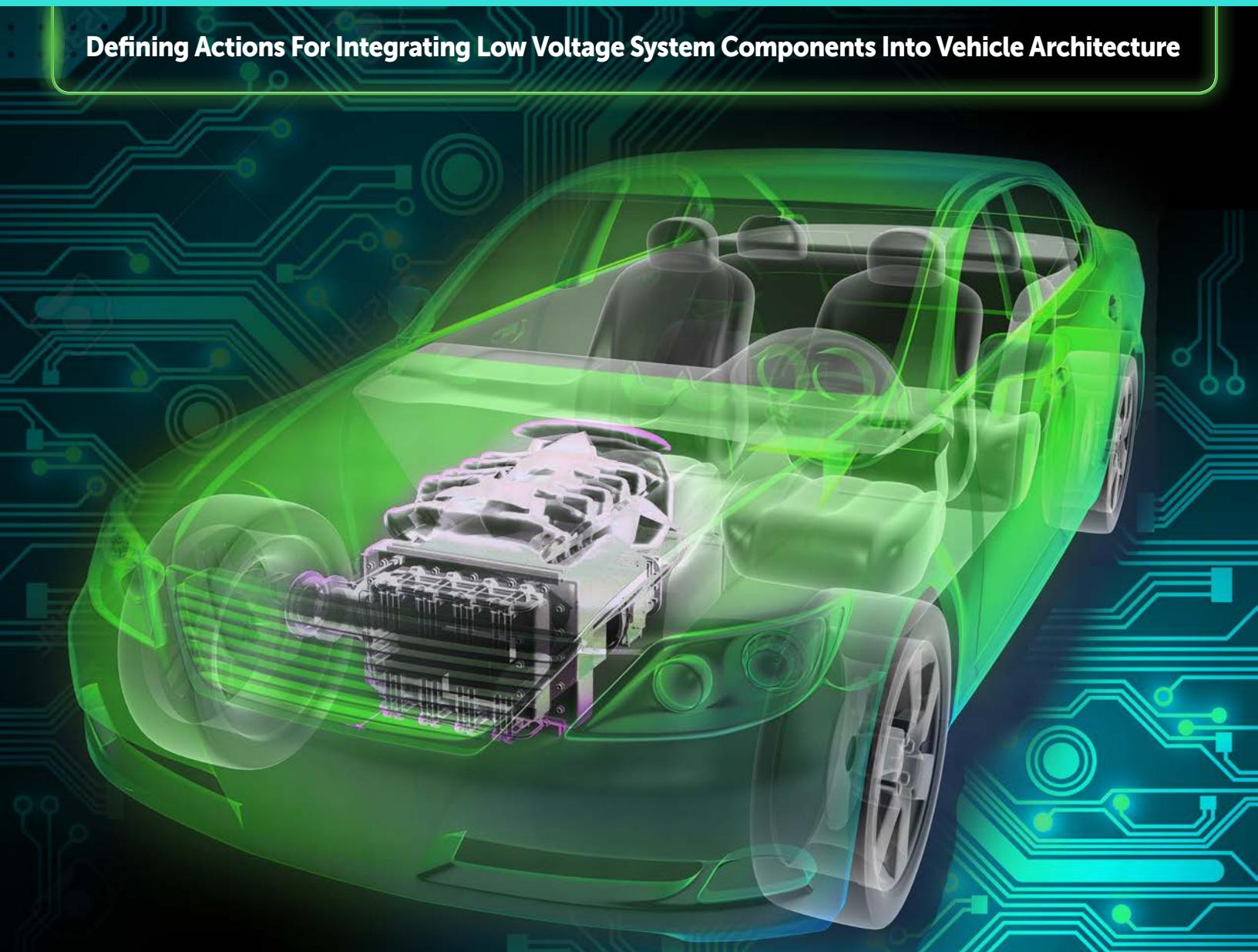




Low Voltage Vehicle ELECTRIFICATION

Pre-Summit Workshop Day: April 26, 2017 • **Main Summit Days:** April 27-28, 2017
DoubleTree Suites by Hilton Detroit Downtown – Fort Shelby

