Electric Pumps for future mobility

Electric | Hybrid | Conventional

- Battery Cooling
- Electronics Cooling
- Turbo Charger Cooling
- Cabin Cooling – Stop/Start
- After Boil Treatment
- Fuel Cooling
- EGR Cooling

Contact North America
David Griffith
Key Account Manager Automotive
David.Griffith@buehlermotor.com
+1 919 380 3334

Contact Europe
Dr. Sven Urlaub
Director Thermo Management Solutions
Sven.Urlaub@buehlermotor.com
+49 911 4504 1877
THANK YOU TO THE FOLLOWING COMPANIES FOR THEIR GENEROUS SUPPORT.

PLATINUM

![Gentherm Logo]

SILVER

![Dana Logo]  ![Spicer Logo]

Honeywell

BRONZE

![ThermoAnalytics Logo]
EMERGENCY PROCEDURES DURING THE TMSS SYMPOSIUM

During the event attendees are to follow the established emergency guidelines of the facility where the emergency occurs. Based on the location of the incident, report emergencies to the nearest venue representative and/or security personnel if available, or report to the SAE registration area.

Should a catastrophic event occur, attendees should follow the safety and security instructions issued by the facility at the time of the event. This includes listening for instructions provided through the public address system and following posted evacuation routes if required.

In the event of an emergency or a major disruption to the schedule of events at the event, attendees and exhibitors may call this number to receive further information about the resumption of this event. Updates will also be provided via the SAE website at www.sae.org.

SAE EMERGENCY HOTLINE
+1.724.772.4044
+1.800.581.9295

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<tr>
<th>October 9</th>
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<tbody>
<tr>
<td><strong>TUESDAY</strong></td>
<td><strong>WEDNESDAY</strong></td>
<td><strong>THURSDAY</strong></td>
</tr>
<tr>
<td>8:30-9 a.m.</td>
<td>8:30-9 a.m.</td>
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<tr>
<td>Continental Breakfast</td>
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<tr>
<td>9-10 a.m.</td>
<td>9-10 a.m.</td>
<td>9 a.m.-10 a.m.</td>
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<tr>
<td>Keynote</td>
<td>Keynote</td>
<td>Technical Sessions</td>
</tr>
<tr>
<td>Daniel Kok, Manager Advanced Electrified Powertrain Systems Engineering, Ford Motor Company</td>
<td>Antonio (Tony) Vespa, Senior Engineer, Vehicle Evaluation Group, Hyundai America Technical Center Inc.</td>
<td>Technical Sessions</td>
</tr>
<tr>
<td>10:10-10:30 a.m.</td>
<td>10:10-10:30 a.m.</td>
<td>10-10:30 a.m.</td>
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<tr>
<td>Networking Break</td>
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<tr>
<td>10:30 a.m. - 12 p.m.</td>
<td>10:30 a.m. - 12:30 p.m.</td>
<td>10:30 a.m.-12:30 p.m.</td>
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<td>Technical Sessions</td>
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<tr>
<td>12:30-12:30 p.m.</td>
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<tr>
<td>Lunch</td>
<td>Lunch</td>
<td>Grab &amp; Go Lunch</td>
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<td>Sponsored by Gentherm</td>
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<tr>
<td>1-3 p.m.</td>
<td>1:30-3:30 p.m.</td>
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<td>Technical Sessions</td>
<td>Technical Sessions</td>
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<tr>
<td>3:30-3:30 p.m.</td>
<td>3:30-4:00 p.m.</td>
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<tr>
<td>Networking Break</td>
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<tr>
<td>3:30-5:30 p.m.</td>
<td>4:00-5:30 p.m.</td>
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<td>Technical Sessions</td>
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<tr>
<td>5:30 p.m.</td>
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<tr>
<td>Networking Reception</td>
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</tbody>
</table>

**REGISTRATION HOURS**
- Tuesday 7:30 a.m.–4 p.m.
- Wednesday 8 a.m.–4 p.m.
- Thursday 8 a.m.–10 a.m.
EVENT INFORMATION

Registration
Rio Vista Ballroom Foyer
Tuesday, October 9
7:30 a.m.–4:00 p.m.
Wednesday, October 10
8:00 a.m.–4:00 p.m.
Thursday, October 11
8:00 a.m.–10:00 a.m.

Networking Breaks
Pavilion
Tuesday, October 9
10:00 a.m.–10:30 a.m.
3:00 p.m.–3:30 p.m.
Wednesday, October 10
10:00 a.m.–10:30 a.m.
3:30 p.m.–4:00 p.m.
Thursday, October 11
10:00 a.m.–10:30 a.m.

