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2024 XEV

BTM | USA

BATTERY THERMAL MANAGEMENT INNOVATION SUMMIT

BEYOND THE MATERIAL | REDUCING COST & COMPLEXITY AT SYSTEM LEVEL



1 DAY

TECHNICAL FOCUS



40+

SPEAKERS



60+

EXHIBITORS



400+

DELEGATES

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CUTTING-EDGE INSIGHT DELIVERED BY EXPERTS AND THOUGHT LEADERS INCLUDING:

Our programs are diligently researched and curated in partnership with the Automotive Manufacturing community, to ensure they address the most pertinent current challenges and key investment areas. This level of detail is part of our pioneering approach to content and ensures that we attract the highest level of attendees.



Bob Galyen
Conference Chair:
Retired Chief Technical
Officer | CATL



Arnaud Gug
Director of Product
Management
| EJOT ATF



Mekiyah Bailey
Field Application
Engineer II
| Parker Lord



David Brandt
Technical Sales Manager
E-Mobility | SIKA



Kevin Hales
Automotive Innovation
Mngr, Powder Coatings
| AkzoNobel



Domenico Solazzo
Vice President - Product
Segment Thermal Management
| WOCO Group



Bret Trimmer
Applications
Engineering Manager
| NeoGraf Solutions



Tom Stellmach
Head of Mubea Rollbonding
Products (Director/General
Manager) NA | Mubea



Wim Dexters
Sales Engineering
Products (Director, Americas
| bdrtronic Americas



Priyanka Murthy
Business Development
Engineer, EV Battery
| tesa



Gregory Green
Director of Automotive
Marketing
| Vicor Corporation



Alex Kosyakov
Founder & CEO
| Natrion Inc.



Laura Polchinski
Technical Laboratory Chemist
| University of Illinois Urbana-
Champaign / Wacker Chemie



Adrian Serna
Business Development
Specialist
| AdvanTech International



Priyanka Bhattacharya
Sr. Manager, Battery R&D
| Blue Current, Inc.



Rich Byczek
Global Technical Director,
Transportation Technologies
| Intertek



Adam Forti
Global Business
Development Engineer
| Stanley Black & Decker, Inc.



Khaled Rashwan
Automotive OEM Business
Development Manager
| Evonik



Tom Clark
NA Battery Technology
Leader | DuPont



Khoren Sahagian
Key Account Technologist
and Business Development
Manager | plasmatreat



Haixia Deng
VP of Cathode
| Ascend Elements



Sumin Zhu
Co-founder and CEO
| Ampcera Inc.



Thomas Klama
Application Engineer
| ARNOLD Fastening Systems, Inc.



Joerg Pecho
Director Functional Parts
Pre-Series Production
| ARNOLD Fastening Systems, Inc.



Rutooj Deshpand
Sr Manager, Battery Modeling
and Integration
| Rivian



Ahmad A. Pesaran
Chief Energy Storage Engineer
| National Renewable Energy
Laboratory



Asim Hussain
Chief Marketing Officer
| QuantumScape



Yuhang Chen
HV Battery Design
Release Engineer
| Canoo

DON'T MISS OUT! OUR SAVER RATE ENDS 26TH APRIL 2024

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battery-thermal-management-usa.com

JOIN NA'S LARGEST ANNUAL EVENT FOR xEV BATTERY THERMAL MANAGEMENT EXPERTS

Directly Addressing The Key Challenges, Technology Strategies, Engineering, Material And System Solutions To Optimises Battery Life, Safety & Range

Beyond The Material: Reducing Cost & Complexity At System Level

Battery Thermal Management Innovation USA is the #1 conference & exhibition to match OEM and Battery Manufacturer requirements with expert material, solution, and technology providers.

Following the success over the past 4 annual events, this unique Californian meeting has grown exponentially becoming known as the industry best-in-class technical summit and foremost communication network for BTM practitioners, and in particular Battery Manufacturers and OEMs.

BTM Innovation USA is North America'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 May for North America's largest technical conference for battery thermal management professionals; and foremost communication network for OEMs, technology and solutions providers alike.

