highest specific torque (50-100Nm/kg) on the market, in a compact and robust design package that fits in the wheel envelope space between the friction brake and the rim.

Debuting at the show is the company's world-record-breaking performance-optimised production version of the L1500 motor line – the most powerful production in-wheel motor on the market. It is designed to power passenger cars, SUVs and special applications in connected and autonomous mobility across the world.

Visit Elaphe at Stand 241



Contamination control for electric mobility

Keeping lithium-ion batteries and fuel-cell stacks in the required temperature range is essential to reduce performance losses and avoid severe system failures; plus, air pressure and humidity must be controlled.

Mann+Hummel's filtration solutions remove contaminants from air and liquids. Removal of water from air inside the battery pack and from oil used for direct cell cooling is realised through air and oil dryers. The multifunctional venting unit enables pressure balancing between the environment and battery pack interior as well as emergency degassing. For liquid-cooled fuel-cell stacks, particle filters and ion-exchange filters are applied.

Visit Mann+Hummel at Stand 106

MANN+HUMMEL

High performance needs reliable connections

ODU is meeting higher-current requirements with further development of its two-pole HV connector system. The result combines efficiency with compact design and practical handling: the new ODU POWER MATE 400.

The system is predestined for use with an HV battery. Its small size and innovative locking system enable the reliable transfer of power and shielding.

ODU also presents the ODU DOCKING MATE, a two-pole connector system distinguished by its special tolerance-compensation characteristic.

Visit ODU at Stand 212



More flexible than ever before: glulock multiple dots

Kienle + Spiess's glulock multiple dots (MD) enables a further step towards increasing the bonding strength of package assembly of loose rotor and stator laminations. In addition to the possible applications on the yoke, glulock MD technology can be used to apply adhesive to the bridge. Optimised control allows the adhesive to be placed more uniformly and more regularly, and the available surface can be used efficiently.

Kienle + Spiess offers a unique portfolio of products and services across the entire value-added chain.

Visit Kienle + Spiess at Stand 434



Longer life for electric vehicles

Henkel will showcase its expansive portfolio of BERGQUIST thermal management products.

Lithium-ion batteries are pushing the limits of high power and energy density, and Henkel has addressed this reality with the development of thermal-control products that raise battery reliability and optimise performance.

The company is delivering flexible, effective, cost-competitive heat-control solutions for dependable battery and automotive electronics performance. BERGQUIST thermal-management solutions in pad and liquid formats are used throughout the lithium-ion battery structure and help to improve performance, extend battery life and ensure reliability of electric and plug-in hybrid-electric vehicles.

Visit Henkel at Stand 1025



Electrification gathers speed: products must respond

Integral Powertrain will demonstrate how its extremely power-dense, efficient, record-breaking, high-performance SPM motors, as well as motor control units and an inverter motor gearbox, deliver next-generation technologies as part of the move towards a more sustainable way of powering vehicles.

The company's key focus is the design, validation and manufacture of motors and control systems suitable for the highest echelons of the world's aerospace and aviation, motorsport and automotive, engineering and defence, and marine industries. As a technology development partner, Integral Powertrain offers innovation to existing and new topologies.

Visit Integral Powertrain at Stand 136



Options for current sensing in automotive applications

The two new current-sense ICs from Melexis share the same high-performance CMOS core. The MLX91217 implements conventional Hall technology; the MLX91216 uses Melexis's proprietary integrated magneto concentrator.

Both devices are aimed at automotive applications, in particular inverter phase current monitoring and DC-link monitoring applications where Hall effect has been the preferred solution for more than a decade. As well as traction motor control, the devices are suited to other embedded applications such as DC-DC converters and battery junction boxes, or any application that requires high-speed, fast-response or highly accurate (over)current measurement.

Melexis
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Visit Melexis at Stand 215

Smart solutions for vehicle electrification and autonomy

DUPONT

DuPont's AHEAD (Accelerating Hybrid-Electric Autonomous Driving) initiative provides innovative solutions for lightweighting; battery pack components and assembly; thermal management and safety; electric motors; powertrain/chassis; connectivity, sensing and control solutions through electrical and electronic applications that enable improved automation, including driver assists and self-driving capabilities; and support infrastructure.

The company is focused on innovation, providing solutions in adhesives, thermal interface materials, high-performance elastomers, engineered thermoplastics, fluids/speciality lubricants, electronic materials, high-performance fibre and safety materials.

