Thermal Management Systems and Materials 2023

itB GROUP
when technology matters

In-person June 15, 2023

The Sheraton Detroit Novi Hotel · Novi, MI USA

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TI Fluid Systems

Zi Zoppas Industries
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Register On-line at www.itbgroup.com

Thermal Management Systems and Materials 2023

7:30 a.m. **Registration, Networking and Continental Breakfast**

8:20 a.m. **Welcome and Opening Remarks: Thermal Systems and Component Priorities**
Mr. Sean Osborne, Vice President - ***The ITB Group***

Vehicle Thermal Systems

8:30 a.m. **Selection and Evaluation of Thermal Interface Material Through Simulation and Testing in ADAS cameras**
Chirag Hiremath, Principal Thermal Engineer and Aravinda Bommareddy, Principal Engineer - ***ZF***
An overview for selecting Thermal Interface materials (TIM) for ADAS cameras will be presented. An outline of essential properties to be assessed through simulation and testing to ensure TIM reliability and performance will be highlighted, and a discussion of TIM process qualification, which clarifies how thermal dissipation works for the Eye-Q chip will be provided.

9:00 a.m. **The Expanded Application Demands for EV Thermal Management**
Jason Blume, Product Marketing Manager,Temperature and Pressure Sensor Business Group
TDK Electronics
Proper thermal management using NTC sensors helps address the thermal challenges for battery, e-drive, inverter, cabin comfort, and charging systems of xEVs. This presentation will describe how to measure system temperatures, challenges to heat pump and battery thermal systems, plus sensor requirements and solutions for EV applications.

9:30 a.m. **Addressing Three Different Thermal Fluid Categories in E-Mobility Applications**
Ed Eaton, US OEM Support Representative, Tom Lansbergen Area Sales Manager, e-Fluids Project Lead, and Dr. Sander Clerick, Development Chemist
Arteco Coolants
Three distinct types of thermal fluids tailored to different e-mobility thermal system architectures (HEV, BEV, and FCEV) will be presented. The development of each technology is reviewed including heat transfer needs, discovery and description of problems to be addressed, research, development, test results, and benefits.

10:00 a.m. **Networking Break**

10:45 a.m. **Improving BEV Thermal System with a Multi-Way Coolant Valve**
Adrien Pleuhs, Product Line Engineer
Bontaz
This presentation will describe how a single LIN rotary valve replaces multiple discrete coolant valves, thereby simplifying and improving functionality of a BEV coolant system. A case study based on a VW MEB platform vehicle will demonstrate the benefits.

11:15 a.m. **Addressing Thermal Management through Interior Thermal Surfaces and Coolant Control Hub**
Jillian Cooper, Marketing and Business Strategy Director, Interiors - ***FORVIA Faurecia*** *and Nicholas Jordan, Product Line Director, Thermal Management -* ***FORVIA HELLA***
This presentation spotlights two technologies for improving electric vehicle usability and sustainability. Thermal interior surfaces offer improvements in comfort and energy management and will redefine EV HVAC system design. Furthermore, HVAC fluid systems for EVs are becoming more complex, but a centralized integrated single module offsets the complexity while improving performance such as EV range.

12:00 p.m. **Electric Vehicles - Heating Technologies and Systems**
Alberto Rizzetto, Sales Manager Automotive
Zoppas Industries
Heating systems are a fundamental requirement for EVs to ensure operation and comfort, but they must be optimized to protect energy efficiency. This presentation focuses on the fast evolution of battery and cabin heating technologies, as well as other key functions, spurred by the acceleration of vehicle electrification.

12:30 p.m. **Lunch**

1:30 p.m. **CARB's Advanced Clean Cars II Regulations**
Ryan Hart, Air Resources Engineer
California Air Resources Board (CARB)
By 2035 all new passenger cars, trucks and SUVs sold in California will emit zero emissions. The Advanced Clean Cars II regulations augment the state's growing zero-emission vehicle market and robust motor vehicle emission control rules, setting more aggressive tailpipe emissions and 100% zero-emission requirements. This program review includes highlights of zero-emission vehicle assurance measures, which set minimum warranty and durability, plus increased serviceability and battery labeling provisions.

Exhibitors To-Date:

- **Ascend Performance Materials**
- **Bontaz**

(continued)

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

Thermal Management Materials

2:00 p.m. **Sustainable and Lightweight Tubing Systems Based on Specialty Polyamides**
Dr. Christian Kochanek, Business Development Manager
Evonik Corporation
This presentation provides an overview of specialty polyamide cooling line systems developments for ICEs and BEVs and includes a comparison of technical benefits between alternatives. Test results and performance advantages of extruded thermoplastic air conditioning tubing systems will be highlighted. Additionally, a BEV case study will show the benefits of these technologies to meet mass and sustainability targets.