KEY 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

Heat Sink Optimization

Evaluating Difference Platforms And Architectures For Battery Integration

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

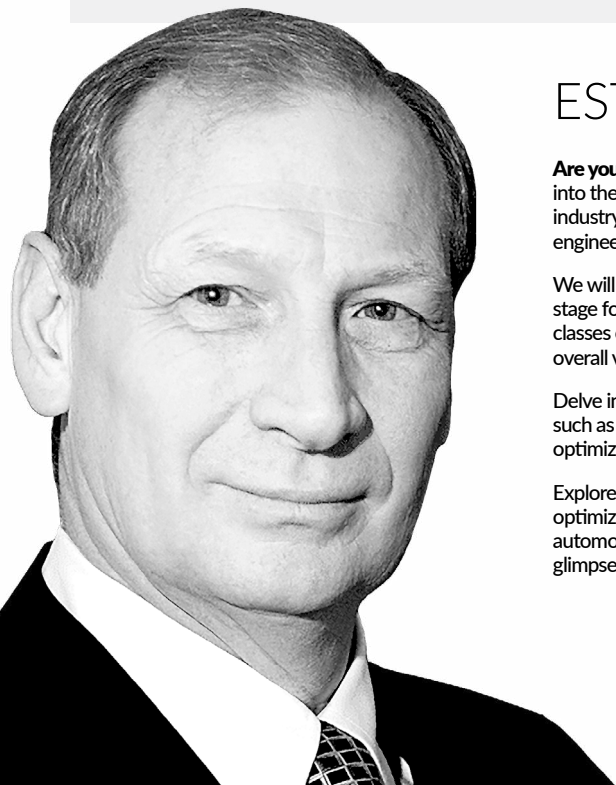
Simulation And Modelling For BEV Safety Optimization: Predicting Thermal Performance And State Of Health Of Battery Pack

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)



ESTEEMED CONFERENCE CHAIR 2024

Are you ready to explore the forefront of electric vehicle innovation? Join us for a dynamic conference that delves into the heart of EV battery technology – optimizing the whole vehicle architecture at a system level. During this industry leading conference, we will unearth the strategies and insights that are shaping the future of automotive engineering.

We will uncover the challenges and triumphs of optimizing system integration on a whole vehicle scale, setting the stage for a new era in automotive engineering. Explore the cutting-edge design philosophies tailored to various classes of Battery Electric Vehicles, and gain a deeper understanding of how these philosophies influence the overall vehicle design.

Delve into the intricate relationship between emerging design philosophies and their impact on critical aspects such as battery pack integration and thermal optimization; and learn how to seamlessly incorporate cost optimization into whole vehicle design concept.

Explore the intricacies of battery pack integration, while discovering the latest breakthroughs in thermal optimization and multi-function component integration. Get ready to be at the forefront of innovation in the automotive industry. This conference always promises to deliver fresh insights, groundbreaking strategies, and a glimpse into the future of electric vehicle architecture optimization. Don't miss out – **secure your seat today!**

BOB GALYEN
RT. CTO CATL, CHAIRMAN EMERITUS,
NAATBATT



07:45



Registration | Morning Reception

Breakfast Buffet – Continental Breakfast

08:30

Chair's Opening Remarks: Integrated Design Strategies: System Integration To Cost Optimization

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

- Understand system integration optimization issues at a whole vehicle level and their significance in enhancing the performance and efficiency of battery electric vehicles (BEVs)
- Explore emerging design philosophies tailored for different classes of BEVs and their implications on overall vehicle design, including battery pack integration and thermal optimization
- Analyze the impact of design philosophies on battery pack integration, attachment methods, thermal optimization techniques, and the integration of multi-function components
- Discuss strategies for incorporating cost optimization into whole vehicle design concepts to reduce the price of BEVs without compromising quality or performance
- Examine the role of computational modeling and simulation in evaluating integrated design strategies and predicting the performance of BEV systems
- Identify innovative approaches and best practices for achieving seamless battery pack integration, efficient thermal management, and the integration of multi-function components to maximize vehicle efficiency and reliability

08:50

Enhancing Battery Technology Management: Bridging the Gap Between Cell Degradation and Performance

Rutooj Deshpande, Sr Manager, Battery Modeling and Integration, Rivian

In the pursuit of advancing battery technology, one critical challenge arises: the coupling between cell degradation/performance and Battery Thermal Management (BTM). This presentation delves into the complexities of this relationship and proposes strategies to address this challenge, ensuring optimal battery performance and longevity.

