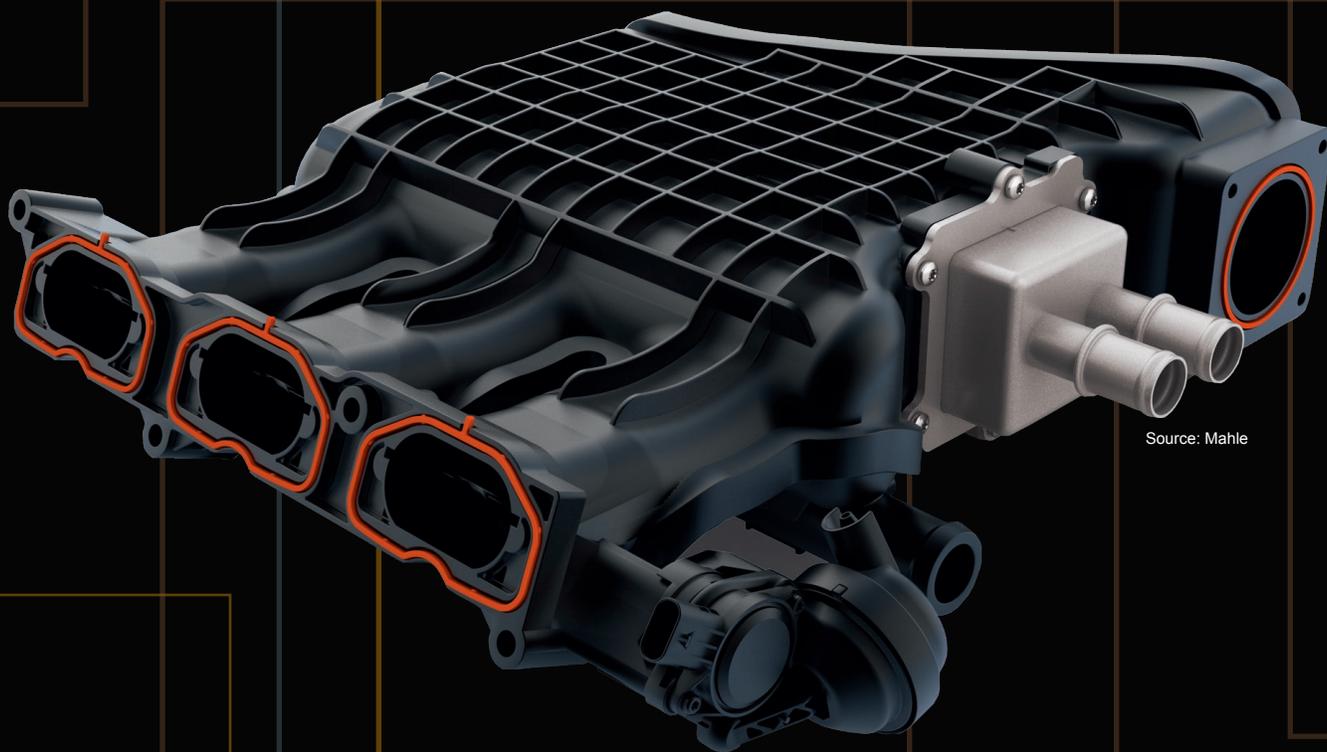


May 31, 2012 · Novi, Michigan USA
Sheraton Detroit Novi Hotel



Source: Mahle

Sponsored by:



Exhibitors To-Date

- Arkema
- Bulk Molding Compounds
- Chevron Phillips Chemical Company
- Excell Corporation
- Ideal/Tridon Clamp Products
- Ticona Engineering Polymers
- Zeon Chemicals

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

7:00 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.)*

Material Developments

8:30 a.m. **Material Solutions to Help Boost Next Generation Engine Performance**

*Steven Mok, Laurent Lefebvre, Andreas Oldeweme
and Joo Yoop Lee
DuPont Automotive (Global)*

Hotter, harsher conditions are testing the limits of current engine materials and component designs. To successfully achieve the performance required by the more demanding intake air, emission control and cooling components, engineers need to look holistically at the combination of material selection, component design and application performance. This presentation will look at how polymers, both rigid and elastomeric, can withstand the combination of higher temperatures and more corrosive chemicals, while driving out both weight and cost.