2:20 p.m. **High-Performance Carbon-Based Solutions for Automotive Thermal Management**
Jérôme Crépin-Leblond, Leader Conductive Polymers Research and Development
Imerys Graphite & Carbon
Imerys C-THERM graphite provides high thermal and electrical conductivity at low loadings which provides flexibility for material formulations. C-THERM based compounds ensure high performance thermal management of safety-critical devices such as sensors, ECUs, LEDs, batteries, and fuel cells; as well as for new Joule heating effect cabin comfort components.

2:40 p.m. **High-Performance Materials for Next Generation Automotive Applications**
Stephen Denny, Application Development Engineer
EMS-GRIVORY
Developments of PPA and other high-performance polyamide materials for next generation automotive and thermal system applications will be presented. Material solutions to overcome industry challenges such as laser welding will be highlighted.

3:00 p.m. **Innovative Long Chain Polyamide Solution for Tubing in the EV Coolant Market**
Dr. Jacob Ray, Specialty Polyamide Technology Manager
Ascend Performance Materials
Ascend Performance Materials has developed an innovative long chain polyamide (LCPA) for electric vehicle flexible tubing that couples LCPA's inherent properties with advancements for improved flexibility. This presentation will describe the combined property advantages discovered through this new generation material development.

3:20 p.m. **Networking Break**

Battery Thermal Solutions

3:40 p.m. **Heat Transfer Enhancement of a Metal-Plastic Hybrid Cooling Plate**
Dr. Tingwen Li, Sreekanth Pannala, Dinesh Munjurulimana, and Carlos Pereira
SABIC
A hybrid cooling plate for an EV battery pack will be presented. The design consists of an aluminum plate and a plastic tray with molded-in coolant channels. The presentation will show different types of turbulator designs evaluated and optimized. Validation of a large-scale prototype will demonstrate the design flexibility and thermal hydraulic performance of hybrid cooling plates.

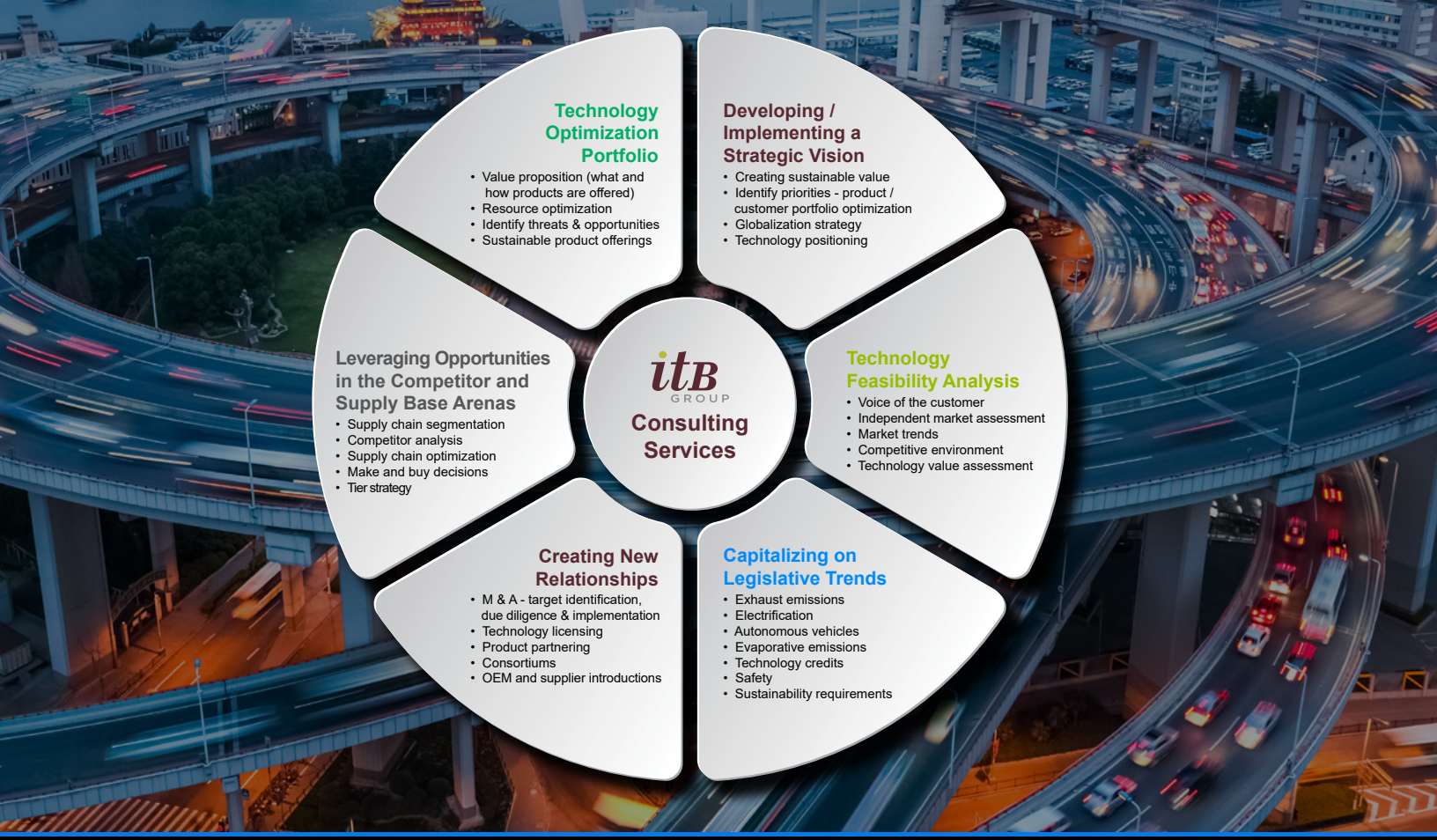
4:00 p.m. **Effective Thermal Management for Ultrafast Charging, Battery Health and Cycle Life**
Dr. Fabrice Chopard, Senior Engineering Manager - Advanced Thermal Systems
Dana
High-power charging must overcome cell heat generation challenges and requires system level knowledge, analysis, and optimization. This presentation highlights Dana's solutions to reduce BEV charging time while improving battery performance, safety, durability, cost, and weight.