- Understanding the intricate interplay between cell degradation/performance and BTM
- Identifying the shortcomings of solely relying on BTM system design rather than addressing underlying cell issues
- Exploring innovative approaches to mitigate the impact of cell degradation on overall battery performance, leading to enhanced reliability and efficiency

09:10

Maximizing Lithium-Ion Battery Safety: Strategies For Enhanced Performance And Reliability

Mekiyah Bailey, Field Application Engineer II, Parker Lord

- Understand the impact of increased energy density in lithium-ion batteries on performance and longevity
- Identify the inherent risks associated with high energy density in lithium-ion batteries, particularly thermal runaway, and its implications for EV safety
- **Explore comprehensive strategies for enhancing battery safety, including:**
 - Battery cell chemistry optimization
 - Cell design improvements
 - Advanced thermal management techniques
 - Utilization of advanced materials in battery packaging
 - Implementation of sophisticated battery management systems
- **Gain insight into EV battery safety by:**
 - Surveying different types of batteries commonly used in EVs and their associated hazards
 - Analyzing root causes of battery failures and identifying effective solutions for ensuring battery safety
 - Discuss effective strategies for preventing or mitigating battery thermal events, considering the importance of proactive measures in safeguarding EV drivers and passengers

09:40

Maximizing Efficiency & Unlocking Battery System Performance Whilst Driving Down Cost Of Battery Pack Production

David Brandt, Technical Sales Manager - E-Mobility, SIKA

- Unlocking performance in your battery thermal management system utilizing state of the art gap fillers and thermally conductive adhesives
- Enabling maximum performance whilst maintaining efficient manufacturing processes to drive down the costs of battery pack production
- Reduce weight and improve efficiency utilizing the latest materials to market in order to meet the demands of the latest adoptions in the BEV landscape
- **Design by nature:** Using nature to influence design in battery thermal management?
- **Materials:** Finding the sweet-spot for thermal conductivity
- **Sustainability:** How solutions can enable repair, reuse and recycling

10:00

Exploring The Boundaries Of Multi-Material Assembly Through Cutting-Edge Friction Welding Elements Technology

Arnaud Gug, Director of Product Management, EJOT Industrial Division

- Learn about the crucial role of innovative fastener solutions in adapting to new multi-material battery structures and ultra-high strength steels, while maximizing lightweight materials
- Understanding the necessity for reliable production processes capable of seamlessly integrating with diverse materials and thicknesses to meet the demands of high-volume battery manufacturing
- Explore the game-changing benefits of a rapid and straightforward friction welding process, slashing cycle times without any surface preparation or pre-drilled holes

- Unlock the potential of minimal heat affected zone and compact profile in friction welding, coupled with its versatility with various adhesives, revolutionizing manufacturing efficiency

10:20

Balancing Component Design, Processability, And Performance Requirements In The Selection Of Thermal Interface Materials

Laura Polchinski, Technical Laboratory Chemist, BS Chemistry, University of Illinois Urbana-Champaign / Wacker Chemie

When selecting a thermal interface material: geometry, surface area, flowability, process cycle time, abrasiveness, material density, viscosity, and thermal conductivity must all be considered. Elastic silicone polymers maintain intimate surface contact between the heat source/heat sink reducing the probability of delamination during thermal cycling. System optimization utilizing the intrinsic properties of dispense applied silicones can meet thermal heat transfer requirements while adding lower density, higher throughput, lightweighting benefits.

- Silicone chemistry offers unique elastic characteristics for enhanced safety, service life and durability
- Optimizing density, viscosity, thermal conductivity, and dielectric insulation for system performance, process speed, and weight reduction
- Silicone Solutions for Battery Assembly in EV's and its advanced properties at high temperature
- Future Trends and Opportunities in Low Density Thermal Interface Silicone for Battery Safety

10:40

Surface Free Energy (SFE) - What Is It And How Does It Impact Future Coating Design?