8:50 a.m. **New PA with Advanced Stabilization Helps Replace Metals, Reduce Mass Under-the-hood**

*Dr. Steve Hanley, Product Development Manager
BASF Corporation (U.S.A.)*

A new generation of PAs have been developed specifically to tackle the challenges of harsh under-the-hood environments and to further promote metal replacement. One recently commercialized family of PA 6,6 resins provides 3,000+ hours of service life at 220°C together with resisting spikes to 240°C. The technology of the new materials will be described and compared against PA 4,6, PPS and PPA.

9:10 a.m. **New Elastomer Developments for Engine Air Intake Sealing, Engine Coolant Sealing, Charge Air Cooler Ducts and Hoses**

*Mark Jones, Research and Development Center and
Joshua Kelley, Senior Applications Development
Chemist*

Zeon Chemicals (U.S.A.)

This two-part presentation will detail a new HNBR with a novel and unique cure system which offers enhanced performance in engine air intake manifold and engine coolant sealing applications. Part two will describe a new grade of polyacrylic (ACM) elastomer that represents the new "state of the art" for performance in charge air cooler hose applications and further builds on the track record that ACM elastomers have in these applications.

9:40 a.m. **Delivering Novel Designs and Key Advantages in Engine Coolant Components using Lightweight Plastics**

*Kirit Desai, Tech Marketing, CAE
Solvay Specialty Polymers (U.S.A.)*

Over the years, thermoplastics have replaced metal for thermostat housings and water inlets/outlets. More recently they are becoming the preferred material for water cooled charged air cooling, EGR, DCTs and

battery-pack cooling. With metals, the bead area has a smooth machined surface for easy installation. With plastics, the bead area requires a parting line for proper part ejection. To avoid quality issues, OEMs specify no parting line in the barb area. Amodel PPA grades for cooling parts do not require a parting line in the barb area. This unique feature allows OEMs to design the complex parts with higher number of outlets and allows for the integration of multiple parts in one.

10:00 a.m. **Mid-Morning Break - Sponsored by Zeon Chemicals**



Air Induction Material and Component Solutions

10:30 a.m. **Lessons Learned and a Roadmap for the Future for Thermoset Electronic Throttle Bodies**

*Michael Kole, Sales and Marketing Representative
Helvoet Rubber & Plastics (U.S.A.)*

Advancements in thermoset molding which enabled the move from machined aluminum to net shape molded parts, specifically for the electronic throttle body, were introduced in 2007. After five years and over 10 million components, further developments in this technology will be presented. Included in the presentation will be both the successes and failures of the transition, as well as lessons learned and a roadmap for the future.

11:00 a.m. **Connectors versus Conventional Systems**

*Richard Graham, Sales Manager USA
HENN (U.S.A.)*

The impact of downsizing and its resultant challenges on connectors will be discussed. Comparisons will be made with conventional connection systems when used for both gasoline and diesel engines.

11:30 a.m. **Hydrocarbon Adsorbers Controlling Evaporative Emissions in Air Systems to Meet LEV III Regulations**

*Erik Versen, Senior Engineer
MeadWestvaco (U.S.A.)*

With the onset of LEV III and potential Tier III evaporative emissions regulations, control of engine evaporative emissions through the air cleaner assembly will likely become necessary for all vehicles in the U.S. Several different low-cost, highly efficient hydrocarbon adsorber solutions are fit into current air cleaner assemblies.

11:45 a.m. **Creep and Fatigue of Vibration Welded Joints Made of PA 6 and 6,6**

*Dr. Prasanna Kondapalli, Application
Development & Computer Aided Engineering
BASF Corporation (U.S.A.)*

On turbocharged engines, the air intake system is subjected to fluctuating internal pressures with varying temperature and as a result, air intake manifolds have to be designed with creep and fatigue considerations. For vibration welded parts, the weld joint is generally the weakest link and the most likely to fail under fatigue loads. Preliminary research work on assessing the dynamic creep and fatigue strength of welded joints will be presented together with numerical models.

