7:30 a.m. Registration and Continental Breakfast

8:30 a.m. Welcome and Introductory Remarks
Mr. Sean Osborne, Director
The ITB Group (U.S.A.)

8:40 a.m. An Industry in Transition - A Live Survey

8:50 a.m. KEYNOTE PRESENTATION
Characterization of Thermal Attribute Impact on Electrified Vehicle Performance
Vehicle Energy Management Engineering
Ford Motor Company (U.S.A.)
Thermal management is a key enabling attribute critical to the performance of electrified vehicle systems. Autonomous driving, human thermal comfort, and power electronics increase system complexity and amplify the demand for thermal management heating and cooling solutions. New systems and components, including energy management strategies, must be considered.

9:20 a.m. Autonomous Vehicles are not for Average Car Owners
Technical Director
Computational Sciences Experts Group (U.S.A.)
Autonomous vehicle technology introduction rates are uncertain. This presentation will cover benefits and barriers including power consumption, controls, thermal effects and value. This analytical study will use simulation data to support the conclusions.

9:50 a.m. Benefits of Fuel Operated Heater for Optimizing PHEV-Thermal Management
Vice President Research and Technology
Eberspächer Climate Control Systems (Germany)
The electric range of PHEVs is dramatically reduced in cold weather when using electric heating systems. In cooperation with the Fraunhofer Institute for Chemical Technology, Eberspächer examined different heating technologies and their impacts on driving range, passenger comfort and CO₂-emissions during cold weather. A discussion of the results, along with the influence of battery heating on electric range will be outlined.

10:20 a.m. Networking Break

11:00 a.m. Key Considerations for EV Thermal Management Material Specification
Advanced Engineering Manager, Automotive Thermal Systems
DSM Engineering Plastics (U.S.A.)
Automakers and suppliers are facing increasing requirements for chemical and hydrolysis resistance, as well as vehicle weight reduction, as they design the next generation of EV thermal management systems. The presentation will discuss system material selection and address specific materials used to overcome these challenges.

11:20 a.m. Prospective Material and Multi-layer Tube Solutions for Thermal Management Systems
Researchers
UBE Industries (Japan)
Mono- and multi-layer tube with PA12, conventionally used for fuel lines, provide new solutions for electrified vehicle systems. Prospective solutions with PA12, PA6 and COPA for thermal management systems will be introduced.

11:40 a.m. Carbon Fiber TIM Thermal Solution Investigation for Maximizing System Power
Senior Applications Engineer
Dexerials (U.S.A.)
With the rise in computing and power electronics in automobiles, the need for heat dissipation increases. Challenges include decreasing package sizes, creating passive systems, and high ambient operating temperatures. Thermal management solutions used to reduce thermal resistance, overcome thermal performance limitations and minimize power loss during operation of power modules will be addressed.

12:00 p.m. Use of PPS in Electric/Hybrid Vehicle Thermal Management Systems
Global Business Director, Engineering Plastics, Advanced Materials
Sun Chemical Corporation (Germany)
Similar to combustion engines, electric and hybrid drive systems require thermal management to optimize performance. This presentation will explore the use of polyphenylene sulfide materials in these propulsion systems.
12:20 p.m. Lunch

1:30 p.m. **KEYNOTE PRESENTATION**
Synergy Through Integration
Group Leader, Engineering, Thermal Management
Schaeffler Group (U.S.A.)
Advanced integration of thermal management and system control strategies in hybrid-electric vehicles can drive significant increases in electric-only range during challenging transient ambient conditions. The key to realizing hybrid system optimization is smart integration of technology across all relevant vehicle subsystems.

2:00 p.m. Waste Heat Recovery and EGR, Complementary Enablers for Expanding Electric Operation on xHEV
Staff Engineer and Advanced Engineer
BorgWarner (U.S.A. and Spain)
As xHEV vehicles operate electrically, the warm-up of the ICE and cabin become much more challenging. Solutions need to be evaluated on a system-level that can enable rapid warm-up, while avoiding operation in a non-efficient regime. Benefits of implementing exhaust heat recovery in conjunction with EGR to achieve these goals, along with key system characteristics will be highlighted.

