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BATTERY THERMAL MANAGEMENT

INNOVATION SUMMIT EUROPE

EUROPE'S LONGEST RUNNING AND LEADING TECHNICAL CONFERENCE & EXHIBITION FOR EV BATTERY THERMAL ENGINEERS

CURATED IN PARTNERSHIP WITH THE EUROPEAN OEMS, THIS YEAR'S AGENDA ADDRESSES THE MOST PERTINENT CRITICAL INDUSTRY CHALLENGES AND KEY INVESTMENT AREAS

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EUROPE's PREMIER TECHNICAL GATHERING OF **BATTERY THERMAL MANAGEMENT** LEADERS, INNOVATORS AND EXPERTS

Battery Thermal Management Innovation Europe is the #1 Conference & Exhibition to match OEM and Battery Manufacturer requirements with expert material, solution, and technology providers.

How To Keep The 'Cost, Performance, And Sustainability' Triangle Balanced And Deliver The Best Result.

Reducing Cost & Complexity: System Level Integration

For the last 7 years the Battery Thermal Management Innovation Summit Europe has lead the events sector as the premier assembly of EV designers, engineers, senior executives and innovators, and is Germany's largest technical conference dedicated exclusively to battery thermal management technology innovation. The event continues to grow exponentially, revered as the best-in-class technical summit and foremost communication network for BTM practitioners, and in particular Battery Manufacturers and OEMs.

Chaired by the industry figure head Bod Galyen, retired CTO of CATL, Chair of NaatBatt and now consultant to the major OEMs and battery manufactures - this conference and adjoining exhibition presence a truly unique, personable opportunity, favoured by the OEMs from across Europe.

BTM Innovation is Europe's exclusive forum for battery engineers, technologists and experts to collectively address the key challenges and industry innovations surrounding advanced BTMS, materials, technologies, solutions and system integrations; to increase efficiency, range, health, optimise solutions for increasingly demanding and ever advancing battery requirements, whilst reducing complexity and cost.

Curated through intensive research with the OEM community to ensure your learning objectives are met -the conference analyses the most crucial and up to date challenges and benchmarks strategic imperatives such as cost and mass production for next-generation BEV advancement. Attendance will provide you with an unbeatable platform for networking and knowledge sharing, and offer a way to generate new business, or ideas, through the power of information exchange with key decision makers and engineers with a shared purpose.

We welcome you to join over 400 xEV experts gathering this March for Europe's largest technical conference for battery thermal management professionals; and foremost communication network for OEMs, technology and solutions providers alike.

CONFERENCE TOPICS

Optimal Design Of Thermal Management Systems At System Level

Next-Gen Cylindrical Cells: Thermal Management Challenges & Solutions

Immersion Cooling For Thermal Management of Lithium-ion Batteries

Cooling Strategies For/ Managing The Impact Of Fast Charging On Thermal Management Of Battery Pack

BMS, Cooling Innovations, Different Cooling Circuit Layouts

Evaluating Difference Platforms And Architectures For Battery Integration

Heat Sink Optimization

Future Of Battery Pack Design & Integration

Optimal Battery Pack Design & Modularity

Integrating Electronic Components Into The Battery Pack

Breakthroughs & Innovations In Thermal Efficiency: Balancing Performance Of The System

Battery Pack Design And Material Selection

Simulation And Modelling For BEV Safety

Optimization: Predicting Thermal Performance And State Of Health Of Battery Pack

Robust Early Detection Of Thermal Runaway

Thermal Adhesive, Sealant & Bonding Solutions: Disruptive Solutions For Battery Applications

Improving Energy Density And Performance Of EV Battery Packs With Thermal Management Materials & Coatings

The Role of Thermal Interface Materials in Battery Systems (TIMs)

AGENDA 2025

26 MARCH 2025 | EUROPE
STUTTGART, DE

07:20 | Morning Registration

08:00 | Chair's Opening Remarks

Next-Generation BEV Design: Innovating System Integration, Battery Performance, And Cost Efficiency

Bob Galyen, *rt. CTO CATL, Chairman Emeritus of* ***NaatBaTT***

- Holistic approaches to integrating powertrain, battery systems, and thermal management for optimal performance.
- Learn how evolving system architectures influence energy efficiency and safety in next-generation BEVs.
- Examine innovative methods for battery pack integration, focusing on structural optimization and thermal safety.
- Understand practical strategies for reducing system costs through material selection, modular design, and manufacturing innovations.
- Evaluate trade-offs between cost, performance, and scalability in BEV production.
- Gain insights into emerging technologies and regulations shaping the next era of BEV design, including solid-state batteries and cell-to-pack architectures.