12:00 p.m. **Lunch**

System Evolutions: Air Induction and Cooling Systems

- 1:00 p.m. Faster Response ... Better Control: Emerging Air Induction and Cooling System Solutions**
Dr. Joel Kopinsky, Managing Director
The ITB Group (U.S.A.)
Air induction and cooling systems play a key role in helping vehicle powertrains achieve substantial reductions in fuel consumption and exhaust emissions. This is not only due to the impacts of engine downsizing and the resultant need to cool charge air but also due to technological advances that allow for air induction and cooling systems to enable improved engine performance in terms of power, torque, driving comfort and reduced vehicle emissions.
- 1:30 p.m. New Intelligent Solutions for Air Intake and Cooling Systems**
Charles Vaillant, Vice President Innovation and Corporate Strategy
MANN+HUMMEL (Germany)
In the quest to reduce fuel economy and CO₂ emissions, new intelligent concepts for engine cooling and air induction systems have been developed. Such developments have been further motivated by the combination of fuel price increases and the shift to more realistic driving cycles (WLTC) for evaluating a vehicle's fuel consumption performance. An active coolant valve to optimize the performance of the coolant circuit through intelligent thermo-management will be described. On the air induction side, a new low pressure EGR module developed to fulfill low cost, small engine packaging space and function integration targets will be illustrated.
- 2:00 p.m. Cooled EGR for GTDI Engine CO₂ Reduction – Benefits and Challenges**
Dan Styles, Research and Advanced Engineering
Ford Motor Company (U.S.A.)
The advent of variable cam timing, allowing for higher levels of internal EGR, led to a reduction in the usage of external EGR systems on gasoline engines. With the advent of downsized, boosted gasoline engines, external EGR is finding renewed interest since external cooled EGR can improve fuel economy at medium and higher engine loads. The reasons for the cooled EGR fuel economy benefits will be discussed together with different EGR systems such as high pressure (HP) and low pressure (LP) systems.

- 2:30 p.m. Afternoon Break - Sponsored by Zeon Chemicals**



Boosting: High Temperature Ducts and Charge Air Cooling

- 3:00 p.m. A New Generation of Flexible PPA for High Temperature Systems**
Greg Poterala, Market Manager
Arkema (U.S.A.)
A new class of flexible PPA materials, Rilsan® HT, suitable for higher temperature extrusion applications has been commercialized. This material demonstrates

flexibility, impact and chemical resistance characteristics such as those found for PA 11 and 12 but with the high temperature performance of classical injection moldable PPAs.