Exhibit Hours
Pavilion
Open during show hours

Networking Lunches
Pavilion
Tuesday, October 9
11:30 a.m.–1:00 p.m.
Wednesday, October 10
12:30 p.m.–1:30 p.m.

Networking Reception
Pavilion
Tuesday, October 9
5:30 p.m.–6:30 p.m.

Wifi Information
SSID: Marriott_Conference
Password: TMSS18

Networking
Pavilion
Tuesday, October 9
10:00 a.m.–10:30 a.m.
3:00 p.m.–3:30 p.m.

Exhibit Hours
Pavilion
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Continental Breakfast
Pavilion
Tuesday, October 9
8:30 a.m.–9:00 a.m.
Wednesday, October 10
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SAE International's Thermal Management Systems Symposium focuses on the latest and most pertinent topics in the field of thermal systems technology today. The symposium provides a valuable opportunity for OEMs, academia, chemical companies, and other thermal systems professionals from around the globe to discuss the latest regulatory changes and their impacts on the thermal management systems industry.

FOR INFORMATION ON EXHIBIT AND/OR SPONSORSHIP OPPORTUNITIES, CONTACT:

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arlene.disilvio@sae.org

October 15-17, 2019 | Plymouth, MI


**Keynote Speaker**

**Grand Ballroom**

Tuesday, October 9  
9:00 a.m.–10:00 a.m.

**Daniel Kok**, Ford Motor Company


**Keynote Speaker**

**Grand Ballroom**

Wednesday, October 10  
9:00 a.m.–10:00 a.m.

**Antonio (Tony) Vespa**, Hyundai America Technical Center

Currently working for Hyundai America Technical Center Inc. (HATCI) as a senior engineer in the vehicle evaluation group.

Main responsibility is the satisfactory operation of vehicle thermal systems (HVAC and Powertrain cooling) for Hyundai Motor vehicles sold in North America.

Fun responsibilities include development of thermal systems both HVAC and powertrain cooling. Recently developing a heat gleaning system to be used on future EVs resulting in 5% range improvement. I have a hand full of patents/pending in thermals systems.

In previous positions, I had full responsibility for powertrain cooling systems from concept to production. Outside of work, I travel and try to understand the world around me as best as I can. Lastly, I believe that electric vehicles are the third best transportation option after bicycles and sailboats.
FACILITY FLOOR PLAN

- Continental Breakfast
- Breaks and Lunches
- Exhibits
- Tuesday Networking Reception

Keynotes and Technical Sessions

- SIERRA 6
- SIERRA 5
- SALON A
- SALON B
- SALON C
- RIO VISTA BALLROOM
- SALON D
- SALON E
- SALON F
- SALON G
- SALON H

