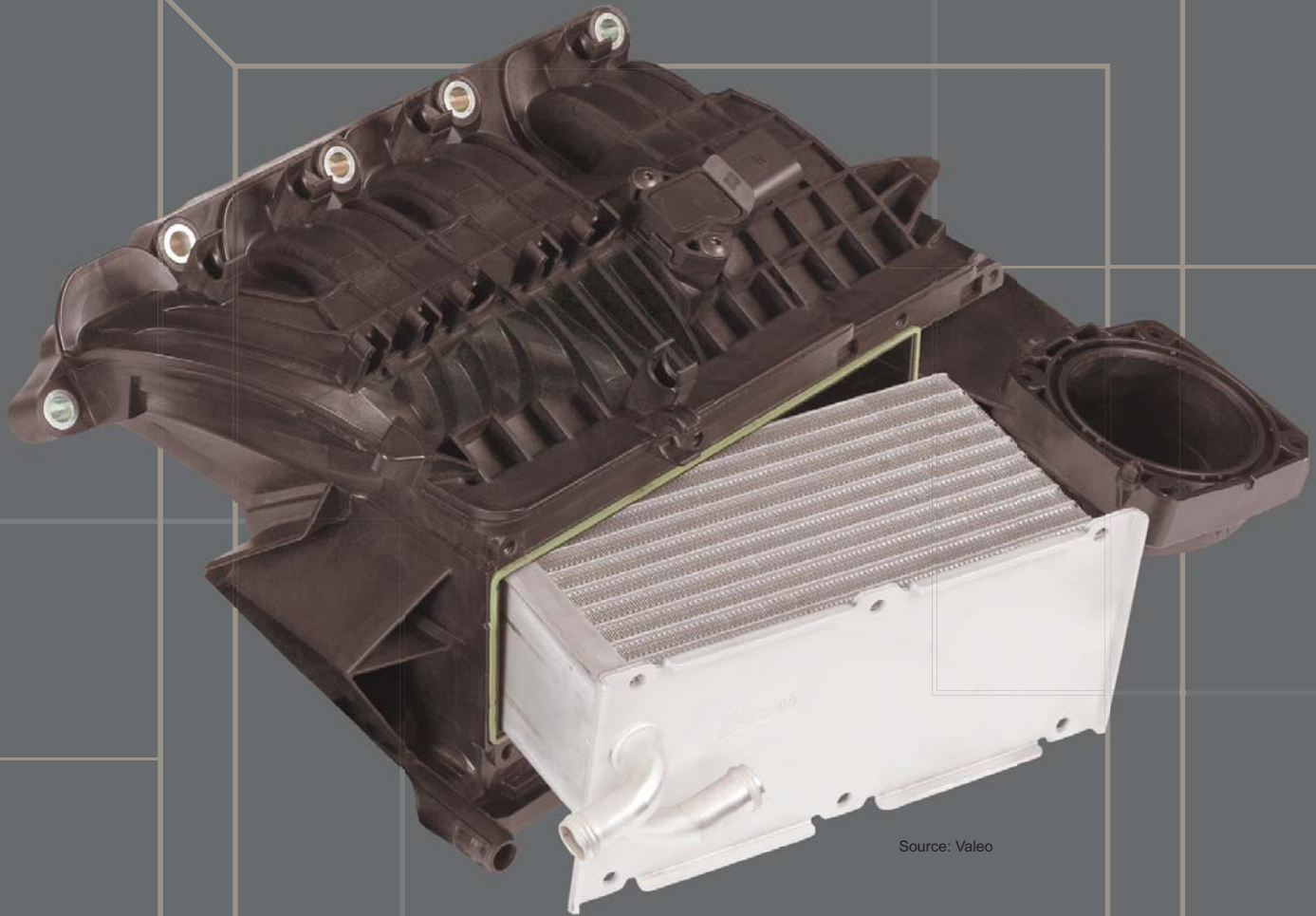


# Automotive Air Induction and Cooling Systems 2007



Source: Valeo

**September 27, 2007**  
**Sheraton Detroit Novi Hotel**  
**Novi, Michigan U.S.A.**

**Final  
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# Automotive Air Induction and Cooling Systems

## AGENDA

Please note that conference proceedings are not available

7:00 -

8:15 a.m. **Registration and Continental Breakfast**

8:15 a.m. **OPENING REMARKS**

*Dr. Joel Kopinsky, Managing Director  
The ITB Group (U.S.A.)*

## Air Induction Systems

8:30 a.m. **Effect of Under-Hood Temperature on the Flow Field in an Air Induction System**

*Visteon Corporation (U.S.A.)*

Effects of the under-hood heat generated by the automobile engine on the air induction system is investigated using steady state and transient analysis. Simulations are performed using ANSYS Fluent and the results are compared with test results.