08:20

Battery Swapping For xEVs: Challenges In Thermal Management And Grid Integration

Dr.-Ing. Yong Wang, *Head of EU Power Swap Product Management,* ***NIO***

NIO's battery swap technology is redefining EV energy replenishment, offering a faster and more flexible alternative to traditional charging. However, the adoption of this innovative system presents several challenges, particularly in thermal management, grid integration, and scalability. Maintaining optimal battery temperatures during swaps is crucial for safety, efficiency, and battery longevity. Additionally, integrating swap stations into the broader energy infrastructure raises concerns about grid stability, bidirectional energy flow, and decentralized energy storage. Standardization across OEMs, battery degradation risks, and the economic viability of battery swapping also impact widespread adoption. This session will explore these challenges while examining solutions that could optimize battery swapping for the future of EVs.

Thermal Management in Battery Swap Stations
- Analyze the impact of frequent battery swaps on temperature regulation and long-term battery performance.
- Explore strategies to optimize cooling and heating within battery swap stations for efficiency and safety.

Grid Integration and Bidirectional Energy Flow
- Examine how battery swap stations function as decentralized energy storage units.
- Discuss the challenges of bidirectional power flow and its impact on grid stability.

Scalability, Standardization, and Market Adoption
- Identify the infrastructure and cost barriers to scaling battery swap technology.
- Assess the need for standardization across OEMs to improve compatibility and drive adoption.

Enhancing Energy Efficiency in Swap Stations
- Understand the role of bidirectional power modules in improving station energy efficiency.
- Explore heat recovery and distribution strategies to reduce energy loss and enhance station sustainability.

NIO's Vision for the Future of EV Energy Replenishment
- Gain insights into NIO's power swap model and its benefits over traditional charging.
- Discuss the long-term potential of battery swapping in transforming EV infrastructure.

08:40

New Thinking Of Thermal Management For Battery Management Systems

Wolfgang Höfer, *Business Unit Leader Thermal Management,* ***KERAFOL***

- Typical protection of PCBs and electronic components against environmental impacts.
- Need for the usage of additional Thermal Interface Materials.
- Presentation of a new way in terms of combining "electronic protection" and "thermal transfer".
- Advantages in comparison to classic thermal interface materials.
- Difference to typical plastics.
- Process of overmolding.
- Different technologies to produce 3D samples.
- Focus on a case study that shows the performance improvement of a Battery Management System (BMS).
- How these solutions can affect the design of electronic components and save production and cycle time.

09:00

Battery Cooling: Advancing Laser Welding For Lightweight, Sustainable Aluminum Cooling Plates

Adrian Serna, *Business Development Specialist,* ***AdvanTech International***

- The evolution of laser welding techniques, high-speed and precision welding advancements.
- Highlight innovations in joint designs for improved cooling performance.
- The potential of laser welding with alternative materials like composites or hybrid metals for advanced cooling systems.
- Compare the performance and cost implications of different materials in battery cooling applications.
- Examine how laser welding aligns with circular economy principles through improved recyclability and material efficiency.
- Explore new metrics for quantifying the CO2 footprint reduction in laser-welded components.
- Showcase successful implementations of laser-welded cooling plates in EVs, eVTOLs, and stationary energy storage.
- The integration of laser welding with emerging battery technologies, such as solid-state batteries.
- Forecast how advancements in laser optics and energy delivery systems will reshape cooling solutions.

09:20

Thermal Innovations For EV Battery Safety: Breakthrough Solutions For Performance And Longevity

Dr.-Ing Matthias Wissling, *VP R&D, Electrification & Engineered Components,* ***Stanley Black & Decker, Inc.***

Behnam M. Gholamali, *Development Engineer,* ***Stanley Black & Decker, Inc.***

- Integrating thermal barriers with swelling compensators, to address swelling and thermal propagation risks.
- Presentation of experimental data and numerical simulations demonstrating the efficacy of these solutions.
- Discussion of the interplay between thermal and mechanical stresses in battery systems
- Strategies for optimizing swelling compensators and thermal barriers to improve safety, performance, and lifespan.
- Exploration of design considerations for balancing thermal propagation prevention with efficient thermal transfer.
- Advanced strategies for managing thermal and pressure dynamics in battery packs to enhance safety and reliability.
- Insights into modular design for improved heat dissipation and uniform pressure distribution.
- Emerging technologies, such as phase-change materials and thermal interface innovations.

09:40

Advanced Thermal Management Strategies For Fast Charging, Extended Range, And Thermal Propagation Prevention

Bret Trimmer, *Applications Engineering Manager,* ***NeoGraf Solutions***

- Analyzing the interplay between thermal management, safety, fast charging, and extended range.
- Learn about the role of flexible graphite, phase-change materials, and thermal barriers in optimizing battery performance.
- Gain a comprehensive understanding of the four main strategies to prevent thermal propagation and their trade-offs.
- Explore innovative methods to reduce pack size and weight while maintaining safety and efficiency.

10:00

Enhancing Battery Safety: How Early Failure Detection Can Prevent Thermal Runaway

Ellen Scott, *Researcher, Battery and BMS,* ***RISE***

Lithium-ion batteries pose certain risks and can undergo thermal runaway if subjected to, for example, high temperatures, overcharge, mechanical impact or short-circuiting. Cell degradation and aging will further impact safety. This can lead to fires or explosions.