Defining Actions For Integrating Low Voltage System Components Into Vehicle Architecture



Sponsors



Media Partners:



DON'T HIT THE BRAKES, WE'RE APPROACHING 48V SYSTEMS

Auto makers are facing an uphill battle to meet customer expectations (both in prices and vehicle conveniences), regulations, and higher quality/performance levels. Greater vehicle electrification will be the key to overcoming these challenges, but how will key auto players move forward with this megatrend?

One solution that's gaining significant headway within the European market is the **integration of 48V power supply systems into mild hybrids**. These vehicles have the potential to achieve 70% of the benefits of full hybrids at 30% of the costs. In fact, Navigant Research predicts that nearly 7 million vehicles will have 48V electrical systems by 2024. But the challenge with this higher voltage system is arranging and adjusting the packaging of electrical components within the powertrain architecture to optimize the functionality of 48V systems.

Auto makers are structuring the 48V electrical architecture with these objectives in mind:

- Raising the fuel efficiency average across an auto maker's fleet and reducing GHG emissions
- Boosting vehicle performance and enabling new capabilities from improved powertrain designs
- Driving down costs and maintaining affordability for components/integration
- Ensuring the safety and reliability of these higher voltage systems

The **2nd Low Voltage Vehicle Electrification (LVVE) Summit** is the industry's sole event focused on exploring methods for meeting these objectives and discussing to help spur how auto makers/suppliers are tackling 48V systems. Join us on April 26-28 in Detroit, MI to spur conversations on how the industry can move forward with the transition to greater vehicle electrification.

I look forward to seeing you there.

Sincerely,

Frankie Yip

Frankie Yip
Program Director
Automotive IQ

P.S. Don't miss our energizing morning boost on Day One with yoga and meditation exercises followed by refreshments! Find out more on page 6.

WHAT TO EXPECT IN 2017!



50+
ATTENDEES



5+
SPONSORS



20+
SPEAKERS



7+
HOURS OF
NETWORKING
OPPORTUNITIES

**EXPLORE. LEARN.
DISCUSS.**

PRESENT VS.

FUTURE:

Join us in questioning whether 48V systems can meet the demands of fuel efficiency/ emissions standards across the global market.

TECHNICAL, BUSINESS/ STRATEGIC, POLICY, AND ANALYSIS

Approaching Low Voltage Systems from Multiple Perspectives:



INNOVATIONS IN THE MARKET:

Collaborate with key industry players to discuss the latest advances in power supply systems, mild hybrids, batteries, and power electronics



BUILT-IN NETWORKING SESSIONS:

Engage in deep dialogues with thought leaders across the low voltage and hybridization spaces



TAKE THE WHEEL ON OUR NEW TOPIC FOCUSES

TRANSITION OF VEHICLE ACCESSORIES TO 48V SYSTEMS: Shifting Electrical Loads Off The Engine And 12V

IN-DEPTH ANALYSES: Projected Costs And Real World Benefits Of Low Voltage Systems

EXAMINATION OF E/E COMPONENTS: Compressors, E-Boosters, And power electronics

VIRTUAL DESIGN OF ELECTRICAL ARCHITECTURE: Arranging Components Using Advanced Computer Simulations



OUR EXPERT SPEAKER FACULTY





Past Attending Organizations



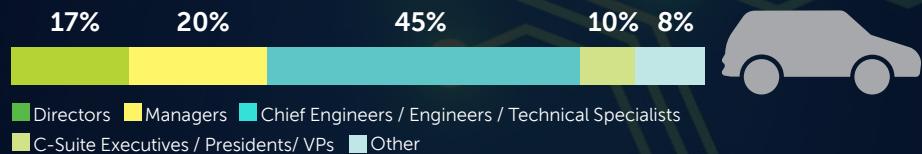
Attend the industry's **ONLY** event focused on the integration of **48V POWER** supply systems and **mild hybrid** electrical components