Rio Vista Ballroom Foyer

SAE Registration

- Pool
- FALLS TERRACE
- FOUNTAIN TERRACE

- RIO VISTA PAVILION
- SANTA FE 4
- SANTA FE 3
- BALBOA 2
- BALBOA 1

Technical Sessions

CABRILLO SALON

CABRILLO SALON 1

CABRILLO SALON 2
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<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>9:00 a.m.</td>
<td>Keynote Speaker</td>
<td>Daniel Kok, Ford Electric Vehicle</td>
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<tr>
<td>10:00 - 10:30 a.m.</td>
<td>Break</td>
<td></td>
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<tr>
<td>10:30 a.m.</td>
<td>CARB Update</td>
<td>Tao Zhan, California Air Resources Board</td>
</tr>
<tr>
<td>11:00 a.m.</td>
<td>Recent Advances on MAC Alternative Refrigerants in China</td>
<td>Jiangping Chen, Jun-ye Shi, Dandong Wang, Shanghai Jiaotong University</td>
</tr>
<tr>
<td>11:30 a.m. – 1:00 p.m.</td>
<td>Networking Lunch sponsored by Gentherm</td>
<td></td>
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<tr>
<td>1:00 p.m.</td>
<td>Multi-Domain Simulation in the Development Process – Coupled Simulation Environments or “All in One Tool”?</td>
<td>Christian Rathberger, Magna Powertrain; Albert Tuertscher, AT Engineering LLC</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>Closed Loop Control System to Prevent Thermal Hazards Of Rear Engine Vehicles</td>
<td>Manish Kedar Shinde, Automotive Design; Yuvraj Y Patil, Tata Motors Ltd</td>
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<tr>
<td>2:00 p.m.</td>
<td>Model-Based Optimization of Automotive Thermal Management using Variable Flow Water Pump</td>
<td>Jason Zheng, Litens Automotive Partnership</td>
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<tr>
<td>2:30 p.m.</td>
<td>A CFD Approach of Louver Fins Airside Thermal Characteristics in Mirco World for Automotive Heat Exchangers with Novel Concept of Fin Design</td>
<td>Kelvin Zhai, BAIC MOTOR CO. LTD.</td>
</tr>
<tr>
<td>3:00 - 3:30 p.m.</td>
<td>Break</td>
<td></td>
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<tr>
<td>3:30 p.m.</td>
<td>Big Data / Artificial Intelligence and Future Thermal Management Product Portfolio – A Match or Mismatch?</td>
<td>Clemens Gamsjaeger, Dr. Gunter Haberkorn, Dr. Anton Mayer, MAGNA Powertrain</td>
</tr>
<tr>
<td>4:00 p.m.</td>
<td>Description and Application Exercises of an Integrated Complete Engine Performance and Thermal model</td>
<td>Mirko Bovo, Rangakishen Mavanur Sampath, Volvo Car Corporation</td>
</tr>
<tr>
<td>4:30 p.m.</td>
<td>Estimation of Electronic Horizon usage potentials for Predictive Vehicle Thermal Management – Active grille shutter control strategy example</td>
<td>Milan Cvetković, Ricardo Prague s.r.o.</td>
</tr>
<tr>
<td>5:00 p.m.</td>
<td>Evaluation of Different Fan Simulation Models for Improved Flow Field Predictions</td>
<td>Randi Franzke, Chalmers Univ. of Technology; Simone Sebben, Chalmers Univ of Technology</td>
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</table>
### Agenda for Tuesday, October 9: Vehicle Climate Control & Cabin Comfort: Part 1

**AGENDA**

**Cabrillo Ballroom**

**Session Code: TMSS200**

**Organizers:** Bashar AbdulNour, Ford Motor Company; Jeffrey Bozeman, General Motors LLC; Hector Cano, Bergstrom Inc.; Wilko Jansen, Jaguar & Land Rover; Jason Aaron Lustbader, National Renewable Energy Laboratory; Gursaran D. Mathur, CalsonicKansei North America Inc.; Jie Zeng, Denso; Tao Zhan, California Air Resources Board