Being able to detect signs of failure at an early stage opens up the possibility of preventing a thermal runaway from occurring and strongly improves the safety and reliability of the battery system. By exploring the regions between the safe zone and the failure zone in li-ion batteries, what we call near-failure events, it could be possible to detect changes in parameters that could indicate the battery is approaching a failure and mitigate this before thermal runaway.

- Insights into some strategies for early detection of failures in li-ion batteries
- Learn the importance of, and how to perform, battery safety critical testing
- Understand how, and to what extent, BMS data during battery operation can be used for early detection of failures

10:20 | MORNING BREAK

11:00

Optimizing EV Battery Design With Digital Twins: An Incremental Engineering Approach

Gaetan Damblanc, *Senior Product Manager, E-mobility,* ***Siemens Digital Industries Software***

Battery cell design optimization is intricate, involving a multitude of design parameters such as cell geometry, electrode micro-structure, and materials properties.These parameters often have conflicting effects on key requirements. For example, increasing electrode thickness can enhance energy density but may come at the expense of fast-charge capability.This presentation demonstrates the effectiveness of an incremental engineering approach using digital twins in optimizing battery cell design against vehicle requirements.Focusing on battery cells' electrochemical performance, It will demonstrate how a digital twin approach helps navigate the complexity of battery cell design optimization.

- Trade-off potentially conflicting design parameters early on
- Predict the impact of li plating on fast-charge capability
- Utilize vehicle-level simulations to identify specific requirements at the cell level
- Employ a fast system simulation approach for the initial cell design phase
- Advance to a detailed 3D simulation approach to refine the battery cell design.

11:20

Future Trends In Thermal Management From Stand Alone Parts To Modules & Heat Pump Systems

Stefan Schäfer, *Thermal Management Expert | NEW MOBILITY | BEV | Global Sales & Business Development Expert,* ***BURGER GROUP***

The evolution of EV battery thermal management is shifting away from traditional standalone cooling components toward highly integrated, modular heat pump systems. This transformation enhances energy efficiency, maximizes heat recovery, and improves overall vehicle performance. However, transitioning from conventional cooling loops to a fully integrated thermal management system presents significant challenges. These include the complexity of system integration, cost constraints, and optimizing performance without compromising vehicle packaging. This presentation will explore the critical hurdles in adopting modular and heat pump-based thermal management while highlighting the innovative solutions shaping the future of EV efficiency.

- Understanding System Integration Challenges: Learn how automakers are addressing the complexities of integrating battery, motor, and cabin thermal loops into a unified system.
- Managing Cost and Design Constraints: Explore strategies to balance advanced thermal management features with manufacturing costs and vehicle packaging limitations.
- Maximizing Efficiency and Sustainability: Discover how smart control algorithms, modular designs, and advanced cooling fluids contribute to improved battery longevity and reduced environmental impact.

11:40

Integrated Thermal Management Innovations: Advancing Efficiency For Batteries, Power Electronics, And Cabin Systems

Lutz Klinkner, *Managing Director,* ***Rubitherm Technologies GmbH***

The challenges associated with managing heat in high-performance electric vehicle systems.

- Examine how to manage batteries, electronics, and cabin temperatures.
- Understand advancements in battery cooling and heating systems, such as phase-change materials, and thermal interface materials.
- The role of PCM as efficient buffers to reduce overall needed system power, weight and cost
- Phase Change Materials as thermal source for vehicle heating
- Analyze the challenges of maintaining passenger comfort while minimizing energy consumption in EVs.
- Explore innovations like thermal energy recovery solutions.
- Gain insights into integrating thermal management materials into overall vehicle architecture for improved energy efficiency.
- Optimize battery temperatures for fast charging in all seasons

12:00

Optimizing EV Efficiency: How Electrical Heaters Support Advanced Thermal Systems

Dr. Karsten Bolz, *Director of Product Management,* ***Eberspächer Group***

The adoption of battery electric vehicles (BEVs) is a critical component of the global transition to sustainable and cleaner energy solutions. Besides high purchase prices, several technological challenges continue to impede the widespread acceptance of BEVs. The top 3 dominating the debate are range anxiety, cabin comfort, and charging times. Addressing these issues requires advanced thermal management systems (TMS) that can optimize the performance and efficiency of electric vehicles.