Past Attendee Profile:

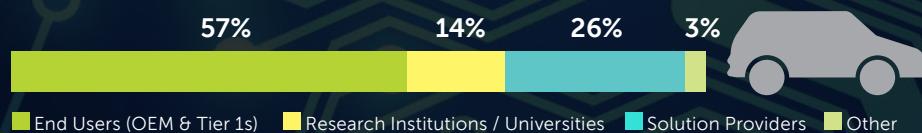
Breakdown of Seniority Levels

Enter this Summit to expand your network and gain insight into strategies for meeting fuel efficiency/emissions standards from various perspectives



Breakdown of Organizational Types

In the inaugural Low Voltage Summit, 57% of all attendees were from an OEM or top Tier 1 supplier! Can you afford to miss this gathering of thought-leaders and E/E system experts within the automotive sector?



Who Should Attend?

OEMs & Tier 1 Suppliers

VP/Director of Engineering/R&D Chief Engineer / Manager / Technical Lead / Technical Fellow / Technology Specialist / Research Scientist / System Architect

- Electrification / Electrical Engineering / E-mobility
- HEVs / Mild Hybrid Systems / Start/Stop Technology / BAS
- Low Voltage Electrification / Low Voltage Systems
- Power Electronics / Electrified Products

- Electrified Propulsion Systems/Powertrain/Drivetrain
- Energy Storage / Battery Development / Power Supply Development
- E/E Architecture/Systems/Functional Safety

Vendors/Industry Solution Providers

VP / Director / Team Lead / Manager / Regional Representative / Sales Engineer

- Business Development
- Commercial/Technical Solutions
- Marketing

- Technology Sales
- Product Services

Vendor Categories

- Vehicle/Hybrid/E/E Systems
- Semiconductors
- Switches / Relays / Motor Controllers / Plugs / Harnesses
- Electric Superchargers / Turbochargers / Compressors
- Battery Suppliers
- Advanced Emissions Testing

PRE-SUMMIT WORKSHOP DAY

26th April 2017



8:30 AM  Refreshments & Registration

9:00 AM **48V In The Heavy Duty Segment. What Kinds Of System Architecture Are Required For HD?**

OEM
INSIGHT

Boost Your Knowledge In...

- Present evaluation of 48V systems
- Unique 48V board network vs dual voltage system
- Implementation and scaling



Yann Boëté

Power Electronics Specialist & Global System Responsible, Electrical Power Management System

Volvo Group

10:45 AM  BRAKE TIME: Morning Networking & Refreshments

11:00 Am **Preparing For Market And Regulatory Shifts Through Developing Technology Roadmaps**

In order to meet short and long-term demands of consumers and regulators, auto makers/suppliers will need to explore various technology solutions and be ready to adjust the design of their vehicles/components. Moving forward, the solutions will involve greater electrification and optimization of the powertrain architecture. To differentiate themselves from the competition, key industry players will need to break down their technical options for meeting existing challenges in the market.

Boost Your Knowledge In...

- Breakdown of essential components for ICE and hybrid powertrain design
- Exploring various methodologies for increasing efficiency and boosting performance
- Continued developments in engine downsizing and greater electrification



Ramon Cerdan

Engineering Director

Lear Corporation



Raul Fuentes

Engineering Director

Lear Philippine Engineering and Technology Center

12:45 PM  Recharge Your Energy: Networking Lunch

2:00 PM **Determining Manufacturing Requirements, Level Of Electrification, And Associated Costs Based On Set Fuel Economy And Emissions Standards**

OEM
INSIGHT

If meeting fuel economy/emissions standards requires greater electrification and hybridization, how can auto makers/suppliers move forward with these technological investments and ensure profitability? Being able to reduce costs and manufacture the optimal components to reach specific goals will be the key to succeeding in a changing marketplace. Cost-benefit analyses of integrating various electrical components, such as 48V power supply systems, are necessary before continuing with the vehicle development process.