Kevin Hales, Automation Innovation Manager, Powder Coatings, AkzoNobel

- Gain a comprehensive understanding of Surface Free Energy (SFE) and its significance in the development of coating attributes for battery architecture
- Explore the evolving landscape driving the shift towards considering SFE in coating design, recognizing the pivotal role it plays in enhancing coating performance and longevity
- Analyze the impact of SFE on coating properties beyond aesthetic requirements, including its influence on corrosion resistance, chip protection, UV resistance, and overall durability
- Investigate emerging trends and technologies in coating formulation and application methods aimed at optimizing SFE to meet evolving performance demands in diverse applications
- Assess the implications of incorporating SFE considerations into coating design strategies, highlighting the potential for improved coating performance and extended service life in various environments
- Discuss practical strategies and case studies illustrating the successful integration of SFE principles into coating development processes, providing insights for future innovation and application

11:00

AkzoNobel

Morning Networking Break

11:40

Leveraging Plasmatrement For Superior Thermal Management In EV Battery Production

Khoren Sahagian, Key Account Technologist and Business Development Manager, **Plasmatrement**

- Analyze the role of plasmatrement methodologies in modifying surface properties to enhance thermal conductivity within electric vehicle (EV) battery modules and packs
- Explore the mechanisms through which plasmatrement optimizes interfacial bonding between materials, bolstering heat transfer efficiency and thermal performance
- Assess the impact of plasma-induced surface modifications on the microstructure and morphology of materials used in battery module construction, elucidating improvements in thermal dissipation pathways
- Investigate the influence of plasmatrement parameters on the formation of functional surface layers, tailored to mitigate thermal resistance and promote uniform heat distribution
- Examine case studies and empirical data illustrating the efficacy of plasmatrement techniques in achieving superior thermal management outcomes in the production and assembly of EV battery systems

12:00

Thermal Innovations For EV Battery Safety: Unveiling Next-Gen Solutions

Adam Forti, Global Business Development Engineer, **Stanley Black & Decker, Inc.**

- **Addressing Critical Challenges in Li-Ion Batteries:** Safety, performance, lifetime, costs, and sustainability, and explore how effective thermal management can mitigate these challenges
- **Understanding the Effects of Charging and Discharging Cycles:** Learn about the volumetric changes, swelling, and contraction experienced by batteries, especially in prismatic cells, during charging and discharging cycles, and their implications for battery performance and safety
- **Exploring Novel Approaches in Thermal Management:** Discover innovative approaches such as integrating thermal barriers with swelling compensators to address thermal propagation risks and battery cell swelling, and understand the effectiveness of these solutions through experimental investigation and numerical simulations
- **Optimizing Thermal Management Solutions:** Gain insights into optimizing the use of swelling compensators and thermal barriers to effectively mitigate thermal propagation risks, leading to improved safety, performance, and longevity of EV batteries
- **Advancing Thermal and Pressure Management Strategies:** Explore advanced thermal and pressure management strategies in battery packs, to enhance the safety, reliability, and efficiency of EV batteries

12:20

Thermal Management Strategies For Faster Charging, Extended Range, And Propagation Prevention

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

- Explore the challenges and opportunities as we delve into cutting-edge technologies, strategies, and best practices to optimize thermal performance in EVs

- Review the latest goals and best current methods for EV, ePlane, eVTOL, and Maritime battery thermal management
- Examine the five factors that allow cells to charge quickly and discuss the single factor that pack designers can control
- Unravel the secrets to maximizing driving range through innovative thermal management materials
- Explore the four primary strategies battery pack manufacturers use to prevent Thermal Runaway and the impact of each on fast charging, cell performance, and cell lifetime
- For applications where smaller-pack-size and lighter weights are essential, flexible graphite will be discussed as a direct substitute for aluminum

12:40

Battery Pack Architectures Utilizing Rollbonded Cooling Plates

Tom Stellmach, Head of Mubea Rollbonding Products (Director / General Manager) NA, **Mubea**