4:30 p.m. **High Energy Density Battery Pack Concept with Thermal Management Material Options**
Patrick Granowicz, EV Battery Application Engineer
Celanese
A novel battery pack concept integrating functions (including thermal, electrical, and structural) by using thermoplastic composite materials and a new chemical bonding agent will be introduced. Benefits such as energy density improvement will be highlighted. Material options for other thermal management components will also be addressed.

5:00 p.m. **Thermal System Integration for a Dual Chemistry Battery Pack**
Samuel Haberl, Technical Product Manager, Aries and Gemini
Our Next Energy
Our Next Energy's Gemini battery is designed to double the range of electric vehicles without compromising safety. It uses two cells: a lithium iron phosphate (LFP) cell for daily driving and an anode-free cell for longer trips. A DC-DC converter moves energy from between the cells seamlessly while our patented skip-cell architecture sharply reduces the risk of thermal runaway.

5:30 p.m. **Closing Remarks**

- Celanese
- EMS-GRIVORY
- Evonik
- Husco
- Kuraray
- Martinrea
- NYCOA
- Schrader Pacific
- Sun Chemical
- TDK Electronics
- TI Fluid Systems
- VEXAGroup
- Zeon Chemicals
- Zoppas Industries



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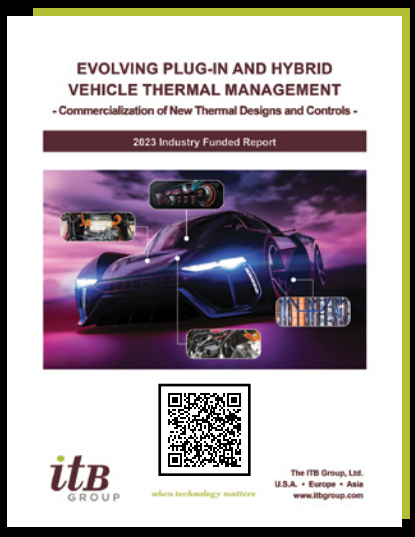
Thursday, June 15, 2023

Sheraton Detroit Novi Hotel · 21111 Haggerty Road, Novi , Michigan 48375

Register On-line to Attend at www.itbgroup.com

New 2023 Industry Funded Report

Available July 2023



Vehicles / Powertrains:	Cars, SUVs, Light-Trucks / MHEV, SHEV, PHEV, BEV
Systems:	Electrified Powertrains plus Conventional Powertrain Interaction, and Passenger Comfort
Sub-systems:	E-drive, Power Electronics, Batteries, HVAC, Heat Pumps
Components:	Thermal Energy Recovery/Transfer/Storage, Drive Motors, Power Electronics, Batteries, Supercapacitors, Chargers/Converters, HVAC, Electric Heaters, Interior Surfaces, Control Systems
Geography:	China, Europe, Japan, North America, and South Korea
Time Frame:	2023 - 2033
Report Formats:	Digital Rights Protected PDF and Paper Copies

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