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<tr>
<th>Time</th>
<th>Session Title</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00 p.m.</td>
<td>Influence of Partial Recirculation on the Build-up of Cabin Carbon Dioxide Concentrations</td>
<td>Gursaran D. Mathur, CalsonicKansei North America Inc.</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>Development of a Standard Testing Method for Vehicle Cabin Air Quality Index</td>
<td>Heejung Jung, Liem Pham, University Of California Riverside; Nick Molden, Sam Boyle, Emissions Analytics</td>
</tr>
<tr>
<td>2:00 p.m.</td>
<td>Thin Ceiling Circulator to Enhance Thermal Comfort and Cabin Space</td>
<td>Toshinori Ochiai, Shuzo Oda, DENSO CORPORATION</td>
</tr>
<tr>
<td>2:30 p.m.</td>
<td>Compressor Design for Improved Warranty, Diagnostics &amp; Remanufacturing</td>
<td>Michael Hope, AutoClimTech Ltd.</td>
</tr>
<tr>
<td>3:00 - 3:30 p.m.</td>
<td>Break</td>
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<tr>
<td>3:30 p.m.</td>
<td>Novel IR-Heating System for Electric Vehicles</td>
<td>Christopher Franzke, Rico Baumgart, Andreas Meyer, IAV GmbH</td>
</tr>
<tr>
<td>4:00 p.m.</td>
<td>Front Seat Integrated Blower to Enhance Comfort for Rear Occupants</td>
<td>Hanns-Martin Kleemeier, DENSO Automotive Deutschland GmbH</td>
</tr>
<tr>
<td>4:30 p.m.</td>
<td>A Statistical Comparative Study Between Passive and Active Seat Cooling</td>
<td>Ioannis Androulakis, Gentherm</td>
</tr>
<tr>
<td>5:00 p.m.</td>
<td>Super-Efficient Secondary-Loop MACs Using HFC-152a Refrigerant</td>
<td>Nancy J. Sherman, Kristen Taddonio, Institute for Governance &amp; Sust Dev; Timothy Craig, MAHLE Behr Troy, Inc.</td>
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<tr>
<td>5:30 – 6:30 p.m.</td>
<td>Networking Reception</td>
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<tr>
<td>Time</td>
<td>Title</td>
<td>Speaker(s)</td>
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<td>9:00 a.m.</td>
<td>Keynote Speaker</td>
<td>Antonio (Tony) Vespa, Hyundai America Technical Center</td>
</tr>
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<td>10:00 – 10:30 a.m.</td>
<td>Break</td>
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<tr>
<td>10:30 a.m.</td>
<td>Thermal Simulation/Analysis/Modeling: Part 2</td>
<td>(Session Code: TMSS700)</td>
</tr>
<tr>
<td></td>
<td>Organizers:</td>
<td>Bashar AbdulNour, Ford Motor Company; Ales Alajbegovic, Exa Corporation; Robin Y. Cash, Ford Motor Co., Ltd.; Wilko Jansen, Jaguar &amp; Land Rover; Vamshi Korivi, TARDEC; Kumar Srinivasan, FCA US LLC; Sudhi Uppuluri, Computational Sciences Experts Group; Matthew D. Warner, Gamma Technologies LLC</td>
</tr>
<tr>
<td>10:30 a.m.</td>
<td>A Comparison of Strategies for Simulating Vehicle Heat Protection Test Cycles in 3D</td>
<td>Jon Rene Juszkiewicz, ThermoAnalytics Inc.</td>
</tr>
<tr>
<td>11:00 a.m.</td>
<td>Predictive Thermal-Electrochemical Battery Modeling for Optimization of EV Thermal Management</td>
<td>Joe Wimmer, Brad Holcomb, Shawn F. Harnish, Gamma Technologies LLC</td>
</tr>
<tr>
<td>11:30 a.m.</td>
<td>Thermal Analysis and Measurement of an Electric Traction Motor in a Production Electric Vehicle</td>
<td>Xiaohui Li, GAC R&amp;D Center Silicon Valley Inc.</td>
</tr>
<tr>
<td>12:00 p.m.</td>
<td>Treating the Stator Windings in Electrical Machines as a Porous Medium in Thermal Management Simulations</td>
<td>Badgar Gueven, Wolong EMEA</td>
</tr>
<tr>
<td>12:30 – 1:30 p.m.</td>
<td>Networking Lunch</td>
<td></td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>Thermal Systems for Hybrid and Electric Vehicles: Part 1</td>
<td>(Session Code: TMSS100)</td>
</tr>
<tr>
<td></td>
<td>Organizers:</td>
<td>Bashar AbdulNour, Ford Motor Company; Ales Alajbegovic, Exa Corporation; Jeffrey Bozeman, General Motors LLC; Christophe Petitjean, Valeo Thermal Systems; Wilko Jansen, Jaguar &amp; Land Rover; Bashar AbdulNour, Ford Motor Company</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>Compact Coolant Based Heat Pump Unit for Electric Vehicles</td>
<td>Dr. Werner Huenemoerder, Dr. Tibor Györg, DENSO Automotive Deutschland GmbH</td>
</tr>
<tr>
<td>2:00 p.m.</td>
<td>Unitary Thermal Energy Management for Propulsion Range Augmentation (UTEMPRA)</td>
<td>Sourav Chowdhury, Mahle Behr Troy Inc.; Lindsey Leitzel, Mark Santacesaria, Mahle Behr Troy Inc; Mark J. Zima, Mahle Behr Troy Inc.; Timothy Craig, Paul Droman, Mahle Behr Troy Inc; Jason Lustbader, Gene Titov, John Rugh, National Renewable Energy Laboratory; Aamir Khawaja, Murali Govindarajulu, FCA US LLC</td>
</tr>
<tr>
<td>2:30 p.m.</td>
<td>Heat Pump System on Jaguar I-Pace</td>
<td>Nilabza Dutta, Chris Chatham, Jaguar Land Rover</td>
</tr>
<tr>
<td>3:00 p.m.</td>
<td>A Study of Vapor Injection Heat Pump System for Battery Electric Vehicle</td>
<td>Duyoul Choi, Wonsuk Lee, Doowon Climate Control Co., Ltd.; Hoseong Lee, Jongphil Won, Korea Automotive Technology Institute</td>
</tr>
<tr>
<td>3:30 – 4:00 p.m.</td>
<td>Break</td>
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</tr>
<tr>
<td>4:00 p.m.</td>
<td>Improvement of Regenerative Braking System Efficiency by Means of an Electro Thermal Recuperator (ETR) Device</td>
<td>Aravind Ramakrishnan, Abhid Akram Abupekar Mohamed Sahul, Continental AG; Egor Sawazki, Continental Automotive GmbH; Brian McKay, Continental AG</td>
</tr>
<tr>
<td>4:30 p.m.</td>
<td>Induction Coolant Heater for EV Battery and Cabin Heating</td>
<td>Kilsang Jang, Junsu Kim, Yongha chae, Kyung Seok Cho, Hanon Systems</td>
</tr>
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AGENDA
WEDNESDAY, OCTOBER 10