9:00 a.m. **Creating a Unique Brand Sound Through Passive Acoustic Management**

*MANN+HUMMEL (U.S.A.)*

Because more and more vehicles are being equipped with charged engines, there is a greater demand for acoustic measures to address the resulting sound. When compared with naturally-aspirated engines, turbochargers or superchargers create an additional source of noise within the air intake system. This discussion will address how specific acoustic measures are developed to address these sounds. It will explore how MANN+HUMMEL's acoustic engineers use 3D simulation tools to create branded sounds, designed for a particular vehicle.

9:30 a.m. **Design Guidelines for Improved Burst Pressure and NVH Characteristics of Air Intake Manifolds**

*BASF Corporation (U.S.A.)*

Design considerations of air intake manifolds as they relate to burst pressure and noise and vibration and harshness performance, two of the most important criteria for intake manifolds, are considered. Design guidelines that improve these characteristics will be presented. The use of computer aided engineering techniques to evaluate burst pressure and NVH characteristics will be emphasized using proprietary codes developed by BASF.

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

## Materials

10:30 a.m. **Continuing Evolution of Fluorosilicone Rubber for Hoseliners in Automotive and Small Truck Air Induction and Cooling Systems**

*Dow Corning (U.S.A.)*

As new engine designs run faster and hotter, new cooling and air intake systems must be designed to maintain efficient and reliable performance. Increasingly, manufacturers are turning to fluoroelastomer hoses in a multilayer construction to meet performance, cost and reliability needs. This presentation will include key data from recent developments that reinforce the importance of selecting an optimized FVMQ as a high-performance hose liner capable of meeting today's requirements.

11:00 a.m. **Innovative High Strength Glass Microspheres for Injection Molded Plastics and Composites**

*3M Company (U.S.A. / Germany)*

High strength glass microspheres have been developed and commercialized for use in injection molded plastic parts and pressed composite structures. This new and innovative additive is low in density, but has high compressive strength. The unique strength and particle size properties allow the additive to survive plastic processing, providing OEM designers and molders with new application opportunities.

11:30 a.m. **High Temperature Ethylene Acrylic Elastomers and Fluoroelastomer Made with APA Technology for Charged Air Cooler (CAC) Hoses**

*DuPont Performance Elastomers (U.S.A.)*

*DuPont Company (U.S.A.)*

The latest automotive charged air systems require CAC hoses with improved resistance to heat, synthetic oils, and blow-by gas condensates. Elastomers used in these hoses must also provide excellent dynamic properties and interlayer adhesion across a wide range of operating temperatures. This presentation will discuss the performance of

high temperature Vamac® and Viton® made with APA Technology in conditions ranging from 165°C to 205°C and in a variety of engine oils and acid condensates.

12:00 p.m. Lunch

## System Drivers

1:00 p.m. **Cleaning of OEM Engine Air Intake Filters**

*Visteon Corporation (U.S.A.)*

The majority of passenger vehicles on the road today are equipped with a disposable filter element. Cleaning OEM and aftermarket air filters is common for end customers in some countries such as Asia and South America. Challenges to implement an appropriate servicing/cleaning procedure and schedule include excessive/over service and potential damage during improper reinstallation that could eventually result in engine damage. Limitations and challenges of cleaning air filters are explored and discussed.

1:30 p.m. **Air Induction Benefits of Watercooled Charge Air Cooler for Engine Performance and Cooling Modules**

*Valeo (U.S.A.)*

Water cooling of charged air is an alternative to air cooled systems. This discussion will address the impact of water cooling of the charge air and how this helps to increase engine specific power.

2:00 p.m. **Electrified Integrated Air Fuel Module**

*MAHLE Filter Systems (Canada)*

The electrified integrated air fuel module concept offers customers a considerable reduction in material, process and assembly costs and greatly enhances reliability by molding engine wiring into the plastic of the manifold. The elimination of the engine wire harness and many electrical connections and seals results in many benefits. The Engine Control Unit (ECU) is integrated into the manifold's electrical connection architecture, allowing the entire E-IAFM to be quality tested as a fully integrated unit.

2:30 p.m. Afternoon Break

## Air Induction Components

3:00 p.m. **Breakthrough in Composite Housings for Electronic Throttle Control**

*Helvoet (U.S.A.)*

Via an intensive team effort involving customers, material suppliers, tool makers and an internal development team, Helvoet has developed the proven competence to produce housings for electronic throttlebody controls out of bulk molding compound as an alternative to aluminum. Main advantages for the customer are weight reduction, long tooling life and cost optimization. This development is considered a real breakthrough in the market, and Helvoet has several parts in production.