2:30 p.m. Engineered Materials for a Dynamic Vehicle Thermal Management System
Vice President Marketing and Business Development
Hutchinson (France)
A new Dynamic Insulating System that keeps lithium-ion battery cells in their optimum operational window for extended periods, without requiring active cooling solutions, will be discussed.

3:00 p.m. Networking Break

3:30 p.m. **Battery Thermal Management Solutions**
Integrated Electric Vehicle Cabin and Battery Thermal Management System Using Onboard Phase Change Materials
Research & Development Engineer
AllCell Technologies (U.S.A.)
Integrating vehicle cabin and battery thermal management using onboard thermal storage with phase change materials is a potential solution for improved battery life, safety and economics. Research and benefits of using phase change composites that can extend driving range and reduce carbon footprint will be addressed.

4:00 p.m. Under Pressure: Protecting Battery Enclosures with Passive Dual-Stage Venting
Senior Product Engineer, Battery Pack Venting
Donaldson (U.S.A.)
Passive dual-stage venting is effective in addressing battery enclosure pressure differences. Venting location, design, and development processes to produce longer-lasting battery enclosures, prolonging battery life, and improving safety will be highlighted.

4:30 p.m. Thermal Management in EV's and HEV's: Smart Quick Connect Coupling for Regulating Batteries
Global QC R&D and Innovation Director
Raygroup (France)
For optimal battery temperature control, pressure losses in the coolant flow have to be minimized in each thermal management line system. Developments in temperature and pressure sensors for continuous and precise flow/temperature control, along with thermostatic-valves and actuators for mixing and/or splitting of coolant flows in complex coolant circuits will be considered.

5:00 p.m. ClimateSense™: Passenger Comfort Solution for Increasing Driving Range of Electric Vehicles
Global Director, Advanced Engineering
Gentherm (U.S.A.)
Human-centric heating and cooling extends the driving range of electric vehicles. ClimateSense™ is a micro climate solution designed to reduce energy consumed by central HVAC while improving passenger comfort. Methods of evaluating comfort and test results will be presented. Energy savings will be correlated with extending driving range.

5:30 p.m. Closing Remarks and Cocktail Reception
8:00 a.m. Registration and Continental Breakfast

8:45 a.m. Introductory Remarks: ICE-Based Powertrains – Innovations Continue
Dr. Joel Kopinsky, Managing Director & Co-founder
The ITB Group (U.S.A.)

9:00 a.m. Changing Conventional Powertrain Cooling Systems
Sean Osborne, Director
The ITB Group (U.S.A.)
Conventional cooling system improvements continue to offer high value vs. other technologies. This presentation will discuss changing cooling system circuits, particularly pumps and valves, to reduce fuel consumption and materials changes to reduce cost and mass.

9:30 a.m. Friction Reduction by a lasting ePTFE Surface Coating on Elastomeric Dynamic Seals
Product Specialist
W. L. Gore (Germany)
A new composite concept consisting of an elastomer with an expanded-PTFE coating has been developed. The coating provides low friction in dynamic sealing applications. Both long life and reliable sealing at low friction are relevant in thermal management devices such as cooling control valves.

9:50 a.m. GENESTAR™ PA9T Solutions for Thermal Management and High Temperature Applications
New Application Development Manager
Kuraray (U.S.A.)
Kuraray will present PA9T solutions for thermal management applications. The presentation will include the recently developed flexible PA9T that can be used for monolayer tubes.

10:10 a.m. Performance of PPS for Thermal Management Modules (TMMs) in Engine Cooling Systems
Business Development Manager-PPS, Advanced Materials
Sun Chemical Corporation (U.S.A.)
Temperature optimization of engines, transmissions or hybrid components have been improved with the use of TMMs instead of conventional thermostats. TMMs have been developed to facilitate meeting tighter emission regulations. This presentation will cover the performance of DIC.PPS for TMMs.

10:30 a.m. Networking Break

11:10 a.m. e-Supercharger: There is a Future?
Automotive Engine System Product Manager
Roechling Automotive (Italy)
e-Superchargers offer a number of benefits to internal combustion engines whether or not conventionally turbocharged. This presentation will highlight opportunities for use, a possible air induction layout, and an example of the use on a 2.0 liter engine.