Visit DuPont at Stand 510



Thermally conductive silicone gap fillers

WACKER

WACKER's thermally conductive silicone gap fillers are process optimised and have been tested with the systems of various manufacturers for reliable processability and maximum dosing performance. The two-part silicone rubber cures at room temperature to a soft, flexible, tacky rubber with excellent thermal conductivity. It also guarantees constant properties from -50°C to +180°C. The formulations are sedimentation and demixing stable, so that they can be promoted and made available from large containers up to 280kg.

Applications include automotive electronics, interface material for heat-sink applications for the electronics industry and heat-sink of EH/HEV batteries.

Visit Wacker at Stand 1057

Discover HV auxiliary device connections

Power & Signal
An Arrow Company

Aptiv, Power & Signal Group's main supplier, has a specialised focus on the transportation market. To meet HV auxiliary device requirements, multiple shielding solutions are available at Aptiv in serial production including over-braid shielding, individual shielded cables and multicore cables.

Aptiv will also introduce its latest innovations, including the Shieldpack HV280 right-angle and four-way splice connectors. Its high-voltage connection system is designed specifically for the voltage and current needs of auxiliary modules, such as A/C compressors, heaters, coolant control modules, onboard chargers, DC converters and battery accessory output.

Visit Power & Signal GmbH at Stand 557

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Webinar:

Improving Energy Density, Lifespan and Affordability of EV Components Through Thermal Management Materials

Date: Thursday 11 April 2019

Time: 3:00pm Central European Time // 10:00am Eastern Daylight Time // 2:00pm Greenwich Mean Time

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Conference Overview

3 DAYS
3 TRACKS
35+ SESSIONS
120+ SPEAKERS

Welcome to the preview of the Electric & Hybrid Vehicle Technology Conference 2019. This year, the agenda has an increased focus on advances in EV technologies such as 48V systems and architectures, hybridisation and powertrain efficiency.

Before the conference kicks off, delegates have the opportunity to gain first-hand experience and dive deeply into the subjects of **fast charging** and **V2G** in our pre-conference workshops on Monday May 6 led by renowned industry experts. Book your places quickly as limited spaces are available.

Interactivity is a key feature at the conference this year with more discussions, live polling and the return of our popular feature **Slido**, which allows you to get even more involved by posing your questions to the panel through your handheld device.

Co-located with The Battery Show Conference Europe, the show offers three outstanding tracks dedicated to **market forecasting**, **advances in EV technologies** such as next generation 48V systems, e-motor developments, and powertrain efficiencies.

Don't miss some of the highlights below:

TUESDAY 7 MAY:

- Driving Efficiency in Electric and Hybrid Vehicles, Enabling the Next Generation of Electric Autonomous Vehicles and delivering Mobility As A Service
- Optimising Next Generation 48V Systems and Architectures

WEDNESDAY 8 MAY:

- Hybridization: Examining the Latest Technologies and Architectures to Deliver Electric Vehicle Efficiency and Meet Customer Demands
- Evaluating the Latest Second Generation Race Technology

THURSDAY 9 MAY:

- Bus Operator Case Studies: Outlining the Challenges of Deploying an Electric Bus Fleet, Lessons Learnt and Future Requirements for the Manufacturers
- Evaluating the Latest Developments in Medium and Heavy-Duty Trucks and Large-Scale Electric and Hybrid Powertrains

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Brief Agenda

Monday 6 May 2019 Pre-Conference Workshops

	The Battery Show Pre-Conference Workshops	Electric & Hybrid Vehicle Technology Pre-Conference Workshops
10:00	Specifying Thermal Management Solutions to Optimise Battery Safety and Performance Deep-dive into thermal management for battery applications: <ul style="list-style-type: none"> • How do application, materials and design of the battery assembly impact thermal management and cooling? • What are the most effective cooling methods for different battery applications? • What are the key selection criteria for the most efficient thermal solution? • How is it integrated into the battery system and driveline? • How to effectively measure and evaluate thermal management solutions? Sponsored by 	Fast Charging and XFC Infrastructure Evolution and Impact <ul style="list-style-type: none"> • Latest developments in fast charging and V2G • Impact on the battery and powertrain of vehicles • Evolution of an effective EV charging infrastructure
12:30	Delegate Networking Lunch	
13:30	Reducing Cost and Increasing Speed to Market Through Virtual Battery Design and Simulation Examine virtual battery design and the opportunity it offers for design validation in several stages of the design process: <ul style="list-style-type: none"> • How to harness digital technology to improve battery design? • Exploring the application of multiscale modelling to battery pack design • How accurate do we need to be? The trade-off between speed and accuracy • Lifetime prediction: the importance of understanding degradation 	Fast Charging Continued: V2G Technology – Standards, Technical Challenges, Infrastructure <ul style="list-style-type: none"> • Enabling V2X bi-directional charging: examining standardisation developments and implementations • Providing V2G service to maximise benefit while supporting grid, and decrease battery degradation • How V2G technology can work with renewable energy sources: outlining technology and infrastructure solutions
16:00	Close of Pre-Conference Workshops	