- Understand the advantages of rollbonded cooling plates in automotive battery applications, particularly in heat transfer optimization
- Explore the manufacturing process of rollbonded cooling plates, emphasizing diffusion bonding of aluminum coils through high force rolling, and their superior performance compared to traditional brazed plates
- Analyze the versatility and sustainability of rollbonded cooling plates, highlighting their formability, weldability, and single-alloy recyclability, which streamline manufacturing and recycling processes
- Investigate diverse implementation strategies enabled by rollbonded cooling plates for battery heat transfer, including cooling tubs and module integrated designs, tailored to optimize heat transfer efficiency and withstand crash load cases
- Examine prospective battery pack architectures utilizing rollbonded cooling plates, assessing their benefits and limitations in addressing specific challenges such as heat transfer optimization, pressure drop minimization, and packaging constraints
- Discuss the environmental advantages of rollbonded cooling plates, including their contribution to waste reduction and environmental sustainability through single-alloy recyclability
- Explore future aspirations in battery pack recycling, envisioning the recycling of entire battery boxes as a single alloy, and highlighting comparative process routes and value chains for enhanced sustainability

13:00

Advancing Thermal Management Battery Design With Adhesive Tape Solutions

Priyanka Murthy, Business Development Engineer, EV Battery, **tesa tape**

- **Streamlining Battery Pack Design:** Maximizing Weight and Space Efficiency with Adhesive Tape Venting Solutions
- **Ensuring Safety and Reliability:** Electrical Insulation of Battery Cells and Components
- **Protecting Critical Components:** Busbar Shielding and Flame Retardant Adhesive Tapes
- **Advanced Integration:** Mounting Mica & Aerogels Materials for Enhanced Thermal Performance in Battery Packs

13:20

Innovative Solutions For Thermal Management: Lightweight Tubing Systems

Khaled Rashwan, Automotive OEM Business Development Manager, **Evonik**

- The presentation will provide an overview of key approaches to developing innovative material and system solutions for batteries
- Understand the development approaches for innovative material and system solutions tailored to battery applications, leveraging expertise in specialty polyamides and automotive fluid handling systems
- Explore solutions for thermal management systems for BEV's, emphasizing the importance of lightweight and high-performance tubing systems.
- Examine the process of material and tubing system testing, and analyze the results to determine compliance with key performance requirements, ensuring reliability and efficiency in thermal management solutions
- Gain insights into power bus bar materials designed for high-voltage applications within BEVs, highlighting their role in enhancing safety and performance in battery systems
- Learn about ongoing efforts by specialty chemistry groups to innovate specialty polyamides, contributing to the electrification of the automotive industry by providing advanced solutions to automotive Tier suppliers and OEMs

13:40

Networking Lunch Break

14:40

Navigating Global Regulatory Requirements For Thermal Propagation

Rich Byczek, Global Technical Director, Transportation Technologies, **Intertek**

Thermal propagation testing and performance have been key challenges in stationary storage and building codes, and quickly gaining traction in the EV field. While propagation has long been a part of EV battery development, several global and international regulations are codifying Thermal Propagation as mandatory requirement. This talk focuses on the implementation in UN 38.3/ Dangerous Goods regulations and UNECE R100/E-marking requirements for vehicles.

- Explore R100 Rev 3 Thermal Propagation requirements
- Discover UN 38.3 T9-T13 test development and classification
- Understanding the core methodology and criteria
- Discuss timelines for implementation

15:00

High Volume Manufacturing Challenges For Thermal Interface Materials

Tom Clark, NA Battery Technology Leader, **DuPont**

One- and two-component adhesives have been used successfully in automotive manufacturing for decades using high volume automated dispensing equipment. However, new material properties and performance requirements for adhesives used in the electric vehicle battery pack assembly process require the reimagining of guidelines for dispensing of adhesives and thermal interface materials.

- Identify the essential characteristics of a stable and dispensable thermal interface material, including properties such as thermal conductivity, adhesion strength, and stability under varying operating conditions
- Understand the specific physical properties required for thermal interface materials to be suitable for high-volume manufacturing processes, ensuring consistency, reliability, and scalability in production
- Explore how enhancing the efficiency of production processes can serve as a pivotal factor in reducing costs associated with manufacturing thermal interface materials, highlighting strategies for streamlining workflows, minimizing waste, and optimizing resource utilization

15:20

Processing Of Foams For Thermal Propagation Protection:

Wim Dexters, Sales Engineering Director, **bdtronic, Americas**

- Explore the fundamental principles underlying the generation of foams for thermal propagation protection in battery modules, including the key mechanisms involved in foam formation and their significance in preventing thermal runaway
- Analyze various concepts and techniques for processing foams in battery applications, elucidating their individual advantages and disadvantages in terms of thermal management, adhesion, and overall performance
- Understand the critical parameters and considerations involved in the selection and application of foaming adhesives for thermal propagation protection, including factors such as material compatibility, processing conditions, and environmental considerations
- Assess the impact of foam processing techniques on the structural integrity and reliability of battery modules in automotive electric vehicles, highlighting best practices and potential challenges faced by battery engineers and manufacturers
- Gain insights into innovative approaches and emerging trends in foam processing technology for thermal propagation protection, with a focus on enhancing efficiency, performance, and safety in automotive battery applications

15:40

Battery Cooling: Harnessing Laser Welding For Stronger, Lighter, Sustainable Aluminum Cooling Plates

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

- Explore the advantages of laser welding, including enhanced strength, reduced weight, and cost savings, achieved through the utilization of robust yet affordable materials
- Examine the environmental advantages of ground breaking laser welding technology, particularly in terms of reducing the CO2 footprint, and its contribution to sustainability efforts
- Gain insight into the practical applications of laser-welded aluminum cooling plates across various industries, understanding their potential market impact and benefits
- Analyze the trajectory of laser welding technology, forecasting its potential to reshape the landscape of battery cooling solutions and its broader implications for industrial applications

16:00

Navigating Challenges In Battery Assembly: Joining And Sealing Solutions Through Efficient And Sustainable Practices

Thomas Klama, Application Engineer, **ARNOLD Fastening Systems, Inc.**

Joerg Pecho, Director Functional Parts Pre-Series Production, **ARNOLD Fastening Systems, Inc.**

- Identify the challenges inherent in electric vehicle battery manufacturing, focusing on durability and leak resistance, and the need for meticulous assembly practices
- Navigate the complexities associated with joining thick materials and high-strength steels in battery pack assembly, including integration of adhesives and mixed material joining
- Explore innovative solutions provided by specialized fasteners and nuts to address material complexity and achieve enhanced sealing protection in battery assembly applications
- Understand the principles and benefits of cold forming processes in producing customized multifunctional parts without machining, utilizing materials such as steel, stainless steel, copper, and aluminum
- Examine practical applications of cold forming techniques, including over 10 forming stages for complex components relevant to e-mobility and battery technologies, automatic assembly of sealing elements, leak-tightness inspection, and traceability markings
- Evaluate the versatility of parts manufactured through cold forming, such as bushings and overmolded solutions, in various materials, enhancing design flexibility and performance in battery applications
- Recognize the potential for reducing CO2 emissions through sustainable manufacturing practices, including the replacement of machining processes with cold forming and the promotion of lightweight engineering in battery assembly

16:20

Enhancing Converter Power Density And Flexibility With High Power Density Modular Power Conversion Devices

Greg Green, Director of Automotive Marketing, **Vicor Corporation**

- Opportunities to reduce vehicle weight go beyond battery system improvements and involve system integration with the power distribution network for total vehicle system improvements
- Using the highest power density technology for DCDC conversion allows DCDC converters to be downsized and incorporated into the battery case, for weight and package improvements
- Recognize the impact of reducing the weight of the thermal management system for the battery and power distribution system on improving consumer attractiveness towards BEVs
- Explore opportunities for reducing vehicle weight beyond battery system enhancements, including system integration with the power distribution network for overall vehicle system improvements
- Discover the benefits of utilizing high-power density technology for DCDC conversion to downsize DCDC converters and integrate them into the battery case, leading to weight and package improvements
- Learn how this technology facilitates the implementation of the 48V zonal architecture, resulting in reduced thermal load for the battery cooling system and driving cost and weight savings at the vehicle level

16:40

Unlocking The Potential Of Artificial Intelligence Through BTM System Small Parts

Domenico Solazzo, Vice President - Product Segment Thermal Management, **Woco Group**