- Heat pump systems will be broadly adopted by OEMs
- Electrical heaters significantly boost overall system performance
- By integrating electrical heaters with heat pump systems, the overall performance of the TMS can be significantly enhanced

12:20

IMMERSION COOLING PANEL Immersion Cooling For xEVs: Unlocking Potential, Overcoming Barriers

Pranav Nagaveykar, *Researcher in Battery Technology,* ***University of Paris Saclay & CEA (Center of Atomic Energy)***

Speaker, ***Breathe Battery Technology***
Speaker, ***XING Mobility***
Speaker, ***MAHLE***
Speaker, ***Hyvia***

As immersion cooling gains traction in xEV battery thermal management, key challenges remain in optimizing performance, cost, and scalability. While this method enhances battery longevity and safety, factors such as fluid selection, chemical compatibility, and system design pose significant barriers to widespread adoption. The discussion will explore the trade-offs between hydrofluoroethers and hydrocarbon-based coolants, the impact of fluid flow dynamics on system efficiency, and the engineering challenges of integrating immersion cooling into existing battery architectures. Experts from OEMs, battery manufacturers, and thermal management leaders will debate whether immersion cooling is a niche solution or a future mainstream technology.

Material and Fluid Selection Trade-offs

- Compare hydrofluoroethers vs. hydrocarbons in immersion cooling, weighing factors such as safety, cost, and thermal performance.
- Discuss the regulatory and environmental concerns surrounding PFAS and flammability risks of alternative fluids.

Engineering and System Integration Challenges

- Examine the impact of fluid thermal conductivity and specific heat on cooling efficiency.
- Address design constraints, including fluid flow rate, pressure requirements, and sealing complexities.

Market Adoption and Future Outlook

- Assess the scalability of immersion cooling across different xEV segments.
- Debate whether immersion cooling will remain a specialized technology or evolve into a mainstream solution for next-gen EVs.

13:00

Harnessing AI And Machine Learning For Optimized Thermal Management System Design In Competitive Markets

Artificial intelligence (AI) and machine learning (ML) are emerging as transformative tools for system design and optimization. This session

explores how AI and ML can revolutionize thermal management, from enhancing system efficiency to automating design processes and analyzing complex data streams.

- Explore how AI and ML algorithms identify optimal configurations and dynamically adjust thermal systems for maximum efficiency.
- Discover how AI automates key stages of development, including software verification, real-time simulation, and predictive modeling.
- Understand how machine learning techniques analyze, cluster, and model data from testing and in-use systems to inform design refinements.
- Learn how to incorporate AI tools into workflows to improve workload distribution, accelerate decision-making, and reduce time-to-market.
- Discover how AI-enhanced thermal management solutions give companies a decisive advantage in performance, cost-effectiveness, and sustainability.

13:20 | LUNCH BREAK

14:20

Bridging Cell-Level Data With System-Level Insights: A New Path For Battery Thermal Management

Issam Baghdadi, *Independent battery specialist and Founder,* ***Kurybees***

In this presentation, we delve into how accurately characterizing cell resistance—by distinguishing ohmic, charge-transfer, and entropy components—enables more precise thermal management across various battery chemistries. We demonstrate how these parameters evolve with State of Charge (SoC), temperature, current, and time, and show why ohmic losses (scaling with I(A)^2) and charge-transfer kinetics (often related to ln(~I(A)) must be quantified separately for reliable heat estimation. Through comparative data on LFP, NMC, NCA, LTO, Na-ion, and both power- and energy-oriented cells, we illustrate the heat output normalized to kW/kWh under different load conditions.

Unpacking Cell Resistance: Ohmic, Charge-Transfer, and Entropy
- Fundamentals of cell internal resistance and its dependence on SoC, temperature, current, and time for charge and discharge
- Distinction between ohmic vs. charge-transfer resistance
- Importance of entropy effects at low currents and their impact on reversible heat generation

Conventional vs. Advanced Heat Estimation Approaches
- Overview of classical methodologies that lump all heat sources together into one resistance
- Demonstration of how decoupling ohmic, charge-transfer, and entropy components yields more accurate results
- Case studies or brief data illustrations showing discrepancy in thermal predictions

Comparative Analysis Across Chemistries
- Heat generation comparisons for LFP, NMC, NCA, LTO, Na-ion, and specialized power/energy cells
- Normalizing heat output (kW) to stored energy (kWh) across varying power demands
- Practical considerations: design, safety margins, and cooling strategies

14:40

Pushing The Boundaries Of Battery Systems With Data-Driven, Temperature-Controlled Charging And Power Delivery

Daniel Astudillo, *Research Fellow,* ***Fraunhofer Institute for Silicon Technology ISIT***

Understanding battery thermal behavior is complex, requiring multiple models, experiments, and coolant-specific configurations. As a result, conventional charging strategies tend to be overly conservative, restricting power delivery to prevent overheating. In this session, we demonstrate how to develop a temperature-constrained fast charging or maximizer power delivery strategy — using only minutes of in-situ data collection.

- Recognize the need for a robust and adaptive approach to fast charging and maximum power delivery.
- Understand the paradigm shift from data-to-model approaches to data-to-control strategies.
- Learn how to create a data-driven, model-free charging strategy with less than an hour of in-situ data collection.
- Explore how to develop a cost-effective, data-driven, model-free controller that could be implemented in existing battery packs.