Boost Your Knowledge In...

- Incremental costs accrued through added components
- Adjusting projections and greater implementation of hybrid systems
- Estimate the volume of manufacturing required to reach economies of scale for electric parts



James Martin

Principal, **NemoTec Automotive**

Former Senior Manager,

Global Product Planning and Industry Intelligence,

General Motors

3:45 PM **Closing Remarks**

4:00 PM  End of Pre-Summit Day – Fully Charged & Ready For the Main Summit Day One!

MAIN SUMMIT DAY ONE

27th April 2017



7:30 AM  Refreshments & Registration

8:30 AM Chairman's Welcome & Opening Remarks



Scott Jorgensen, Ph.D.
Technical Fellow, R&D
General Motors

8:45 AM **Assessment Of Auto Manufacturers' Transition Towards Greater Electrification: Strategy, Focuses, And Components**

- Examination of auto makers and suppliers' use of 48V power supply systems
- Implementation of 48V to meet current fuel economy and emissions standards
- Potential disruptors of the 48V market and shifts in regulations



Denis Ulicny
Senior Industry Analyst
WardsAuto

9:30 AM **Steps Toward Hybridization: Shifting To 48V Through Implementation Of Dual Power Supply Systems**

- Accounting for extra components added into powertrain design for dual voltage capabilities
- Interactions between 12V and 48V for on-board systems
- Buck and boost power conversions
- Developments in DC-DC converters to facilitate bi-directional power supply conversions
- Additional steps needed to design vehicles with a single 48V power source



Juergen Wiesenberger
Head of Hybrid Electrical Vehicles, North America
Continental AG

10:15 AM  **BRAKE TIME: DEMO DRIVE & MORNING NETWORKING**

Enter the exhibition hall to hear more about various 48V system and E/E components that can be adapted into your company's vehicles, optimized for performance, functionality, and reliability.

11:00 AM **48V Powertrain Architecture Options To Optimize Performance, Efficiency And Cost**

- Opportunities and requirements for next generation architectures
- Breakdown of components and integration within powertrain for P0-4 configurations
- Examination of the associated benefits and boosted performance of each configuration



Matti Vint
North America Engineering R&D Director, Powertrain Systems
Valeo

11:45 AM  **PANEL DISCUSSION – Standardization Of E/E Architecture: Regulations In The Development Of Low Voltage Power Supply Systems**

- Adopting higher voltage E/E systems to meet future regulatory demands
- Overview of vehicle electrification standards that correspond with 48V systems (ISO 7637, 21848, & 21780)
- Regulation effects on auto makers and suppliers worldwide
- Establishing an industry standard of 48V to reduce costs, ensure safety, and improve reliability

Moderator:



Scott Jorgensen, Ph.D.
Technical Fellow, R&D
General Motors

Panelists:



Paul Nicastri
Retired Technical Leader, Electrical Distribution System Components, **Ford Motor Company**, Member, **United States Council for Automotive Research – Electrical Power Systems Working Group**



Mark Rychlinski
Technical Fellow, Electric Power
General Motors



Priya Bendale, Ph.D.
Sr. Director, Applications Engineering
Business Portfolio Manager
Auto Maxwell Technologies

12:30 PM  **Recharge Your Energy: Networking Lunch**

1:30 PM  **48V In The Heavy Duty Segment: Volvo's View**

- A truck is not a car
- The epic voltage split
- 12/24V superseded by 48V
- Do we need it?
- Can we afford it?