Embark on a journey through the nexus of innovation as we dissect the BTM system's small yet potent components, unleashing the potential of artificial intelligence. This presentation unveils the critical interplay between classic coolant architectures, sealing mechanisms, and the synergy of small parts, propelling automotive performance and sustainability to unprecedented heights

- Examine classic coolant architectures to understand their role in automotive thermal management systems and their impact on performance and sustainability
- Investigate the significance of small sealing components within the BTM system and their substantial influence on overall system efficiency and reliability
- Explore the intricate interaction between small parts within the BTM system, highlighting how their synergy enhances performance and sustainability in automotive applications
- Analyze the integration of artificial intelligence (AI) into BTM systems, identifying opportunities for optimization and advancement enabled by AI-driven insights and decision-making processes

17:00



Networking Break

17:40

Solid-State Batteries: Transforming Battery Thermal Management For Electric Vehicles

Moderator:

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

Panelists:

Alex Kosyakov, Founder & CEO, **Natrion Inc.**
Priyanka Bhattacharya, Sr. Manager, Battery R&D, **Blue Current, Inc.**

Sumin Zhu, Co-Founder and CEO, **Ampcera Inc.**

Asim Hussain, Chief Marketing Officer, **QuantumScape**

Join our industry experts as they explore the transformative impact of solid-state batteries on EV battery thermal management. As the demand for sustainable energy solutions intensifies, the session critically assesses the impact of SSB on overall system design, complexity, and cost at the vehicle level. The safety of hybrid/semi-solid systems and lithium metal systems is scrutinized, with a nuanced discussion on defining safety in this evolving landscape. Additionally, the panel investigates whether SSB enables new material combinations and performance metrics that can enhance energy, thermal stability, and safety, surpassing the limitations of traditional lithium-ion batteries

- Assessing the impact of Solid-State Batteries on overall system design, complexity, and cost at the vehicle level
- Scrutinizing the safety aspects of hybrid/semi-solid systems and lithium metal systems, while delving into the evolving definition of safety in this context

- Exploring the potential of SSB in enabling new material combinations and performance metrics, surpassing the capabilities of traditional Lithium-Ion Batteries

18:20

Navigating Li-ion Battery Safety: Understanding Thermal Runaway And Mitigation Strategies

Ahmad A. Pesaran, PhD, Chief Energy Storage Engineer, National Renewable Energy Laboratory

- **Introduction to Li-ion Batteries (LIBs):** Fundamentals, Chemistries, and Cell Designs
- Approaches for Designing Safer Cells and Modules—Recent Progress of EV Pack and System Safety
- **Safety and Abuse of LIBs:** Fires, Causes of Thermal Runaway, Abuse Characterization and Testing, Modeling/Simulation Tools
- Recent Progress in Designing Safer LIB Cells and Modules for Electric Vehicle (EV) Packs and Systems
- Understand the fundamental causes of safety issues leading to thermal runaway and fires in lithium-ion batteries (LIBs)
- Explore abusive behavior of cells and packs through characterization, testing, and modeling/simulations
- Review approaches to reduce safety risks and detect impending failures in LIBs

18:40

Driving Sustainable Innovation: Research And Development In Battery Thermal Management And Li-ion Battery Recycling

Haixia Deng, VP of Cathode, Ascend Elements

- Understand the importance of Battery Thermal Management (BTM) in the context of Li-ion battery recycling
- Explore the technical processes involved in pyrometallurgical and hydrometallurgical recycling of Li-ion batteries
- Learn about innovative approaches and emerging technologies in Li-ion battery recycling, with a focus on sustainability and environmental impact

- Gain insights into the engineering principles behind the transformation of spent batteries into new materials suitable for reintroduction into the battery supply chain
- Discuss the challenges and opportunities in scaling up Li-ion battery recycling processes to meet the growing demand for sustainable battery materials
- Examine case studies and real-world examples of successful implementations of BTM in Li-ion battery recycling initiatives
- Explore the role of research and development in driving advancements in BTM and sustainable battery materials engineering for Li-ion battery recycling

19:00

Fireside Chat With OEM

Moderator: Bob Galyen

Interviewee: TBC

Bob Galyen, renowned for his expertise in the field, is set to engage in a captivating interview with a yet-to-be-confirmed OEM expert. Together, they will delve into the intricate landscape of OEMs and Battery Thermal Management.

