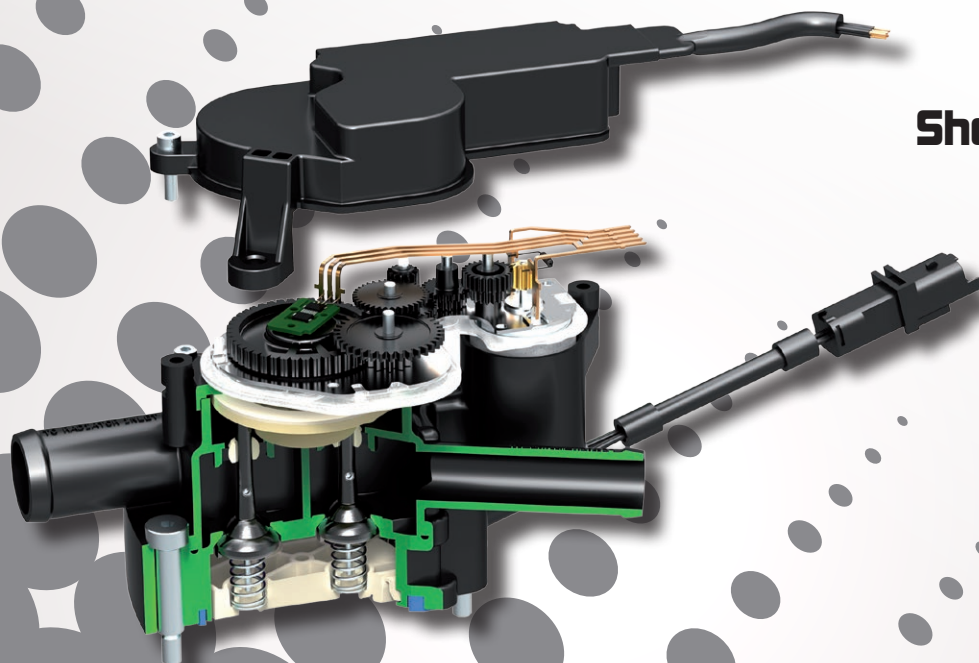


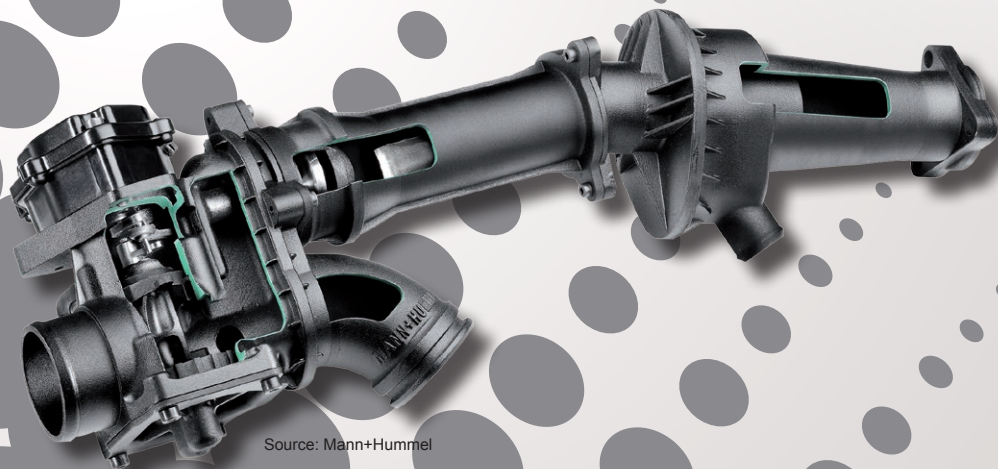


Organized and Hosted by The ITB Group

Automotive Engine Air and Cooling Systems 2013



June 6, 2013
Sheraton Detroit Novi Hotel
Novi, Michigan USA



Source: Mann+Hummel

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Automotive Engine Air and Cooling Systems

Conference Agenda

Please note proceedings are not available

7:15 a.m. Registration and Continental Breakfast

8:15 a.m. **Welcome and Introductory Remarks**
Dr. Joel Kopinsky, Managing Director
The ITB Group (U.S.A.)

Boosting and EGR Systems

8:30 a.m. **Strength through Flexibility**
Ryan Collins, Engineering Manager
Senior Flexonics (U.S.A.)

EGR coolers are one of the more problematic components on a modern engine. While designs are developed for extreme heat and vibration loading, they often have little ability to withstand the abnormal situations most engines face during their lifetime. An EGR cooler architecture has been developed that not only delivers performance and durability but protection is provided for abnormal conditions.