Cabrillo Ballroom

Vehicle Climate Control & Cabin Comfort: Part 2
(Session Code: TMSS200)
Organizers - Bashar AbdullNour, Ford Motor Company; Jeffrey Bozeman, General Motors LLC; Hector Cano, Bergstrom Inc.; Wilko Jansen, Jaguar & Land Rover; Jason Aaron Lustbader, National Renewable Energy Laboratory; Gursaran D. Mathur, CalsonicKansei North America Inc.; Jie Zeng, Denso; Tao Zhan, California Air Resources Board

10:30 a.m.
Application of Heat Pumps in Electrified Commercial Vehicles and Buses
Shawn Vehr, Mark Gariety, Devon Dobie, KEN PISTONE, Emerson

11:00 a.m.
Evaluation of a Heavy-duty Truck Climate Control System using Testing and Simulation Techniques
Mark Hepokoski, ThermoAnalytics Inc.; Steven Patterson, ThermoAnalytics Inc; Steven Adelman, Volvo Group Trucks Technology; Miguel Javier, Volvo Trucks North America

11:30 a.m.
A Seat Centric Thermal Comfort Solution for Autonomous Vehicles
Chad V. Pacilli, Gentherm Incorporated

12:00 p.m.
Thermal Management Study - Climate Control Seat
Ken Turner, Gentherm; Chad V. Pacilli, Gentherm Incorporated

12:30 – 1:30 p.m. – Networking Lunch

Vehicle Climate Control & Cabin Comfort: Part 3
(Session Code: TMSS200)
Organizers - Bashar AbdullNour, Ford Motor Company; Jeffrey Bozeman, General Motors LLC; Hector Cano, Bergstrom Inc.; Wilko Jansen, Jaguar & Land Rover; Jason Aaron Lustbader, National Renewable Energy Laboratory; Gursaran D. Mathur, CalsonicKansei North America Inc.; Jie Zeng, Denso; Tao Zhan, California Air Resources Board

1:30 p.m.
Studies on the Generation Mechanism of the Hissing Noise by Analyzing the Correlation Between the Noise and the Flow Regime
Atsushi Itoh, Mitsubishi Motor Corporation

2:00 p.m.
Implementation of Electrified Air Conditioning on a Class 8 Long Haul Vehicle
Shawn Vehr, Devon Dobie, Emerson Climate Technologies; Mark Gariety, Emerson; Kenneth Pistone, Emerson Electric Co

2:30 p.m.
Experimental and Numerical Performance Study of Automotive Air Conditioning System with Nature Alternative Refrigerants
Jun-ye Shi, Shanghai Jiao Tong Univ.; Dandong Wang, Shanghai Jiao Tong Univ; Jiangping Chen, Shanghai Jiaotong Univ

3:00 p.m.
Vapor Injection Heat Pump System Development for Electric Vehicles Part 2: Investigation on Outer Evaporator Defrosting Logic and Driving Range Increased from Heat Pump
Yu Zhao, Air International Thermal Systems

3:30 – 4:00 p.m. – Break

Autonomous and Connected Vehicle Thermal Management
(Session Code: TMSS1000)
Organizers - Bashar AbdullNour, Ford Motor Company; Edward Gerges, Dana-Long Manufacturing; Wilko Jansen, Jaguar & Land Rover; Sowmya Jayaraman, General Motors LLC; Gursaran D. Mathur, CalsonicKansei North America Inc.; Andrew Sutherland, TI Automotive; Jie Zeng, Denso

4:00 p.m.
Optimization-Based Cabin and Battery Thermal Management of Connected and Automated HEVs for Improved Energy Efficiency
Mohammad Reza Amini, Hao Wang, Xun Gong, Jing Sun, Ilya Kolmanovsky, University of Michigan, Ann Arbor

4:30 p.m.
Assessing Impact of Motor Characteristics on Electric Vehicles, and How Autonomous Driving Impacts these Decisions
Sudhi Uppuluri, Computational Sciences Experts Group

5:00 p.m.
Improving the Classical Approach to Thermal System Management and Efficient Mobility - A Digitized and Connected Solution for the Modern Vehicle Fleet.
Michelange Saint Jean, Invensity Inc.; Barbaros Serter, Invensity Inc
## AGENDA