15:00

Advanced Cooling Systems And Smart Control For Optimized Battery Thermal Management

Marc Graff, *Managing Partner,* ***SynErgy Thermal Management GmbH***

Innovations in advanced cooling systems and smart control technologies are transforming Battery Thermal Management Systems (BTMS), improving energy efficiency, reducing charging times, and ensuring long-term reliability. This session explores cutting-edge cooling system designs, the role of smart controllers in thermal optimization, and how these advancements impact the overall performance of EV batteries.

- Examining Smart Control Innovations for advanced cooling systems
- Understand the role of integrated smart controllers in real-time monitoring and adaptive thermal management.
- Learn how AI and machine learning enhance BTMS efficiency and reliability.
- Discover strategies for maintaining thermal stability in high-energy-density battery cells.
- Evaluate System Integration and Energy Efficiency
- How smart controllers and advanced cooling systems work together to optimize energy usage.
- Gain insights into reducing parasitic losses in thermal management systems.
- Learn about the integration of IoT, AI, and predictive analytics in next-generation thermal management systems.

15:20

Mastering Battery Thermal Management And Aging Prediction: Avoiding Common Pitfalls

Dr. Frank Richter, *CEO,* ***Greenectra OÜ***

Accurately calculating heat production and understanding parameter changes during battery aging are critical for optimizing performance and safety in lithium-ion batteries. However, challenges such as incomplete thermal models, unpredictable aging behaviors, and common operational mistakes often lead to failures. This talk will explore methods for precise heat generation estimation, discuss how aging impacts battery heat production parameters and their prediction, and highlight typical errors in battery operation. Attendees will gain actionable insights into extending battery lifespan.

- Understand accurate heat production calculation during battery operations, including the role of advanced thermal models and real-time monitoring techniques.
- Learn how aging affects key battery heat production parameters such as, resistance, and thermal diffusivity, and discuss predictive models to estimate end-of-life (EOL) and performance degradation.
- Identify common mistakes in battery thermal management and learn strategies to avoid them.

15:40

Battery Integration And Thermal Optimization

Pranav Nagaveykar, *Researcher in Battery Technology,* ***University of Paris Saclay & CEA (Center of Atomic Energy)***

- Present new developments in battery pack architecture, such as cell-to-pack and cell-to-chassis designs.
- Discuss advanced thermal management solutions that reduce weight and improve energy efficiency.
- Include innovations in active cooling/heating systems and thermal runaway prevention
- Gain insights into integrating thermal management systems into overall vehicle architecture for improved energy efficiency.
- Explore the trade-offs between performance, cost, and design complexity in selecting thermal management solutions.
- Explore Advances in Integrated Thermal Management Systems
- Identify the latest innovations in integrated thermal management technologies, including dual-loop and multi-functional systems.
- Examine how integrated systems improve energy efficiency by simultaneously managing batteries, electronics, and cabin temperatures.

16:00

SODIUM-ION BATTERY / THERMAL MANAGEMENT PANEL From Lab To Road: Managing Heat And Performance In Sodium-Ion EV Batteries

As sodium-ion battery technology advances toward commercial viability for electric vehicles, thermal management remains a critical challenge. While these batteries offer advantages such as lower cost, improved safety, and better low-temperature performance, their lower energy density and unique electrolyte requirements create new obstacles for thermal regulation. Maintaining optimal temperatures to balance efficiency, longevity, and performance in extreme conditions is crucial. This panel will explore sodium-ion battery thermal characteristics, key cooling and heating strategies, and the

implications for broader xEV adoption. Experts from OEMs, battery manufacturers, and thermal management innovators will discuss the path forward in making sodium-ion a competitive alternative to lithium-ion.

Understanding Thermal Behavior in Sodium-Ion Batteries
- Explore how sodium-ion cells respond to temperature extremes, including their advantages and limitations compared to lithium-ion.
- Examine electrolyte design and material challenges affecting thermal performance and energy density.

- Innovative Cooling and Heating Strategies for Sodium-Ion Batteries
- Discuss the role of advanced cooling techniques in optimizing sodium-ion battery safety and longevity.
- Evaluate how different thermal management approaches can improve fast-charging capabilities and extreme-weather performance.

Scalability and Integration Challenges in xEV Applications
- Assess the feasibility of sodium-ion adoption in passenger EVs, commercial fleets, and other mobility sectors.
- Analyze how sodium-ion's unique properties impact battery pack design, BMS integration, and overall vehicle efficiency.

16:40

A Novel Direct Liquid Cooling Strategy For EVs: A Focus On Lithium-Ion Pouch-Type Battery Cells

Manex Larrañaga Ezeiza, *Engineer in the mechanical/thermal section of the Energy Storage unit,* ***CIDETEC***

This research proposes, develops, and verifies an innovative cooling strategy based on partial direct liquid cooling (DLC), which has proven to be more effective than most known cooling strategies in the EV sector, the ones based on indirect liquid cooling (ILC). A comparative analysis against the ILC strategy was conducted, using pumping power consumption as the evaluation criterion. The proposed strategy offers more precise thermal management control while consuming less auxiliary power, thereby enhancing overall battery system performance. Additionally, with a carefully designed module, the strategy maintains volumetric and gravimetric density values comparable to current battery systems in the market and incorporates safety measures to delay or prevent thermal runaway propagation events. As a result, this strategy has the potential to extend battery life, reduce the size and power consumption of auxiliary systems, improve safety, and facilitate effective Battery Thermal Management System (BTMS) control.