9:00 a.m. **Exhaust Gas Recirculation Evolution**
Dr. Georges De Pelsemaeker, R&D and Marketing Director
Valeo Thermal Powertrain (France)

Exhaust gas recirculation is becoming a standard for diesel and gasoline engines. New technologies are developed to increase cooling efficiency and to reduce fouling sensitivity with improved quality and optimized total cost of ownership. Two main technologies are considered: brazed aluminum core or stainless steel components.

9:30 a.m. **TVS® Supercharger – V-Series Development for Single and Compound Boosted Engines**
Justin Hopkins, Senior Design Engineer
Eaton (U.S.A.)

In response to the continued industry trend towards downsized, down-spiced gasoline and diesel engines, superchargers have been optimized for volumetric and isentropic efficiency at low speeds. These efficiency improvements enable maximum engine torque at very low engine speeds in both transient and steady state conditions. Development has focused on small superchargers in the 250 to 400 cc displacement range, with applications both as a single boost device and as an element in a compound boost system.

10:00 a.m. **Mid-Morning Break**
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Material Developments

10:30 a.m. **Evolution of Heat Exchangers and Their Use of Plastics in Automotive**
Paul Wheeler, Olivier Piernot and Charles Taylor
Ascend Performance Materials (U.S.A.)

The history and future trends of automotive heat exchangers with a special focus on the use of plastics in these applications will be presented. The changing and evolving OEM and Tier One specifications and requirements will be highlighted, along with the introduction of super-stabilized plastics to meet these evolving needs.

10:45 a.m. **Influence of Multi-Pass Regrind on 15% Glass-Filled PPS Alloy Blow Molding Compounds**
Dr. Randall Moynihan, Product Development Specialist and Dr. Brent Fiedler, Product Development Engineer

Chevron Phillips Chemical Company (U.S.A.)
Glass-filled PPS alloys have found widespread acceptance for use in high temperature automotive charge air cooler duct applications. Results of incorporating high loadings of multi-pass regrind on the processing performance of PPS alloys will be presented. The cyclic loading behavior was investigated at high-temperature in tensile specimens. Results of incorporating high loadings of multi-pass regrind on the mechanical performance of PPS alloys will also be discussed.

11:00 a.m. **Turbo Market and Materials**
Harry Siepel - Innovation Manager
DSM (U.S.A.)

The turbo market is changing and as the inventor of Diablo technology, DSM adds Stanyl® Diablo and Akulon® Diablo blow molding grades to its portfolio of high-temperature products. The technology is widely used in injection molded turbo applications such as two-shell welded ducts and resonators. Both injection and blow molded parts offer a significant cost benefit compared to metal and PPS due to lower weight and scrap rates.

11:15 a.m. **Fatigue Life Prediction of a Charge Air Cooler Component**
Chul Lee, Applications Development Manager
and Dr. Michael Dreisbach, Applications Development Manager - Europe

INVISTA Engineering Polymer (U.S.A. and Germany)
Fatigue life prediction of charge air cooler components has been developed based on experimental part testing and subsequent CAE stress analysis. Once developed, this real-part-based fatigue life curve enables a part design engineer to determine target design stress levels for similar parts under a given pressure and life cycle performance requirement.

11:30 a.m. **Stretch the Boundary of Downsizing Technology through High Performance Thermoplastics**
Mark Wright, Global Automotive Market Manager
Solvay (U.K.)

Engine downsizing is a common feature in engine technology as OEMs strive to improve vehicle efficiency without compromising performance. The consequence has been higher charge air pressures and higher engine loading. Coupled with tighter engine packaging the temperatures on the compressor exit can be high. In order to facilitate metal replacement, new Amodel HH grades are offered which withstand continuous use temperatures of 210° - 240°C.

11:45 a.m. **Lunch**

12:45 p.m. Air Induction Component Developments: Connecting Technologies
Sarah Gibson, Marketing and Product Manager Americas Oetiker (U.S.A.)
 Clamps for air induction and resonator assemblies will be presented including new technologies that include fast installation fasteners with a complete uniform compression 360° seal. The next generation Stepless® Ear Clamp is tamper proof, easy to install and economical. Other products include Stepless® Low Profile Clamps, Stepless® Low Profile Clamps with tolerance compensation and multi-crimp rings.

1:00 p.m. Metal Quick Fit Couplings for Cooling Water Applications - Stainless Steel Resonator with Henn HC-Coupling
Richard Graham, North American Sales Representative HENN (U.S.A.)
 A new generation of couplings for cooling water and heating applications will be presented. This will include a cost comparison of the couplings compared with conventional connections including the use of necessary machines and tools. A new development of a stainless steel resonator and HENN-HC coupling will be presented.