**THURSDAY, OCTOBER 11**  
**Grand Ballroom**

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| 8:30 a.m. | **Worldwide Electrical Energy Consumption of Various HVAC Systems in BEVs and their Thermal Management and Assessment – Control Architecture and Results**  
Malte Westerloh, Sven Twenhövel, Volkswagen AG; Walter Schumacher, Univ Of Braunschweig; Jürgen Köhler, Tu Braunschweig |
| 9:00 a.m. | **Performance and Structural Optimization of a Counterflow Cold Plate for Battery Thermal Management**  
Ben Kenney, Jeremy Kroeker, Dana Canada Corporation; Raghavendra Hallur, Devendra Vidhale, Dana Incorporated |
| 9:30 a.m. | **Combined Simulation of Passenger Comfort and Battery Cooling**  
Chin-Wei Chang, EXA; Edward Tate, Exa Corporation; Adrien Mann, EXA; Vijaisri Nagarajan, Exa Corporation; Kamalesh Bhambare, EXA; Nithin Palakurthi, Satheesh Kandasamy, Exa Corporation |
| 10:00 - 10:30 a.m. | **Break** |
| 10:30 a.m. | **Battery Wellness by Thermal Management**  
Alfred R. Jeckel, Daimler AG |
| 11:00 a.m. | **High Performance Thermal Conductive Substrates for Power Module Packaging**  
Rajesh Tripathi, Sejin Im, DuPont Electronics |
| 11:30 a.m. | **City Bus with Modular R744 HVAC System Based on Passenger Car Components**  
Christian Peteranderl, University of Braunschweig; Michael Bernath, MAN Truck & Bus AG; Wilhelm Tegethoff, Juergen Koehler, University of Braunschweig |
| 12:00 p.m. | **Cooling an Amphibious Vehicle's Engine**  
Rachel Boydston, John Nuszkowski, William Dally, Christopher Andrews, Aaron Owens, Armando Florez, University of North Florida |
| 12:30 – 1:30 p.m. | **Networking Lunch** |
## Waste Heat Recovery

**Organizers**  
- Bashar AbdulNour, Ford Motor Company  
- Edward Gerges, Dana-Long Manufacturing  
- Wilko Jansen, Jaguar & Land Rover  
- Kevin Laboe, FCA US LLC  
- Gursaran D. Mathur, CalsonicKansei North America Inc.  
- Ronald Semel, Ford Motor Company  
- Sudhi Uppuluri, Computational Sciences Experts Group

### 8:30 a.m.

**Progress in Thermo-Electric Generators within the H2020 ECOCHAMPS Project**  
Cédric Rouaud, Ricardo UK, Ltd.

### 9:00 a.m.

**Dynamic Simulation Model for Waste Heat Recovery in Commercial Vehicles**  
Fabian Timo Schweizer, Technical University of Munich; Michael Bernath, MAN Truck & Bus AG; Georg Wachtmeister, Technical University of Munich

### 9:30 a.m.

**Compact Exhaust Heat Recovery System using Highly Heat-Conductive SiC Honeycomb**  
Tatsuo Kawaguchi, Takeshi Sakuma, Takafumi Hamada, Daisuke Kimura, Hiroshi Mizuno, Makoto Yoshihara, Teijiro Takahashi, NGK Insulators Ltd

### 10:00 – 10:30 a.m. – Break

## Powertrain Energy Management

**Organizers**  
- Bashar AbdulNour, Ford Motor Company  
- Robin Y. Cash, Ford Motor Co., Ltd.  
- Alaa El-Sharkawy, FCA US LLC  
- Wilko Jansen, Jaguar & Land Rover  
- Sowmya Jayaraman, General Motors LLC  
- Kevin Laboe, FCA US LLC  
- Ronald Semel, Ford Motor Company

### 10:30 a.m.

**Thermal Management Architecture Strategies for Different Powertrain Systems: From Energy and Efficiency Perspective**  
Harry Chen, Yinlun Co., Ltd.

### 11:00 a.m.

**Energy Efficient Driving Strategies for Highly Automated Vehicles**  
Jonas Alexander Gutsche, Wieland Gelke, Rico Baumgart, Joerg Aurich, Frank Schrödel, IAV GmbH

### 11:30 a.m.

**Keeping Your Cool During Bonneville Speed Week**  
James Gebbie, Ford Motor Company

### 12:00 – 1:30 p.m. – Networking Lunch
EXHIBITOR PROFILE

Exhibitor Directory text is published as submitted by exhibiting companies.

