itB GROUP

Battery Pack Integration and Thermal Management Systems and Materials 2025

June 11 and 12, 2025

Sheraton Detroit Novi Hotel - Novi, MI USA

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Automotive Battery Pack Integration - June 11, 2025

Presentations will be made available to conference attendees two weeks after the conference has concluded AND when provided permission by the speaker

8:30 a.m. **Registration, Networking and Refreshments**

9:15 a.m. **Welcome and Opening Remarks**
Sean Osborne, Vice President
The ITB Group

BATTERY CHALLENGES

9:40 a.m. **Smart Design for Fast Charging: Battery Pack Safety Under High-Power, Cold-Climate Conditions**
Jacob Bookwalter, Application Sales Engineer
Element Materials Technology
Fast charging is critical to EV adoption but introduces significant risks, especially when charging in cold environments. This presentation explores how battery pack integration strategies, thermal preconditioning, and advanced BMS control can reduce degradation and enhance safety for fast charging. Real case studies demonstrate how to bridge the gap between models and market-ready systems. The presentation will also examine tools to help OEMs and suppliers design for performance, reliability, and environmental extremes.

10:10 a.m. **Faster Charging, Extended Range, and Propagation Prevention through Advanced Thermal Management**
Bret Trimmer, Application Engineering Manager
NeoGraf Solutions
This presentation reviews the latest goals and best current methods for EV battery thermal management. Four primary strategies pack manufacturers use to prevent thermal runaway are explored, plus the impact of each on fast charging, cell performance, and battery life. Five factors are examined that allow cells to charge quickly. Graphite thermal solutions offer three key advantages.

10:40 a.m. **Coffee and Conversation Break**

BATTERY THERMAL

11:20 a.m. **Innovative Flexible Cooler for Enhanced Thermal Regulation of EV Battery Cells**
Maurizio Bagnasco, System Expert Manager and Luc Milanini, Director of R&D
Hutchinson
The rapid advancement of electric vehicle (EV) technology necessitates efficient thermal management systems to ensure optimal performance, battery cell longevity, and safety. Reducing weight while improving thermal regulation is essential. A flexible cooler integrates advanced materials and designs. Flexible elements ensure uniform cooling and avoid thermal hotspots for varying battery pack shapes and sizes.

11:50 a.m. **Oscillating Heat Pipe Thermal Management for Battery Packages**
Dr. Corey Wilson, Director of Research and Development
ThermAvant Technologies
This study examines the use of oscillating heat pipe (OHP) technology to enhance safety, improve lifespan, and increase energy storage systems charging rates. OHP is a passive heat transfer device capable of high heat loads in thin-conformal and structural form factors. This research focuses on evaluating OHP performance to control temperatures and prevent issues such as localized overheating and thermal runaway. Experimental results demonstrate that OHP can reduce peak temperatures and create a more uniform temperature distribution across battery modules.

12:20 p.m. **Lunch**

1:20 p.m. **Heat-Resistant Pouch Film and Tab Sealing Film for all Solid-State Batteries**
Satoshi Takenaka, Manager Next Generation Business Exploration Office
AGC
Liquid electrolyte batteries have a higher risk of explosion as temperature increases. This presentation explains pouch film and tab film packaging solutions, targeted for fast charging of all solid-state batteries. The presentation highlights next generation polymers with excellent heat and chemical resistance; barrier properties; airtightness; and moldability for flexible battery design.

1:50 p.m. **KEYNOTE ADDRESS**
Global Powertrain Transitions and Battery Development Priorities
Darren Nowak, Director Research and Analysis
The ITB Group
BEVs continue to be the long-term powertrain trend, while hybrids are gaining traction throughout the world. At a deeper level batteries are evolving to reduce cell and pack cost while improving safety, energy density, and chargeability. This presentation highlights global electrified vehicle and battery development priorities.