Charge Air Cooling

1:30 p.m. Thermal Cycle Durability of Liquid Cooled Charge Air Coolers
Mike Bardeleben, Heat Transfer Analytical Development and Lee Kinder, Charge Air Cooling Product Development Dana PTG (U.S.A.)
 Liquid cooled charged air coolers represent the perfect storm when it comes to durability issues related to thermal cycle failures: large temperature gradients, highly transient conditions, and disproportionate air-to-coolant thermal capacities. Dana has developed appropriate key life specifications using field data, bench data, and numerical modeling. Methodologies to develop appropriate test specifications and design approaches to extend the life of these products will be discussed.

2:00 p.m. Structural Water Charge Air Cooler Manifold Range
Jean-Pierre Galland, Technical Director Air Intake and Water Charge Air Coolers and Dr. Georges De Pelsemaeker, R&D and Marketing Director Valeo Thermal Powertrain (France)
 Water charge air cooler (WCAC) technology offers for high boosted gasoline and diesel engines the possibility of charge air thermal management by regulation of the coolant flow on the one hand, and on the other hand, the possibility to reduce the air volume between the turbocharger compressor and the inlet valves of the engine. Structural WCAC manifold technology is a solution to the conflicting targets of compact packaging, charge air cooler thermal performance and the reduction of gas side pressure drop.

2:30 p.m. Afternoon Break Sponsored by: 

3:00 p.m. Dual Level Cooling System for C/D Segment Vehicles
F. Vestrelli, C. Malvicino, F. Di Sciullo and W. Ferraris Fiat Group Automobiles (Italy)
 The introduction of high efficiency, reduced mass and cost-effective powertrain solutions have already been introduced on many vehicles. For cooling systems, the increased adoption of dual level cooling loops and water cooled charge air cooling is a clear trend. The presentation proposes a compact and cost effective solution including a water cooled charge air cooler and water cooled condenser with options for additional exchangers.

3:30 p.m. Thermal Management Module
Peter Schaefer, P.E. Application Engineer and Alexander Morein, Development Engineer Schaeffler Group (U.S.A.)
 In most current automotive applications, a thermostat is used to control the excess energy generated from the engine. This excess is for the most part emitted to the ambient air via the radiator. The Thermal Management Module utilizes the excess energy to a higher degree by means of flow control and flow distribution. Benefits include a shorter warm-up phase of the engine with increased interior comfort and increased thermal efficiency. More precise temperature control facilitates operating an engine closer to the optimum temperature with reduced friction and longer engine life.

4:00 p.m. CAE Simulations in Cooling System Design
Dr. Yi Zhang, Dr. LaMar Stewart, Calvin Young, Dr. Meisam Mehravaran, Dr. Rodolfo Palma and Dr. Yafang Miao Ford Motor Company (U.S.A.)
 CAE can help avoid product failure and assist with failure root cause investigations together with quick design solutions. This presentation will demonstrate several advanced CAE technologies developed over the last two years to support cooling system design, including transient radiator temperature profile prediction, thermal stress analysis and fatigue life estimates; fan shroud design optimization; as well as radiator module durability analysis and clearance check under road load conditions.

4:30 p.m. Heat Recovery, Storage and Conversion - From Electric Hybrid to Thermal Hybridization
Dr. Georges De Pelsemaeker, R&D and Marketing Director Valeo Thermal Powertrain (France)
 The future use of the worldwide harmonized light vehicle test procedure (WLTP) will present opportunities for thermal energy recovery and/or conversion. The operating condition of the normalized cycle will shift from low load/low engine revolution to higher engine load with increased energy rejection. This presentation will draw on a large panorama of solutions that may emerge in the market to improve the efficiency of the internal combustion engine and associated systems such as the passenger cabin. In addition, the Latent Heat Battery (LHB), an innovative solution to improve thermal comfort, engine cooling and warm-up, will be described.

5:00 p.m. Closing Remarks and Cocktail Reception

Automotive Engine Air and Cooling Systems 2013

Thursday, June 6, 2013

Sheraton Detroit Novi Hotel 2111 Haggerty Road, Novi, Michigan 48375

(A block of rooms has been reserved for conference attendees - Click [HERE](#) to make your hotel reservations)

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

Early Registration by May 24, 2013 - \$550 USD
Late Registration - \$700 USD Limited on-site registration

Exhibitors To-Date:

- **Ascend Performance Materials**
- **BASF**
- **Bulk Molding Compounds**
- **DIC International**
- **DSM**
- **Fränkische**
- **INVISTA**
- **Kuraray**
- **Oetiker**
- **PPI Protoplast**
- **Solvay**
- **Stant**
- **Ticona Engineering Polymers**
- **Wellman Engineering Resins**
- **Zeon Chemicals**



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