ACCRUATE TECHNOLOGIES INC  
Booth 3

3011 RAVENGLASS RD
Waterford, MI  48329
United States
accurate Technologies.com

Accurate Technologies Inc. (ATI) is a supplier of automotive measurement, calibration and diagnostics hardware and software tools. With clients including global OEMs and Tier Ones, ATI's product range includes VISION Calibration and Data Acquisition software, EMX data acquisition modules and CANary FD – a compact, rugged four channel CAN FD interface.

BOSAL INTERNATIONAL NORTH AMERICA  
Booth 15

1476 Seaver Way
Ypsilanti, MI  48197
United States
bosal.com

BOSAL is a developer and manufacturer OEM emission control and heat recovery systems. BOSAL close-coupled Exhaust Gas Heat Recovery System (EGHRS) on a hybrid vehicle was and still is unique in its class. The latest and most effective heat recovery systems are now available and on display at our booth.

BUHELER MOTOR INC  
Booth 14

860 Aviation Pkwy Ste 300
Morrisville, NC  27560
United States
buehlermotor.com

Buehler Motor is an independent, globally-active company focused on the development & production of mechatronic drive solutions and electric pumps. A leading supplier in the Automotive industry, with >1,700 employees at eleven locations worldwide, we are committed to offering world-class products to provide thermal management system solutions.

DANA INCORPORATED  
Booth 23

SILVER SPONSOR
3939 Technology Dr
Maumee, OH  43537
United States
dana.com

Dana is a world leader in thermal management solutions for improving the efficiency, performance, and sustainability of vehicles. Founded in 1904, Dana supports the passenger vehicle, commercial truck, and off-highway markets and employs approximately 30,000 people in 33 countries with sales of $7.2 billion in 2017. For more information, please visit our website.

DYNATRON CORP  
Booth 8

33200 Western Ave
Union City, CA  94587
United States
dynatron.co

Dynatron Corporation, an industry leader in thermal solutions in the United States and internationally. With missions of CPU coolers sold worldwide since 1995. Dynatron has established its reputation over the years and continues to reinforce it with world class support and inventive ways to keep critical systems operating.

EMERSON  
Booth 9

1675 Campbell Rd
Sidney, OH  45365
United States
emerson.com

Emerson has been in business since 1890, originally incorporated as Emerson Electric Company. Emerson employs more than 74,000 people in over 70 countries. In 2016, Emerson ranked 128th in the Fortune 500 and is listed on the New York Stock Exchange as EMR. Headquarters are in St. Louis, MO.

EXA CORPORATION, A DASSAULT SYSTEMES COMPANY  
Booth 16

55 Network Dr
Burlington, MA  01803
United States
3ds.com

Exa Corporation a part of SIMULIA, a Dassault Systèmes brand, develops software and provides professional services for simulation-driven design. Leading manufacturers choose Exa’s aerodynamic, fluid, heat transfer, and acoustic simulation solutions to optimize product performance, reduce development costs, and improve the efficiency of their design and engineering processes.

GAMMA TECHNOLOGIES LLC  
Booth 19

601 Oakmont Ln Ste 220
Westmont, IL  60559
United States
gtisoft.com

Gamma Technologies develops GT-SUITE, an MBSE system simulation tool. It provides a broad set of validated 0D/1D/3D multi-physics component libraries simulating fluid flow, thermal, multi-body, structural, electro-magnetic, chemistry and controls. Build practically any engineering system model including vehicles, hybrids, electrics, engine, thermal management, drivetrain, transmission, aftertreatment, hydraulics, fuel, lubrication, etc.
GENTHERM  Booth 7

Platinum Sponsor
21680 Haggerty Rd
Northville, MI  8167
United States
gentherm.com

Gentherm is the global market leader and developer of innovative thermal management technologies for a broad range of heating and cooling and temperature controlled applications. Its products provide solutions for automotive passenger comfort, battery thermal management, patient temperature management, and various electronics. The Company’s automotive products can be found on the vehicles of nearly all major automotive manufacturers operating in North America, Europe, and Asia.

IPETRONIK INC  Booth 11

50220 Dennis Ct
Wixom, MI  48393
United States
ipetronik.com

IPETRONIK - experts for data acquisition, signal conditioning and data logging in harsh environments. IPEengineering services and benchmarking for HVAC testing. IPEtec full HVAC system test benches and CO2 A/C development.

MAGNA POWERTRAIN  Booth 1

PO Box 18962
Golden, CO  80402
United States
kuli.magna.com/

Magna Powertrain - Engineering Center Steyr provides automotive CAE software and engineering services.