Save €100 on a one-day workshop pass when booked with a three-day conference pass

Brief Agenda

Tuesday 7 May, Conference Day 1

08:30	Realising a European-Based Battery Value Chain NAATBatt International // European Commission // Leclanché // Daimler AG // Saft		
10:30	Morning Break		
11:00	Driving Efficiency in Electric and Hybrid Vehicles, Enabling the Next Generation of Electric Autonomous Vehicles and Delivering Mobility as a Service EV-volumes.com // E.ON SE // Cosworth		
12:30	Lunch Break		
	Business / Market / Industry	Battery Engineering & Design	Electric & Hybrid Vehicle Technology
14:30	Assessing Battery Application Market Trends Bloomberg New Energy Finance // Airbus Defence and Space – Engineering Integration // IDTechEx // Shmuel De-Leon Energy	Preventing Thermal Runaway Through Improving Thermal Management in Battery Pack Design Ricardo // NASA Johnson Space Center // Underwriters Laboratories // LORD // KIT Sponsored by LORD	Hybrid and EV Market Forecasts, Analysis and Opportunities EV-volumes.com // McKinsey // Faraday Institution // BAIC Motor Company
15:45	Afternoon Break		
16:15	Forecasting Raw Materials Cost and Availability and Investigating Trends in Global Procurement Strategies Wood Mackenzie Ltd // Infinity Lithium // Eurasian Resources Group // MMC Norilsk Nickel // S&P Global Platts // IHS Markit	Assuring Global Competitiveness: European versus Chinese Pack Design BAIC Motor Company // Akasol // Audi	48V Systems: Optimising Next-Generation 48V Systems and Architectures to Deliver Fuel Efficiency and Reduced Emissions in the Immediate Term EV-volumes.com // MAHLE Powertrain Limited // Ford Motor Company // Valeo
17:30	Close of Day 1 and Evening Drinks Reception in Exhibition Hall sponsored by LORD		

Speaking organisations include:



Brief Agenda

Wednesday 8 May, Conference Day 2

	Optimising Automotive Battery Technology Design	Battery Chemistries: Increasing Energy Density & Future Battery Cell Design	Electric & Hybrid Vehicle Technology
08:30	Balancing Functionality and Application Design in OEM Platform and Battery Development China Euro Vehicle Technology AB (CEVT) // Fraunhofer Batteries // IAV GmbH // Romeo Power	Moving Towards Higher Nickel Chemistries in Lithium-Ion Batteries for Increased Energy Density Benchmark Mineral Intelligence // CSEM // Wildcat Discovery Technologies // Johnson Matthey	Hybridisation: Examining the Latest Technologies and Architectures to Deliver Electric Vehicle Efficiency and Meet Customer Demands Power Technology Research // FEV Europe GmbH // Protean Electric // Bosch Transmission Technology BV
10:30	Morning Break		
11:00	Electrification for the Masses: Optimising 48V Battery Systems for Mild Hybrids MAHLE Powertrain Limited // A123 Systems // Johnson Controls	Pushing the Limits of Lithium-Ion Cell Development – Developing Higher-Capacity Materials NAATBatt International // CAMX Power LLC // ARKEMA // Williams Advanced Engineering // University of Münster	E-Motor Developments: Latest Developments in E-Motors and Powertrain Design, Including Alternatives to Rare Earth Magnets, Axial Flux Motor Technology and Thermal Management Power Technology Research // Dana Incorporated // Daimler // Phi-Power // TU Delft
12:30	Lunch Break		
14:00	Investigating Advances in Modular Pack Design and Applications BMZ POLAND // XALT Energy LLC // Volkswagen	Future-proofing 12V Technologies: Lead-Acid VS Lithium and Alternative Technologies EUROBAT // A123 Systems // Johnson Controls // Ford	Powertrain Efficiency: Evaluating the Different Techniques for Improving the Energy Efficiency of the Electric Powertrain P3 Group // HORIBA MIRA // Siemens Industry Software
15:15	Afternoon Break		
15:45	Extending Battery Life, Range and Performance Through Battery Management Systems Audi // Dukosi Ltd // Aston Martin // Groupe Renault	Investigating Technology Readiness Level of Innovative Battery Technologies Shmuel De-Leon Energy // Tiamat // ZapGo // Oxis Energy // UltraCharge	Racetrack to the Road: Evaluating the Latest Second-Generation Race Technology P3 Group // Integral Powertrain // Sin Cars // McLaren
17:00	Close of Day 2 and Evening Drinks Reception in Exhibition Hall		