3:30 p.m. **Continued Developments in Plastic Intercoolers for Turbo Charged Engines**

*MAHLE Technology (Canada / U.S.A.)*

The all plastic intercooler has been previously proposed and described by Siemens VDO. Now under a new organization, development has continued with new improved designs for heat transfer and improved manufacturing approaches. Improvements have been made both to the laser welding and geometry. Test data will be used to show recent developments.

4:00 p.m. **Development of Composite Air Intake Manifold for Flex Fuel/E100 Fuel Systems**

*Visteon Corporation (U.S.A.)*

Review of design and development for an intake manifold for a Flex Fuel (E22 - E100) powertrain will be discussed. The intake manifold was developed with additional fuel system features that were necessary for cold weather start performance. The additional design features required for secondary fuel ports will be reviewed and discussed. Design features that reduced overall system complexity and leak points will be reviewed.

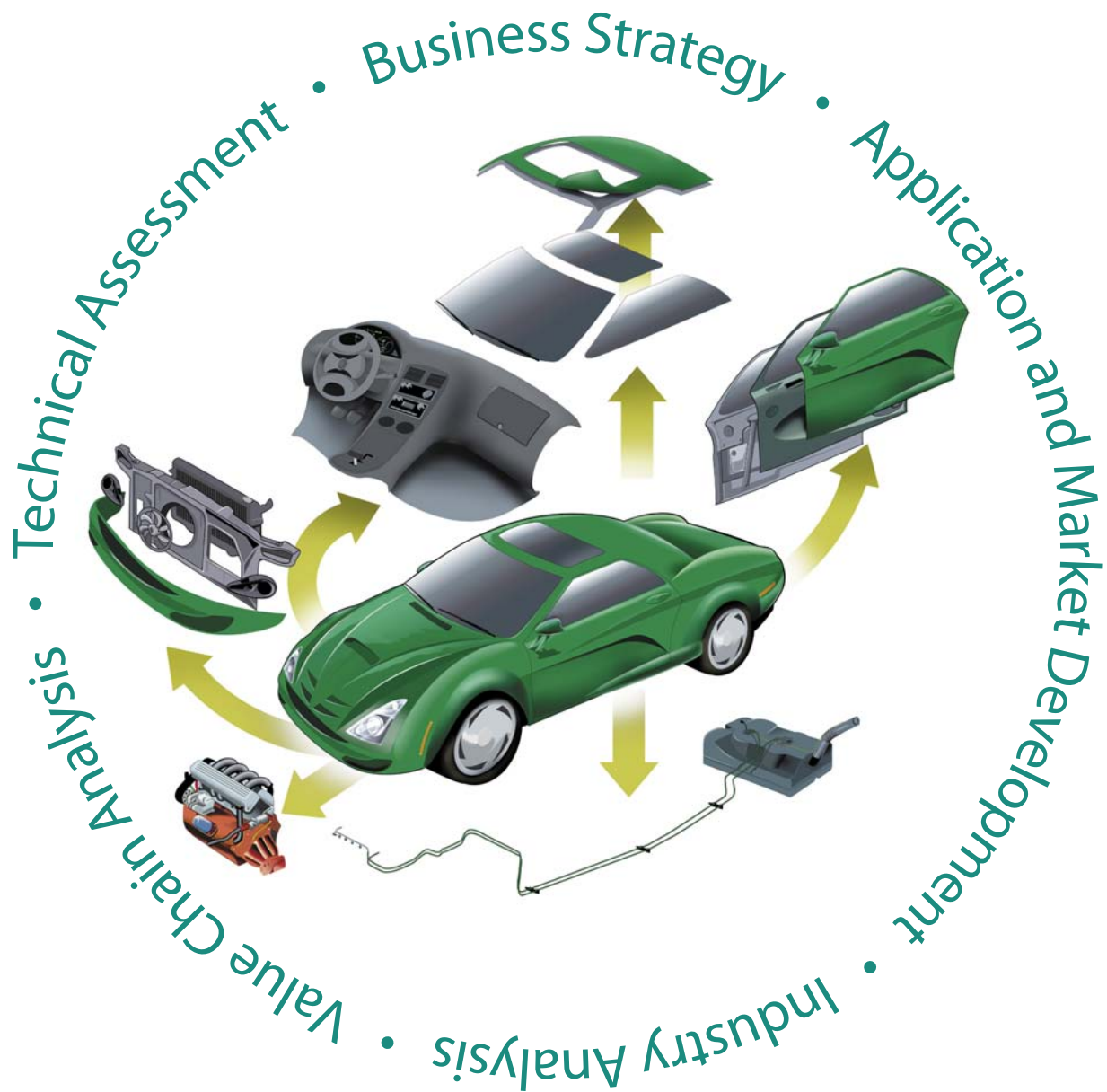
4:30 p.m. **Closing Remarks and Cocktail Reception**

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