Yann Boëté
Power Electronics Specialist & Global System Responsible, Electrical Power Management System
Volvo Group

2:15 PM **Session To Be Announced**

Sponsored by  **Johnson Controls**

3:00 PM  **BRAKE TIME: AFTERNOON NETWORKING & REFRESHMENTS**



3:30 PM **Functionality And Customer Satisfaction Of Low Voltage Stop-Start Systems**

**OEM
INSIGHT**

- Competitive Differences: Hardware & Functionality across the NA market for ATX vehicles
- Customer Satisfaction



Margaret Brach

Vehicle Integration Responsible, Low Voltage Systems
FCA US LLC

Moderator:



Scott Jorgensen, Ph.D.
Technical Fellow, R&D
General Motors

Panelists:



Shannon Baker-Branstetter
Policy Counsel, Energy and Environment
Consumers Union



Bruce Belzowski
Managing Director, Automotive Futures Group
Michigan Transportation Research Institute



Siddiq Khan
Senior Researcher
**American Council for
an Energy-Efficient Economy**

4:15 PM **SHORT-TERM PANEL DISCUSSION – Addressing The Industry's Challenge To Meet Increasing Fuel Economy And Emissions Standards**

- How will auto makers and suppliers comply with stricter standards set in the next decade by state or federal policy makers?
- What innovations have come about within the industry as a result of pressures from regulators?
- What is the progress on meeting current standards across the globe?
- Should the industry adopt the 48V standard being pushed by European OEMs?

5:00 PM **Chairperson's Closing Remarks**



Scott Jorgensen, Ph.D.
Technical Fellow, R&D
General Motors

5:15 PM  **End Of Main Day One**



“Very informative event that addressed key topics that are being discussed in the LV electrification realm.”

-Senior Systems Architect,
R&D-Powertrain, Valeo



“An opportunity to meet with others who are interested and working on 48V electrification.”

-Technical Leader, Electrical Distribution System Components, Ford Motor Company



“Great opportunity to network with people who are on the forefront of 48V innovation.”

-Research Scientist, East Penn Manufacturing



MAIN SUMMIT DAY TWO

28th April 2017



8:00 AM  Refreshments & Registration

8:30 AM Chairman's Welcome & Opening Remarks

OEM INSIGHT  **Paul Nicastri**
Former Technical Leader, Electrical Distribution Systems Components
Ford Motor Company

8:45 AM Advanced Energy Storage Solutions: Batteries Technologies To Optimize 12V And 48V Systems

- Energy storage options and configurations
- Use of lead-carbon versus lead-acid batteries
- Developments in lithium-ion battery chemistries
- Battery packs and cell chemistries optimized for higher power

 **Matthew Denlinger**
Battery Research Engineer
Ford Motor Company

9:30 AM Examining The Safety Case For Lithium Ion Batteries: Management/Control Systems To Protect The End-User

- Monitoring the conditions of individual cells that form the battery
- Accepting and implementing commands from connected vehicle systems
- Cyber security protocols to prevent intrusion into battery controls

 **Oliver Gross**
Technical Fellow, Energy Storage Systems
FCA US LLC

10:15 AM  BRAKE TIME: Morning Networking & Refreshments

10:45 AM Examining Applications For 48V Electrical Systems In Commercial Motor Vehicles: Challenges & Benefits

- Comparison of power growth demands versus current electrical power available
- Technologies in commercial vehicles suitable for 48V
- Regulations pushing for increased efficiency of commercial vehicles

 **Ross Froat**
Manager of Engineering & Information Technology Programs
American Trucking Associations, Technology & Maintenance Council

11:30 AM Consumer Perception/Market Outlook Of Higher Fuel Efficiency And Adoption Of Advanced Powertrain Technologies

- Can lower cost micro and mild hybrid systems paired with 48V provide a stronger value proposition to customers?
- Consumer perception of higher fuel economy and price points
- What level of fleet sales are needed to bring a return on higher investments in E/E architecture?