SCHRADER PACIFIC  Booth 20

205 Frazier Rd
Altavista, VA  24517
United States
pacific-ind.co.jp/eng/company and schraderintl.com

Schrader Pacific is a newly acquired division of Pacific Industrial Co. Ltd. Combined we are the global leader and manufacturer of AC valves designed to access, regulate or contain AC refrigerant. We are the only supplier of all the types of AC valves. Schrader Pacific directly services the OE, and Tier I and Tier II markets. We are IATF accredited.

SIEMENS PLM SOFTWARE  Booth 5

5800 Granite Parkway Ste 600
Plano, TX  75024
United States
siemens.com/plm

Siemens PLM Software is a world-leading provider of product lifecycle management (PLM) software. We help thousands of companies make great products by optimizing their lifecycle processes, from planning and development through manufacturing and support. Visit our website to learn more about our technology.

SHINANO KENSFI CORP  Booth 12

6065 Bristol Pkwy
Culver City, CA  90230
United States
shinanokenshi.com

Shinano Kenshi with over 100 years of history and vertical manufacturing capabilities has been providing cutting edge technologies in motion control to the global automotive industry. We support passive & active thermo applications using liquid-air pumps, compressor, actuators, and others which require collaboration from design concept to large scale manufacturing.

SHIN-ETSU SILICONES OF AMERICA  Booth 13

8190 Beechmont Ave
Cincinnati, OH  45255
United States
shinetsusilicones.com

Shin-Etsu Silicones is a leading global manufacturer of silicone materials for the electronics industry. Shin-Etsu’s products protect sensitive electronics from damaging environments and insures the reliable, long-lasting performance of your components. Our products include adhesives sealants, potting encapsulants, conformal coatings, thermal interface materials, and SIFEL elastomers for extremely corrosive environments.

SONCEBOZ  Booth 2

Rue Rosselet Challandes 5
Sonceboz 2605
Switzerland
sonceboz.com

Sonceboz creates, designs, and produces compact, robust and energy-efficient electric actuators for demanding applications. Our innovative and tailored solutions reflect our commitment to optimal ecological footprint, safety, and comfort. Since 1936 our focus on innovation, zero defect approach, and exceptional service is our key to the success of our worldwide customers.
EXHIBITOR PROFILE

SPAL USA
Booth 10
1731 SE Oralabor Rd
Ankeny, IA  50021
United States
spalusa.com
SPAL manufacturers DC axial cooling fans and centrifugal blowers with an emphasis on sealed brushless motor technology for the global OEM market. SPAL provides value for the automotive, truck, bus, off-highway, stationary, ATV, military and other markets including EV, Hybrid and Battery cooling applications, providing the highest quality products available.

THERMETERS LLC
Booth 18
4220 24th Avenue West
Seattle, WA  98199
United States
thermetrics.com
Thermetrics - the new name for Measurement Technology NW - designs and manufactures advanced biophysical test instruments that simulate the human thermoregulatory system and are used to measure and predict the thermal comfort of automobile climate controls, seats, sport performance and cold weather apparel, uniforms, protective clothing, and more.

THERMOANALYTICS, INC.
Booth 17
Bronze Sponsor
23440 Airpark Blvd
Calumet, MI  49913
United States
thermoanalytics.com
ThermoAnalytics provides Thermal Solutions for heat transfer and engineering analysis. Our TAITherm software is the leading program for rapid design and optimization of heat transfer problems. We develop innovative and efficient simulation processes that result in fast turnaround times and the ability to represent all transient test conditions via simulation.

TLX TECHNOLOGIES
Booth 24
N27 W23727 Paul Rd
Pewaukee, WI  53072
United States
tlxtech.com
TLX Technologies answers automotive system demands with superior electromagnetic solutions. Custom solenoids and valves designed for EV & PHEV applications are vital in meeting demands for better performance and greater efficiency, especially when addressing the unique challenges of thermal management control.

TORAY
Booth 6
2800 Livernois Rd Bldg D
Troy, MI  48083
United States
toray.jp/plastics/en
Toray Industries is a fully integrated material supplier with manufacturing, processing and sales in: Fibers and Textiles; Performance Chemicals; Carbon Fiber Composite Materials; Environment and Engineering; Life Sciences and Other Businesses. With operations in 26 countries, more than 46,000 employees and revenues of $20+ billion; Toray provides advanced materials through “Innovation by Chemistry.”

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– Thomas Lockwood
Lockwood Thermal Management

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## 2018

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<td>September 5-6</td>
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For an updated listing of events, dates and locations, please refer to sae.org/events/