This discussion promises to shed light on the pressing challenges and pain points that currently confront the industry. From navigating technological advancements to addressing environmental concerns, the conversation will explore the multifaceted dynamics shaping the present scenario.

Moreover, Bob and his guest will peer into the horizon, offering insights into the anticipated future developments and innovations in the realm of Battery Thermal Management. As they unravel the complexities and possibilities, this interview is poised to be a compelling exploration of the past, present, and future of OEMs and their approach to managing battery temperatures.

19:20

OEM Customer Panel

Moderator: Bob Galyen, CTO, NAATBatt, Retired CTO, CATL

Panelists:

Rutooj Deshpande, Sr Manager, Battery Modeling and Integration, Rivian
Yuhang Chen, HV Battery Design Release Engineer, Canoo

Join us for an engaging round table panel discussion at Battery Thermal Management Innovation Summit Palo Alto, where leading OEMs will converse with Bob Galyen to delve into the complexities of Battery Thermal Management (BTM) within the automotive industry. With electric vehicles (EVs) gaining traction globally, the efficient management of battery temperatures stands as a critical frontier for innovation and sustainability.

In this dynamic session, esteemed representatives from prominent OEMs will share insights into the current landscape of BTM, highlighting the myriad challenges and pain points they face. From concerns over thermal runaway and battery degradation to the optimization of cooling systems in diverse operating conditions, participants will illuminate the multifaceted hurdles shaping the BTM industry today.

Moreover, the panelists will collectively gaze into the future, offering prognostications on the technological advancements poised to revolutionize BTM strategies. From novel cooling technologies to predictive analytics and adaptive thermal management systems, attendees will gain invaluable foresight into the innovative solutions driving the next phase of EV development.

Don't miss this opportunity to gain firsthand perspectives from industry leaders, explore emerging trends, and envision the future trajectory of Battery Thermal Management in the automotive sector. Join us for an insightful dialogue that promises to illuminate the challenges, opportunities, and technological advancements shaping the future of electric mobility.

19:50

Chair's Closing Conference Summary

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

20:00

All Attendee Drinks Reception



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LEADING OEMs & BATTERY DEVELOPERS PRESENT LAST YEAR

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

Lucid Motors, **Rivian**, ONE | Our Next Energy, **Tesla**, Ford, **GM**, **Stellantis**, **Amazon**, **BDTRONIC**, **Apple**, Lyft, AVL, **BMW**, Google, **BrightVolt**, JLR, BYD, **CATL**, **Clarios**, **Cummins**, **NIO**, SERES, **MAHINDRA AUTOMOTIVE NORTH AMERICA**, Custom Cells, Daimler, EaglePicher, **Samsung**, EnerSys, BYTON, **ENOVIX**, **Uber**, EnPower, EoCell, **Polestar**, **Canoo**, Factorial, **FISKER**, First National Battery, **Fluence**, **Gogoro**, Gotion, CARESOFT, Group14, GS Yuasa, **Harley Davidson**, **Honda**, **Hyundai**, John Deere, LG, **MATHWORKS**, **Lion Electric**, **Mercedes Benz**, Milwaukee Tool, **Mitsubishi**, **Natron Energy**, Nissan, Panasonic, **Polaris**, **PolyPlus**, Porsche America, QuantumScape, **Robert Bosch**, **Rolls Royce**, SAFT, Sion Power, **SIONIC Energy**, **DUPONT**, Solid Power, Solid State Battery, **TRUMPF**, South 8 Technologies, **Lamborghini**, StoreDot, **DASSAULT SYSTEMES**, Teledyne, **Texas Instruments**, **Toshiba**, **Toyota**, Triathlon **Batterien**, **Volkswagen**, Volvo, **Yokohama**, AMPCERA, ASPEN AEROGELS, **Ferrari**, AVERY DENNISON, **BASF**, A123 Systems, ABB, **Daimler Truck North America**, Morgan Advanced Materials, SCANIA, **Total Energies**, Wevo



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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 Manufacturing Fluids 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

OEM/Battery Mnf. **\$700**

Vendor/Supplier **\$1,000**

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- All attendee evening drinks reception - open bar

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