12:15 PM  Recharge Your Energy: Networking Lunch

1:15 PM Energy Impact Of Component Technologies And Real World Driving Cycles On Start-Stop Technologies

- Efficiency levels achieved through 48V power supply systems
- Optimizing the functionality of vehicle technologies in various driving conditions
- Standard, highway, and city driving cycles
- Hot or cold conditions
- Statistical analysis of technology combinations and derived energy benefits

 **Aymeric Rousseau**
Systems Modeling and Control Group Manager
Argonne National Laboratory

2:00 PM Transition Of Vehicle Components: Optimizing Electrical Architecture To Take Full Advantage Of 48V Power Supply Systems

- Shifting electrical loads off of the engine and 12V systems
- Examination of which accessories are best suited to transfer over to higher voltage systems
- Overview of component changes in design and packaging

2:45 PM  BRAKE TIME: Afternoon Networking & Refreshments

3:15 PM Combining Electrically Driven Compressors With E-Supercharging To Drive 48V Systems

- Mitigating turbo lag while driving greater on-demand horsepower and torque
- Downsizing of combustion engines without sacrificing performance
- Expansion of technologies across hybrid powertrains

 **Sebastian Milan**
Product Marketing Manager, Powertrain Systems
Valeo

4:00 PM Long-Term Panel Discussion – Hybridization And Higher Voltage Systems Acting As Blueprints For Full Electrification

- Steps to advance automotive electronic technology and continue meeting more stringent fuel efficiency/emissions standards
- Incremental improvements toward adopting a complete electrical platform
- Impacts of 48V technology on future markets
- Advancements in batteries and powertrain components
- Use of 48V systems in full HEVs and EVs
- Life span of 48V before taking the next steps towards higher voltage systems

 **John German**
Senior Fellow
International Council for Clean Transportation

 **James Martin**
Principal,
NemoTec Automotive
Former Senior Manager,
Global Product Planning
and Industry Intelligence,
General Motors

 **Matti Vint**
North America
Engineering R&D
Director,
Powertrain
Systems
Valeo

4:45 PM Closing Remarks

5:00 PM  End Of Main Day Two

ELEVATE YOUR BRAND



HOW CAN YOU MEET YOUR MARKETING AND BUSINESS DEVELOPMENT OBJECTIVES AT THE 2ND LOW VOLTAGE VEHICLE ELECTRIFICATION (LVVE) SUMMIT?

NETWORKING

Ensure that you have the opportunity to engage with the key decision makers within your industry. We can create a platform for you to effectively interact with your top customers and prospects in the environment of your choice. This can range from formalized private meetings / workshops right through to less structured networking events such as sponsored drinks receptions, coffee breaks or lunches. Ultimately whatever you decide is the right forum; we will support you in your quest to advance relationships with the key people who can influence the future of your business.

BRANDING

Your company can be elevated to a position where they are seen as a market leader. In a fiercely competitive market you need to ensure that your brand is differentiated from the competition. Failure to create a clear identity will see your organization fade into the background. We ensure that we do everything we can to effectively lift your brand before, during and after the event. Not only do we create a fully integrated marketing campaign, which your company can be part of, but we also offer high impact premium branding opportunities for example on bags, water bottles, pens lanyards etc.

THOUGHT LEADERSHIP

If you think that you should be viewed as a true industry leader then your need to demonstrate your market knowledge and expertise through a thought leadership opportunity, such as speaking or chairing. This is a highly unique opportunity for your company to educate the market, and as long as you are credible enough to fit into a high level event program, we can position your organization alongside top customers and prospects in our speaker faculty. As part of this speaker faculty your company will be set apart from other industry attendees giving you the competitive edge required to make further strides in the market.

8 REASONS WHY THE 2ND LVVE SUMMIT CAN BENEFIT YOU!

- 1 **Generate new sales leads:** Our event will bring together the industry's key-decision makers, all of whom have strong business reasons for attending the event. By exhibiting and presenting, you can impact on these buyers. By the very nature of the high quality of delegate attendance, the contacts generated will lead to very high conversion rates.
- 2 **Launch new products or services:** Use the event as a launch pad to promote your latest products or system. With the most senior figures from the industry in attendance, plus carefully selected media partners at the event, innovative new technology will always generate a buzz.
- 3 **Demonstrate thought leadership:** Speaking on the program will allow you to demonstrate your market knowledge and expertise to an audience of high level decision makers.
- 4 **Enter new markets:** Sponsorship is one of the most effective ways to enter new markets. It is a great opportunity to research and network whilst gaining exposure to a new qualified database.