Brief Agenda

Thursday 9 May, Conference Day 3

	Charging, Validation & Testing	Battery Manufacturing Trends	Electric & Hybrid Vehicle Technology
08:30	The Fast-Charging Trade-Off: Fast Charging versus Battery Degradation and Energy Density Liliun GmbH // Custom Cells Itzehoe GmbH // Renault SAS // NREL // 3M	Validating Solid-State Battery Technology for Commercialising and Scale-up University of Oxford // Morgan Advanced Materials // Daimler AG // Romeo Power	Bus Operator Case Studies: Outlining the Challenges of Deploying an Electric Bus Fleet, Lessons Learned and Future Requirements for the Manufacturers Vervoerregio // TMB // KVB // RVK Determining the Optimum Fuel and Powertrain Architectures and Technologies to Meet the Specific Needs of Buses UQM Technologies // Wrightbus // Ballard // Volvo
10:30	Morning Break		
11:00	Complying with Global Regulations on Battery Safety and Transport CATL // European Commission // Civil Aviation Authority	Creating Material Feed Stock Through Battery Recycling Innovate UK // Berenberg // RECHARGE // Li-Cycle // Umicore	Fast Charging: What Impact Will Fast Charging and XFC Have on Powertrain Design, and What Are the Latest Developments in Dynamic Charging Systems? P3 Group // E.ON SE // Siemens Mobility // Volvo
12:30	Lunch Break		
14:00	Outlining Developments in Battery Performance Testing Methodologies Lancaster University // Mercedes-Benz Cars Daimler AG // NASA Johnson Space Center	Ramping Up Battery Assembly to Meet Future OEM Demand: Building Gigafactories in the EU P3 Group // Node Pole // CATL // Northvolt // Siemens AG // Farasis Energy Europe	Commercial Vehicles: Evaluating the Latest Developments in Medium- and Heavy-Duty Trucks and Large-Scale Electric and Hybrid Powertrains Interact Analysis // Volvo Group Trucks Technology // Eaton // Drive System Design
15:00	End of the 2019 Conference		

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Speaker interview

Pär Ingelstrom,
Specialist in Electric Traction
and Electromagnetism,
Volvo Group Trucks Technology

Pär has been working on the development of electric machines and electric and hybrid propulsion at Volvo Group Trucks Technology since 2011. In this interview he gives us his views on the current evolution of electric and hybrid powertrains for heavy-duty vehicles, and forecasts what the future may hold. He will elaborate on this topic during his presentation on 'Electrified powertrains for heavy-duty commercial vehicles: MD & HD electric/hybrid powertrain development' at the Electric & Hybrid Vehicle Technology Conference in Stuttgart.

What do you see as the latest interesting developments for electric and hybrid powertrains in medium- and heavy-duty trucks?

E-axes with integrated gearboxes and high-speed e-motors seem interesting – especially from a packaging perspective – and challenge the solutions where a 'central drive' is connected to a standard rear axle.

What are the challenges of the power level and range requirements for heavy-duty trucks?

For heavy duty we require around 400kW – continuously. Few motors have been available that provide this power, even if we split the load on two motors. Regarding range, energy efficiency must be optimised for high-speed highway driving, where the power is just 80-100kW, i.e. 20-25% of the rated continuous power. This puts demands on both the e-motor and the transmission design.