- Learn about innovative strategies for optimizing thermal management in electric vehicles.
- Understand the importance of hydraulic design optimisations through CFD numerical analyses to identify and address system bottlenecks.
- Explore the scaling-up strategies of battery systems while emphasizing the importance of modularity in design concepts.
- Gain insights into the development of design strategies that extend battery system lifespan and enhance safety features.
- Perform comparative evaluations between cooling strategies using power consumption criteria as a reference.

17:00 | AFTERNOON BREAK

17:40

Material Science Innovations For Safer, More Efficient EV Batteries: Addressing Critical Challenges With Advanced Materials

Dr. Elisabeth Cura, *Senior Product Development Specialist ePowertrain,* ***3M***

Dr. Sascha Sprott, *Senior Product Development Specialist ePowertrain,* ***3M***

As electric vehicle (EV) adoption accelerates, the push for higher energy density, ultra-fast charging, extended cycle life, and stringent safety standards presents increasing thermal management challenges for OEMs and battery manufacturers. High-performance battery packs must dissipate heat efficiently to prevent thermal runaway while maintaining mechanical integrity, manufacturability, and cost efficiency. At the same time, evolving regulatory pressures demand sustainable, repairable, and recyclable battery designs.
This presentation will delve into the fundamental thermal and electrical challenges that impact battery performance, safety, and reliability.
It will explore advanced material solutions engineered to mitigate hotspots, enhance dielectric protection, and improve interface contact for effective heat dissipation. Additionally, we will discuss innovations that support faster assembly, modular pack designs, and end-of-life disassembly—critical for the next generation of EV battery systems.
- Understand the Thermal Management Challenges in EV Batteries – Gain insights into the critical role of thermal interface materials (TIMs), dielectric coatings, and phase change materials in preventing thermal runaway, optimizing heat dissipation, and enhancing battery safety.
- Explore Advanced Material Solutions for Enhanced Performance – Learn how engineered materials improve thermal conductivity, electrical insulation, and manufacturability, enabling higher energy density, faster charging, and increased battery longevity.
- Address Sustainability and Regulatory Compliance in Battery Design – Discover how innovative materials support repairability, recyclability, and compliance with evolving global safety and environmental regulations, ensuring future-proof EV battery systems.

18:00

SOLID-STATE BATTERIES PANEL Beyond Lithium-Ion: Addressing The Unique Thermal Challenges Of Solid-State Batteries

The shift to solid-state batteries presents a paradigm change in thermal management, with new challenges emerging from their unique heat generation and dissipation properties. Unlike traditional liquid electrolyte batteries, solid-state systems exhibit higher thermal resistance, localized heating issues, and distinct safety concerns related to short-circuiting and runaway events. This panel will explore the complexities of solid-state battery thermal behavior, discuss the adaptation of existing cooling strategies, and examine emerging technologies such as phase-change materials and AI-driven thermal optimization. Experts from the battery, EV, and thermal management industries will debate the best approaches to ensure safe and efficient thermal regulation in next-generation EVs.

Understanding Solid-State Battery Heat Behavior and Safety Risks
- Compare thermal properties of solid-state vs. liquid electrolyte batteries and their impact on performance.
- Examine the risks of localized heating, short-circuiting, and thermal runaway in solid-state batteries.

Adapting and Innovating Cooling Strategies
- Explore how traditional battery thermal management systems (BTMS) must evolve for solid-state applications.
- Discuss advanced materials and designs, including phase-change materials and thermal barriers, to improve heat dissipation.

Integrating Solid-State Batteries into EV Thermal Architecture
- Assess how solid-state battery adoption influences vehicle-wide thermal management strategies.
- Investigate AI-driven thermal regulation and real-time monitoring solutions to enhance efficiency and safety.

18:40

Next-Gen Connectors And Joining Solutions For EV Design: Innovations Driving Safety, Performance, And Efficiency

Dr.-Ing. Fatih Bülbül, *Head of Business Development Europe,* ***EJOT***

- Modular assembly approaches, how modularity in connectors and fasteners supports scalability and reduces assembly complexity.
- Circular economy principles, exploring fastener designs that enable easy disassembly for recycling and second-life applications.
- Lightweighting strategies, examine the role of advanced materials in reducing the weight of connectors and fasteners without compromising performance.
- Recognize how advanced fastener technologies improve safety, reliability, and energy efficiency.
- Learn about insulated screws, integrated spring features, and other innovations that address dynamic and thermal loads.
- Gain insights into real-world applications of advanced connectors and fasteners in EV battery systems and high-voltage components.