- 5 **Building customer loyalty:** Face-to-face contact at conferences, and showing continued support of the market, helps develop client loyalty as well as cementing your position as an industry player.
- 6 **Positioning your company brand:** Being part of this highly influential industry event establishes your company as a strong brand and highlights your company's abilities and strengths. Commitment to this event also demonstrates your capability as a global player.
- 7 **Building relations with the media:** We have researched the market in order to find the most influential media partners. We understand that opportunities for editorial coverage and developing better relations can be integral to your companies' success, so our media partnerships offer additional benefit above and beyond the standard sponsorship package.
- 8 **Brokering new business partnerships:** Currently there are huge opportunities to partner with OEM suppliers actively looking to adjust their supply chains.

To learn more about the opportunities available contact: **Chris Ritchie // T: (+1) 212-885-2799 // E: Chris.Ritchie@iqpc.com**

PRICING & REGISTRATION

End User Pricing

| Package | Standard Price |
|------------------------|----------------|
| Main Conference | \$2,595 |
| Main Conference + 1 WS | \$3,095 |
| Main Conference + 2 WS | \$3,545 |
| Main Conference + 3 WS | \$3,945 |

Vendor Pricing

| Package | Standard Price |
|------------------------|----------------|
| Main Conference | \$3,095 |
| Main Conference + 1 WS | \$3,595 |
| Main Conference + 2 WS | \$4,045 |
| Main Conference + 3 WS | \$4,445 |

| Team Discounts* | Savings |
|-----------------|---------|
| 2 | 10% off |
| 3-4 | 15% off |
| 5+ | 20% off |

*All prices in US\$

*Discounts apply to registrations submitted together, at the same time. Cannot be combined with any other discount

For information on team discounts, please contact IQPC Customer Service at +1-800-882-8684. Only one discount may be applied per registrant.

*IQPC reserves the right to determine who is considered an End-User or a Vendor upon registration for an event.

Those who are determined a vendor will be denied access to End-User pricing. These prices are featured as a limited time only promotion. IQPC reserves the right to increase these prices at its discretion. Please note multiple discounts cannot be combined.

A \$99 processing charge will be assessed to all registrations not accompanied by credit card payment at the time of registration.

MAKE CHECKS PAYABLE IN U.S. DOLLARS TO: IQPC

*CT residents or people employed in the state of CT must add 6.35% sales tax. Team Discounts: For information on team discounts, please contact IQPC Customer Service at 1-800-882-8684. Only one discount may be applied per registrant.

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For IQPC's Cancellation, Postponement and Substitution Policy, please visit www.iqpc.com/cancellation

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3 WAYS TO REGISTER

Web: www.lowvoltagevehicle-electrification.iqpc.com
Email: enquiryIQPC@iqpc.com
Phone: +1-800-882-8684

LOCATION & ACCOMMODATION

Detroit, MI

Travel and accommodation are not included in the registration fee. For updates on the venue and accommodation information, please visit: www.lowvoltagevehicleelectrification.com.



Automotive 
a division of IQPC

ABOUT AUTOMOTIVE IQ

Automotive IQ, a division of IQPC, is an international online platform focusing on providing automotive industry professionals with a central resource for knowledge on topics such as Autonomous Vehicles, Cyber Security Powertrain, Electrics/Electronics, Chassis Systems and Car Body & Materials. Most importantly, the Automotive IQ is a community. We are dedicated to creating a learning environment for sharing best practices and finding solutions to challenges within the automotive industry.