11:40 p.m. New Developments in HyTemp® HT-ACM for Charged Air Intake Systems
Senior Applications Development Chemist
Zeon Chemicals (U.S.A.)
In order to meet the need for improved thermal resistance capability of charged air ducts, a new high temperature elastomer (HT-ACM) has been developed. This presentation will explore the thermal performance characteristics of the new material together with comparisons with other material candidates.
**KEYNOTE PRESENTATION**

**Overcoming New Challenges in the Powertrain Industry by Expanding a Portfolio of Polyamide Solutions**

_Director, Technical Development, Performance Materials_

_BASF (U.S.A.)_

The modern automotive industry is using powertrain optimization, right-sizing, and alternative energy sources to meet emission requirements and improve driving range. OEM engineers look to further expand the use of plastics but face technological hurdles. Those hurdles include increases in operating temperature, humidity and exposure to new types of chemicals. These challenges must be considered as one looks further into the future of disruptive approaches in automobile mass-reduction technologies.

**1:00 p.m. The Science of Influence and Persuasion - Utilizing Hard Science for Soft Skills**

_Chief Content Officer_

_Coursera (U.S.A.)_

Our ability to communicate our perspective effectively is often outpaced by the sheer volume of information available. How do you make sure your message influences and persuades against a backdrop of informational ‘white noise’? Insights will be provided into making your requests exponentially more effective, and improve your influence within a professional and personal context.

**1:30 p.m. Enabling Innovation for Conventional Systems: Systematic Inventive Thinking**

_Chief Content Officer_

_Coursera (U.S.A.)_

Innovation has been linked as a driver for organizational growth, new market development, productivity improvement, resource management and a host of other elements that are all seen to be vital in the current shifts in vehicle powertrains. One perspective of innovation is to transfer innovation thinking from the classic ‘Think out of the box’ approach to a ‘Think in the box’ scenario! Systematic Inventive Thinking is a methodology that changes perceptions about what it takes to be an innovative and a creative thinker!

**2:10 p.m. Closing Remarks**

**Exhibitors To-Date**

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Phone: 947-201-3753
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The automotive industry is one of BASF’s key customer industries. BASF supplies and develops functional materials and solutions that enable vehicles to be built more efficiently and have a lower environmental impact, whatever powertrain technology they use. Further information on BASF’s solutions for the automotive industry is available on the internet at automotive.basf.com.

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DSM Engineering Plastics, Inc.
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Contact: Tom Rippinger, Marketing & Communications Manager, Americas
Phone: 248-205-6478
Email: tom.rippinger@dsm.com
dsm.com/plastics

Fraenkische USA, LP
Fraenkische invented the plastic corrugated tubing process in 1959, and we continue our passion for cutting edge applications. Fraenkische was chosen to provide the first mass production pure electric vehicle with nylon corrugated and smooth tubes for its cooling system. While many imitators will follow, Fraenkische once again is leading the way for a dynamic market…what’s next?

Contact: Roger DeArment, Director of Sales – Automotive North America
Phone: 248-836-7897
Email: roger.dearment@fraenkische-usa.com
www.fraenkische.com
New Portal and Report

Maximizing Thermal Management Technology Value

Emphasizing Electrified Vehicle Innovations

Publication Date - July 2019

ANALYSIS

1. Industry Dynamics
2. Vehicle and Passenger Comfort Thermal Systems
3. Mild Hybrid Systems Developments
4. Low and Moderate Temperature Technology
5. High Temperature Technology
6. Autonomous Driving and Ride Sharing Implications

APPENDICES

7. Thermal System Component Supplier Profiles
8. Thermal Technology Intellectual Property Summary

www.itbgroup.com
Conference Schedule

Plan now to participate in ITB’s upcoming automotive events. Opportunities to present, sponsor and/or exhibit are available.

- Smart Automotive Surfaces 2019 - October 9 and 10, 2019. Livonia, Michigan, U.S.A.

For more information, please contact Bryan Eldredge, Program Manager at: beldredge@itbgroup.com or (1) 248-380-6310.