19:00

Evolving xEV Battery Packs: Simplification vs. Complexity And Their Impact On Cost And Safety

Kevin Konecky, *Battery and Energy Storage Systems Consultant,* ***Total Battery Consulting***

As the electric vehicle (xEV) market evolves, manufacturers face a critical question: Will future battery pack designs become more complex to meet demands for performance and safety, or simplify to reduce costs and enable scalability? Explore the trade-offs between increasing

complexity and system simplification in xEV battery packs, analyzing the implications for cost, safety, and performance. Attendees will gain insights into emerging design strategies, material innovations, and regulatory influences shaping the future of xEV battery systems.

- Understand the Trade-Offs Between Complexity and Simplification
- Explore the drivers behind trends toward complexity or simplification in xEV battery systems.
- Analyze Cost Implications of Design Choices
- Examine Safety in Complex vs. Simplified Designs
- Explore how simplified designs can address safety while maintaining reliability.
- Gain insights into new approaches, such as cell-to-pack integration, solid-state batteries, and advanced thermal management.
- Learn how evolving safety regulations and consumer demands are influencing battery pack design strategies.
- Predict how cost and safety considerations will drive the evolution of battery pack designs in the next decade.

19:20

High-Performance Thermal Conductive Adhesives For Faster Applications And Superior Thermal Performance

Jean-Marc Pinel, *Director, Adhesives and Sealants, Automotive Coatings,* ***PPG***

The Evolving Role of TCAs in Battery Thermal Management

- How battery architecture influences the selection and performance of thermal interface materials (TIMs).
- Learn how TCAs optimize thermal pathways to improve battery safety and performance.
- Advancements in liquid-applied TCAs for faster and more efficient production processes.
- Analyze the impact of high compressibility and low-density materials on assembly and reliability.
- Gain insights into the thermal conductivity, mechanical stability, and longevity of modern TCAs.
- Achieving uniform application, handling varying process conditions, and ensuring material compatibility.
- Strategies to maintain consistent performance under demanding thermal and mechanical loads.
- Learn about innovations in lightweight TCAs, nano-enhanced materials, and automated application techniques for next-gen battery systems.

19:40

Next-Generation ATH-Based Materials For Superior Thermal Conductivity In EV/HEV Battery Modules

Mario Neuenhaus, *Senior Sales Manager,* ***HuberAdvanced Materials***

Advanced aluminum trihydrate (ATH)-based materials with optimized particle size distribution and surface modifications are breaking new ground in thermal management solutions. Explore the latest advancements in ATH-based materials, their enhanced thermal conductivity, processability, and flame-retardant capabilities.

- How ATH additives contribute to thermal conductivity and safety in EV/HEV battery modules.
- Key mechanisms by which ATH materials improve thermal conductivity and manage heat dissipation.
- Discover how particle size distribution and surface modifications improve the processability of highly loaded resins.
- Address manufacturing challenges associated with high-loading levels of thermally conductive additives.
- The latest advancements in ATH material engineering, enabling higher thermal conductivity and broader applications.
- Examine real-world applications of ATH-based gap fillers in advanced battery modules.
- A forward-looking perspective on emerging thermal management technologies and material innovations.

20:00

Thermal Management Materials For EV Battery Module & Packs: High Energy Density And Safety

Tomohiro Kawai, *PhD, Senior Chief Scientist & Leader, Product Design,* ***Mitsubishi Chemical Corp.***

Takata Nobuaki, *Senior Manager,* ***Mitsubishi Chemical Corp.***

Mitsubishi Chemical's thermal management materials for EV battery module/ packs are spotlighted for their integral role in enhancing high energy density and safety. Demonstrations of these materials' effectiveness in fast-charging and thermal stability will be conducted through simulations and test results. The key features presented include flame-retardant thermoplastic composite and inter-cell spacers. Strategies for mitigating thermal runaway will be explored.

20:20

Chair's Closing Remarks

20:25

Drinks Reception & Fork Buffet

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OFFER ENDS 27th FEBRUARY 2025

SUPER EARLY BIRD RATE
OEM RATE €500

- Prices include food & beverages, morning breakfast & coffee
- Networking breaks, coffee and snacks. Hot buffet luncheon
- Afternoon coffee break including soft drinks & snacks
- All attendee evening drinks reception – open bar

SUPER EARLY BIRD RATE
SUPPLIER RATE €700

- Prices include food & beverages, morning breakfast & coffee
- Networking breaks, coffee and snacks. Hot buffet luncheon
- Afternoon coffee break including soft drinks & snacks
- All attendee evening drinks reception – open bar

LEADING OEM'S & BATTERY DEVELOPERS PRESENT IN 2024

Battery Technologists, Leading & Emerging OEMs, Cell manufacturers, Pack Integrators:

BMW Group, **CATL,** DAF, LG, Daimler Truck, **Samsung, Ferrari, Ford, Honda,** Hyundai, INVECO Group, **Jaguar Land Rover, Mercedes-Benz AG,** Stellantis, **Toyota, Volkwagen AG,** Volvo, MAHLE, **General Motors,** FCA, Daimler AG, **Lotus, Lilium, Volvo Group, Lucid Motors,** Rivian, Renault Group, **Fisker,** Lordsdtown Motor, **EDAG Group,** Rimac Technology, **Volvo Buses, Polestar,** XPeng, **AUDI AG, Porsche,** Lion Smart, DENSO Europe, **Genesis,** Cascadian Motion, **Alcraft Motor Company,** Iveco spA, **Volta Trucks,** Webasto Group, **EVBox,** Connected Kerb, **Shell, QuantumScape,** American Battery Solutions, **Clarios, Sono Motors, Tesla, NIO, Faraday Future,** Rimac Automobili, **Nikola, Proterra,** Aptera, **Aston Martin Lagonda, Bentley Motors,** Karam Automotive, **KIA, Lamborgini, Lexus, McLaren,** Penso, **Rolls-Royce**, Skoda, Toyota, **Smart, OPEL, Peugeot,** FIAT, Mini, **Nissan, Seat,** DACIA, **Mazda, Northvolt AB,** Lithium Werks B.V., **BMZ Group,** Draxlmaier Group

THOUGHT LEADERSHIP

Position your company as a thought leader by sharing your latest innovations, insights and best practices on the electric vehicle battery recycling stage. Demonstrate your expertise through presentations, panel discussions and technical workshops to establish your company as an innovative industry leader.

MAXIMUM VISIBILITY

Showcase your brand to a highly targeted audience of battery manufacturers, OEMs, Tier 1 suppliers and recycling professionals from across the e-mobility sector. Enhance your visibility with prominent logo placement, booth displays, and speaking opportunities within the electric vehicle battery recycling community.

NETWORKING OPPORTUNITIES

Build meaningful connections and collaborations with leading experts, decision-makers and potential customers invested in e-mobility, sustainability and circular economy. The conference provides ample networking opportunities, including dedicated networking breaks, receptions and meeting with key stakeholders.

#SHOWCASE YOUR TECHNOLOGIES AND SOLUTIONS AT EV BATTERY RECYCLING USA 2025

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ATTENDEE JOB TITLE CROSS SECTION 2024

Chief Engineer, Chief Scientists, **Head of Research,** Thermal Management – Battery Systems, **Vice President Battery Cell Process & Manufacturing Engineering,** Electrochemist, Advanced Battery Cell Engineering, **Materials and Manufacturing,** Battery Module Thermal Management, **Simulation engineer/ HV Battery thermal management,** Director High Voltage Battery Systems, **Battery Management Systems Engineer,** Director Battery Pack Design and Thermal Management, **Chief Engineer,** Battery Systems Management Engineer, Sr. Adv. Battery Modeling Engineer, **Sr. Staff Battery Cell Engineer,** Senior Project Manager, **Battery Cell ManufacturingFluids and Thermal Management,** R&D Engineers, **Thermal Management Lead Engineers,** Electrified Powertrains, Battery Research and Systems Engineers, **HV Battery Design and Testing,** Chief Engineer, **Thermal Management HV Components, Thermal Management Modules Battery Electrical Vehicles,** Battery Management Systems (BMS) Designer, **Battery Management Systems (BMS) Engineer,** Chief Technology Officer, Senior Mechanical Engineer, **Materials Engineer,** Powertrain Project Management, **Senior Thermal Multi-Physics Engineer,** Energy Storage Systems (ESS) Safety Engineer, **Technical Specialist,** Hardware Engineering, Director Product Manager, **Director of Advanced Thermal Systems and Technology,** Battery Safety Engineer, **Senior Battery Technology Engineer,** Director – Manufacturing Engineering, **Senior Cell Engineer,** Lead Engineer Thermal Management System, **Thermal Management Research Engineer,** Projecthouse Thermal Management Modules, **Head of EV Battery Systems,** Thermal CFD Engineer, Predictive Thermal Management High-Voltage Battery, **Senior Engineer – Virtual Design Development and Verification, Electrification Battery Thermal, Technical Lead – Thermal Management,** Analyst – Battery Thermal Management, **Team Leader – Battery Modeling and Diagnostic,** R&D (Battery Thermal System), Thermal Management CAE Engineer, **Senior Manager- Battery Thermal Simulations,** Battery Packs – Electrical, **Mechanical Thermal components Team Leader,** HV Battery Cell Vent Management Supervisor, Senior Director, **Battery Storage,** Platform Battery Thermal Management Process engineering, **Director Thermal Management HV-Battery,** Director Battery System Product & Platform Management, **EV-Battery Production and Production Planning,** Thermal Systems Architecture Engineering, **Thermal Simulation Lead,** Director of Battery Cell and Module Technology