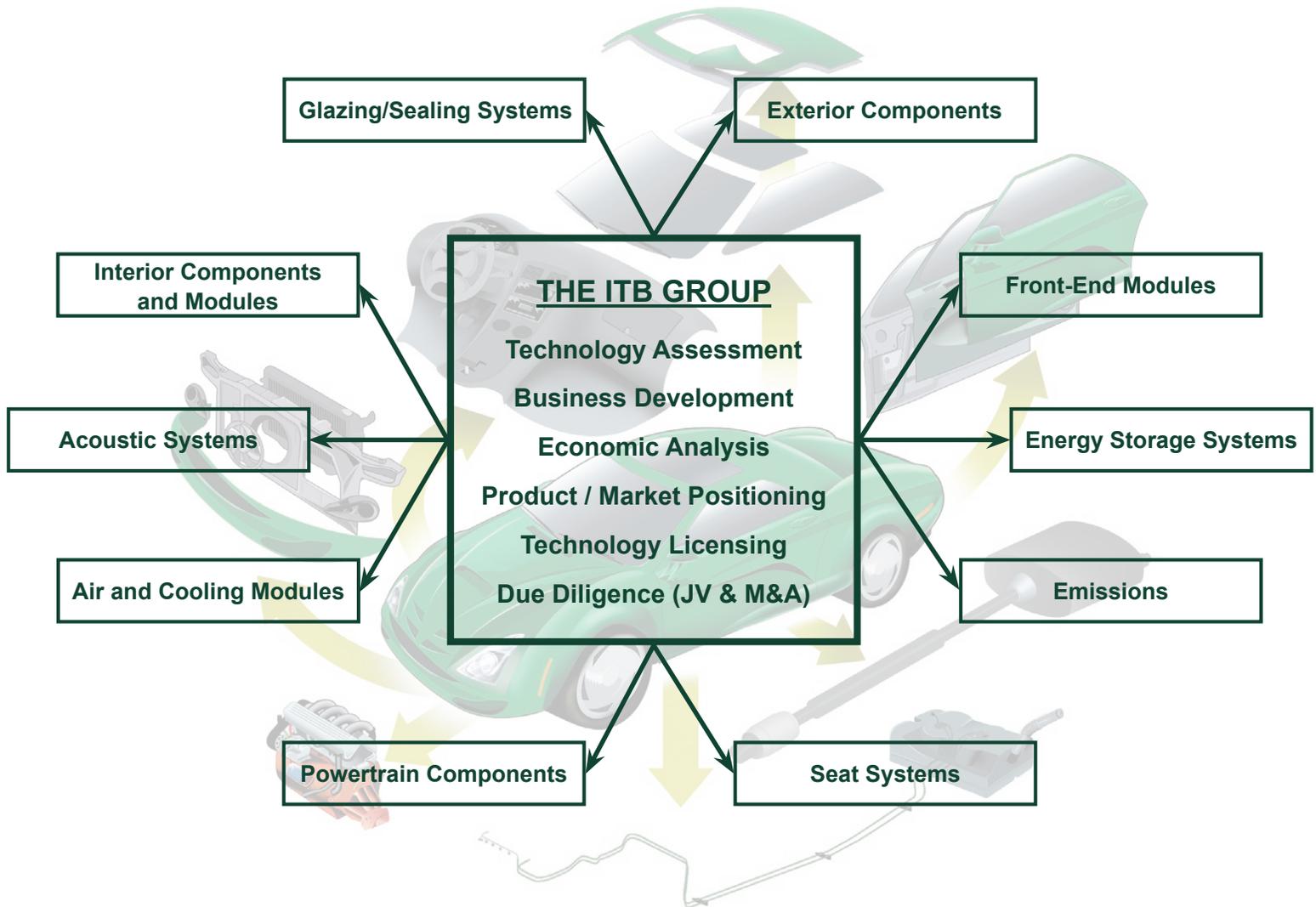
- 3:20 p.m. PPS Alloys for use in High-Temperature Blow Molded Turbocharger Ducts**
Brent Fiedler, Product Development Engineer
Chevron Phillips Chemical Company (U.S.A.)
New PPS alloys that have increased melt strength for the blow molding of complex geometries have been developed. Advantages including chemical resistance at elevated temperatures, resistance to fatigue along with dimensional stability will be discussed. Applications for turbocharger ducts will be highlighted.
- 3:40 p.m. Innovative PPS Blow Molded Air Duct for Turbocharged Diesel Engine**
Bob Newill, Market Development Engineer and Ke Feng, Product Technologist
Ticona Engineering Polymers (U.S.A.)
The charge air duct and its integral brackets, lugs and clips are produced from two different glass-fiber-reinforced PPS grades to form an optimized assembly. The process will be overviewed along with an explanation of production advantages. The latest PPS material development for 3-D robotic manipulation blow molding will also be presented. This patent-pending technology enables one step production of an air duct with more complex geometry.
- 4:00 p.m. Jectbounding: Three Processes in One Shot**
Marco Barbolini, Product Manager
Roehling Automotive (Italy)
The standard procedure for the production of charge air blow molded ducts, welded with clips, brackets and hose/cable holders is divided into at least three processes: blowing the duct, injection molding the clip/bracket/holder and welding these components onto the duct. This presentation will discuss a process that combines all three processes into one.
- 4:30 p.m. Cascaded Charge Air Coolers Applied to Gasoline Downsizing Engines**
Hugh Blaxill, General Manager and Head of Engineering Services
MAHLE Powertrain (U.S.A.)
Efficient charge air cooling is critical in addressing high charge temperatures that can increase the tendency for an engine to knock, which compromises fuel economy. The package of the low-temperature coolant circuit radiator has a limiting effect on the charge air cooler's performance. A two-stage cascaded charge air cooler using first engine coolant then a low temperature circuit coolant is integrated into an intake manifold. System benefits include increased torque at low engine speed, improved transient response and reduced fuel consumption at higher engine speeds through lower charge temperatures.
- 5:00 p.m. Closing Remarks and Cocktail Reception**

Automotive Engine Air and Cooling Systems 2012

Thursday, May 31, 2012

Venue: Sheraton Detroit Novi Hotel - 21111 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 17, 2012 - \$550.00 USD

Late registration \$650.00 USD • Limited on-site registration



39555 Orchard Hill Place, Suite 225 • Novi, Michigan 48375, U.S.A.
Telephone: (1) 248-380-6310 • E-mail: email@itbgroup.com
www.itbgroup.com
U.S.A. • Europe • Asia