2:30 p.m. **Coffee and Conversation Break**

Thermal Management Systems and Materials - June 12, 2025

BATTERY MATERIALS

3:00 p.m. **Enhancing Battery Recycling and Second-Life Batteries with AI-Driven Electrical Impedance Spectrometry (EIS)**
Clemens van Zeyl, Managing Director
Heimdalytics
A battery management system (BMS) can accurately estimate state-of-health, state-of-anomalies, and state-of-stress for safe and reliable operation to a battery's end-of-life. AI/EIS can be used to sort batteries for second use or recycling. Depending on the configuration, a BMS can also actively keep the battery cells in balance. This presentation uses case studies to demonstrate economic benefits of AI/EIS deployed for second-life batteries.

3:30 p.m. **The Material Difference of Thermoplastics in Enabling Electric Mobility**
Dinesh Munjurulimana, Senior Manager
SABIC
This presentation focuses on opportunities to improve safety, reduce weight and cost, and enhance sustainability of EV battery packs in all life cycle phases. Flame retardant (FR) thermoplastics may be used in various pack components. These materials inherently act as insulators for both heat and electricity, presenting substantial opportunities for improved system performance, lightweighting, and seamless part integration. Two case studies demonstrate the potential benefits of thermoplastics.

4:00 p.m. **Closing Remarks**

8:30 a.m. **Registration, Networking and Refreshments**

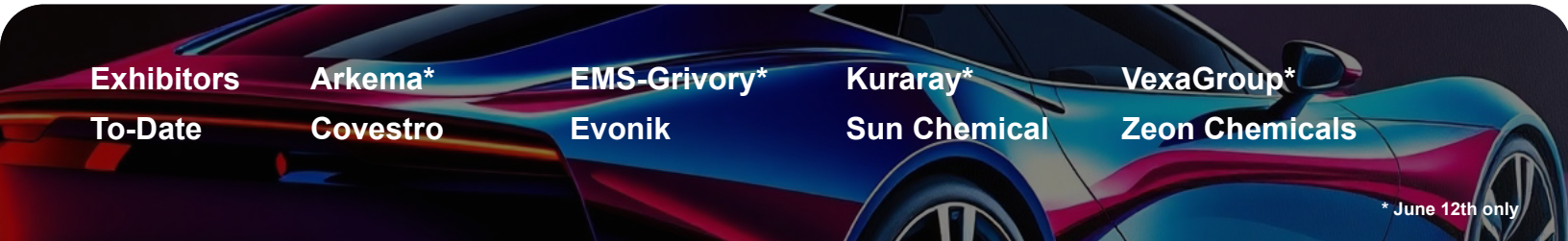
9:15 a.m. **Opening Remarks and KEYNOTE: Global Light Vehicle OEM Thermal Management Development Priorities**
Sean Osborne, Vice President
The ITB Group
Global automotive priorities being embraced to reduce cost and improve performance of electrified vehicle thermal systems will be discussed. An emphasis is placed on how Chinese companies have changed from lagging to leading in thermal technology development.

THERMAL SYSTEMS

10:00 a.m. **EV Powertrain Thermal Management: Insights into Performance, Range and Efficiency**
Dr. Abdul Motin, Staff Engineer, Powertrain Product Development
Rivian Automotive
This presentation provides an overview of EV thermal management challenges and strategies at the drive unit and vehicle levels. It will further explore how the underlying architecture and control methodologies affect vital aspects such as warm-up, cold weather conditioning, and the resulting EV range and efficiency.

10:30 a.m. **Revolutionizing Thermal Management for Electric and Hybrid Vehicles**
Chethan Tembad, Engineering Business Manager
Hutchinson
This presentation highlights innovative solutions such as plastic plumbing to reduce weight, pressure drop, and cost; insulated tubing for heat pump systems; and use of eco-friendly refrigerants. Additionally, a multi-way smart coolant valve for diverse thermal needs and an integrated refrigerant and coolant module, combining a 16-port coolant valve with an R290-compatible compressor will be presented.