What is the optimum level of hybridisation for long-haul trucks and what do you think is the ideal location for the EV drivetrain?

Topography and future (local) legislation will have a great impact on the optimal hybridisation level. To get decent driveability in emission-free zones, and to recuperate enough power on average or hilly European roads, I guess that around 200kW of electric power makes sense for heavy-duty trucks. However, on flatter roads such a system may be too expensive.

What are the timescales for cost-effective BEV trucks – will they ever be viable?

In the near future I think legislation is the main driver for electrification, and charging infrastructure is the main challenge. A lot will happen 2025-2030. Due to superior energy efficiency, I am convinced that BEV trucks will be the more economical choice for urban applications within a few decades.



Essential Contacts

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Customcells is one of Europe's most versatile manufacturers in the lithium-ion cell industry.



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DuPont

DuPont will highlight its AHEAD™ (Accelerating Hybrid-Electric Autonomous Driving) initiative dedicated to providing smart solutions for vehicle electrification and autonomy. This approach is made possible through DuPont's experience and expertise in materials science and electronics that offer clear advantages for vehicle electrification and autonomous vehicle markets.



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Luvata

Luvata is looking to combine its many years of manufacturing and metallurgical expertise with copper's superior features to overcome customers' challenges in terms of EV motor efficiency, driving range, charging times, heating, cooling and infrastructure. Luvata is a group company of Mitsubishi Materials Corporation.



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Useful Information

Opening Hours

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Pre-Conference Workshops	09:30 – 16:00
TUESDAY 7 MAY	
Registration	08:00 – 18:00
Exhibition	09:00 – 16:30
Drinks Reception	16:30 – 18:30
Sponsored by LORD	
Conference Registration	07:30 – 17:00
Conference	08:30 – 17:30
WEDNESDAY 8 MAY	
Registration	08:00 – 18:00
Exhibition	09:00 – 16:30
Drinks Reception	16:30 – 18:30
Conference Registration	07:30 – 17:00
Conference	08:30 – 17:30
THURSDAY 9 MAY	
Registration	08:00 – 15:00
Exhibition	09:00 – 15:00
Conference Registration	07:30 – 15:00
Conference	08:30 – 15:00

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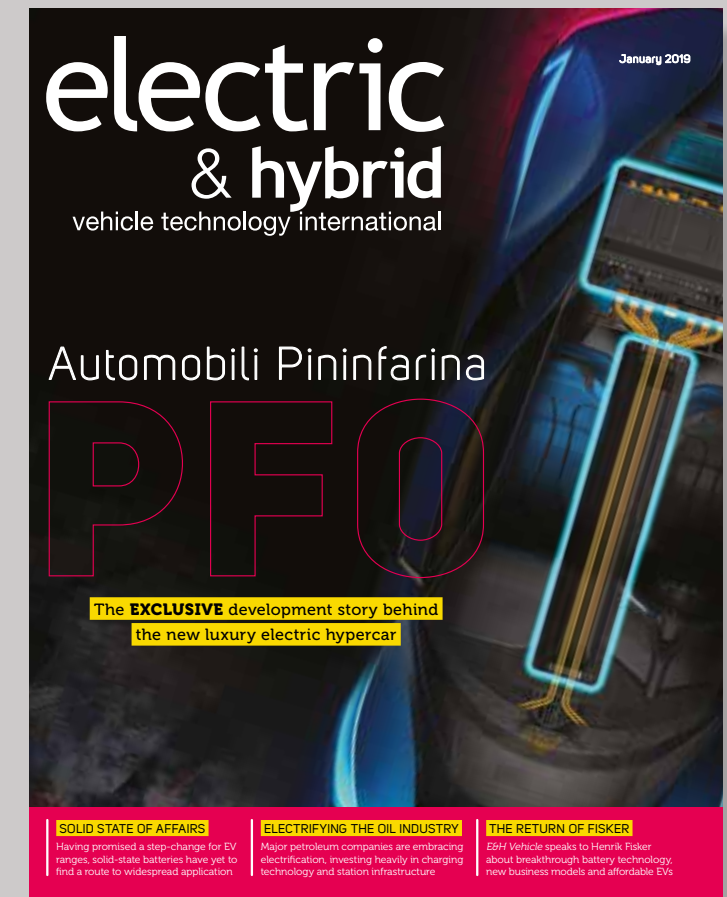
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