11:00 a.m. **Coffee and Conversation Break**



THERMAL MATERIALS

11:40 a.m. **Performance and Efficiency: Multi-Layer Tubing for Thermal Management in BEVs**
Dr. Christian Kochanek, Business Development Manager Automotive and Mobility
Evonik
Cost-effective and resource efficient multi-layer thermal line solutions with a focus on safety, chemical resistance, and connector integrity will be presented. Benefits of multi-layer designs combining a long-chain polyamide (LCPA) outer layer with a polyolefin inner layer versus mono-layer nylon tubing will be addressed.

12:10 p.m. **New Hydrolysis Resistant PPA for Thermal Management**
Michael Pilarski, NA Business Development Manager
BASF
A hydrolysis-resistant PPA that offers excellent chemical and dimensional stability in contact with glycol, thermal oil, and water at 130°C, while retaining tensile strength and elongation after 1000–2000 hours will be presented. Another grade providing similar resistance while ensuring ultra-low electrical conductivity with high-purity cooling media will also be highlighted.

12:40 p.m. **Lunch**

1:40 p.m. **Thermal Management System and Materials: High Temperature Cooling Lines**
Luis Fernando Flores Bustos, Account Manager Automotive NA
Arkema
Unique material solutions to meet stringent high temperature hybrid vehicle requirements, while maintaining cost-effectiveness and easily recycled structures will be explored. Such materials enhance performance and reliability of thermal systems in hybrid vehicles, and ensure they operate efficiently under extreme conditions.

2:10 p.m. **Sustainable PA66 for EV Thermal Management: Coolant-Resistant Solutions from Recycled Materials**
Ji-Hoon Kim, Principal Business Development Leader and Vahid Mortazavian, Senior Product Application Development Manager
Ascend Performance Materials
Driven by growing sustainability and environmental regulations, the automotive industry is accelerating the adoption of recycled materials. This study presents recycled PA66 solutions designed for coolant-exposed applications, with coolant resistance performance validated against industry standards.

2:30 p.m. **Advancing Coolant Tube Solutions for Battery Electric Vehicles**
Murali Chandrasekhar Director of Engineering
Martinrea International
This presentation explores Martinrea's latest advancements in TPV coolant tubing and lightweight adhesive-less thermal sleeving for BEVs. Innovative designs and materials are aimed at reducing costs while enhancing sustainability. A comparative analysis of current market products and recent developments will highlight strategic material selection for greener alternatives without performance compromises.

2:50 p.m. **Coffee and Conversation Break**

THERMAL COMPONENTS

3:20 p.m. **Thermal Management System Performance Optimization and Validation Testing using Compact Module-Based Integration**
Saima Alam, Thermal Management Engineer and Manoj Billa, Lead Thermal Management Engineer
Hutchinson
Hutchinson is exploring efficient alternatives to PTC heaters, developing compact modular integration concepts and secondary coolant loop architectures for high-capacity thermal systems and heat pumps. Innovative system solutions use new refrigerants. VTMS test bench validation of optimization HVAC component functionality, orientation, and sizing with will also be addressed.

3:50 p.m. **Game-Changing Thermal Management Valve – Turning the Standards Upside-Down**
Christian Elz, Product Engineering Manager -
EQYO (Saint-Gobain)
The distribution of coolant flow in xEVs has a higher impact on the efficiency of vehicles than expected. EQYO has developed a valve design to support an optimized coolant flow path and improve system efficiency by reducing energy consumption, size, and weight.

4:20 p.m. **Optimized Mechatronics Solutions for Air and Fluid Management to Address Electrification Challenges**
Augusto Millan, Sales & Application Manager
Moving Magnet Technology
MMT is pioneering intelligent, integrated advancements in mechatronics to meet the evolving needs of EV/HEV coolant and refrigerant systems. EV automotive interiors demand a quieter and more efficient HVAC comfort system, which influences the specifications and architecture of components such as blower motors and flap actuators.

4:50 p.m. **Closing Remarks**

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For more information please contact Bryan Eldredge at beldredge@itbgroup.com

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