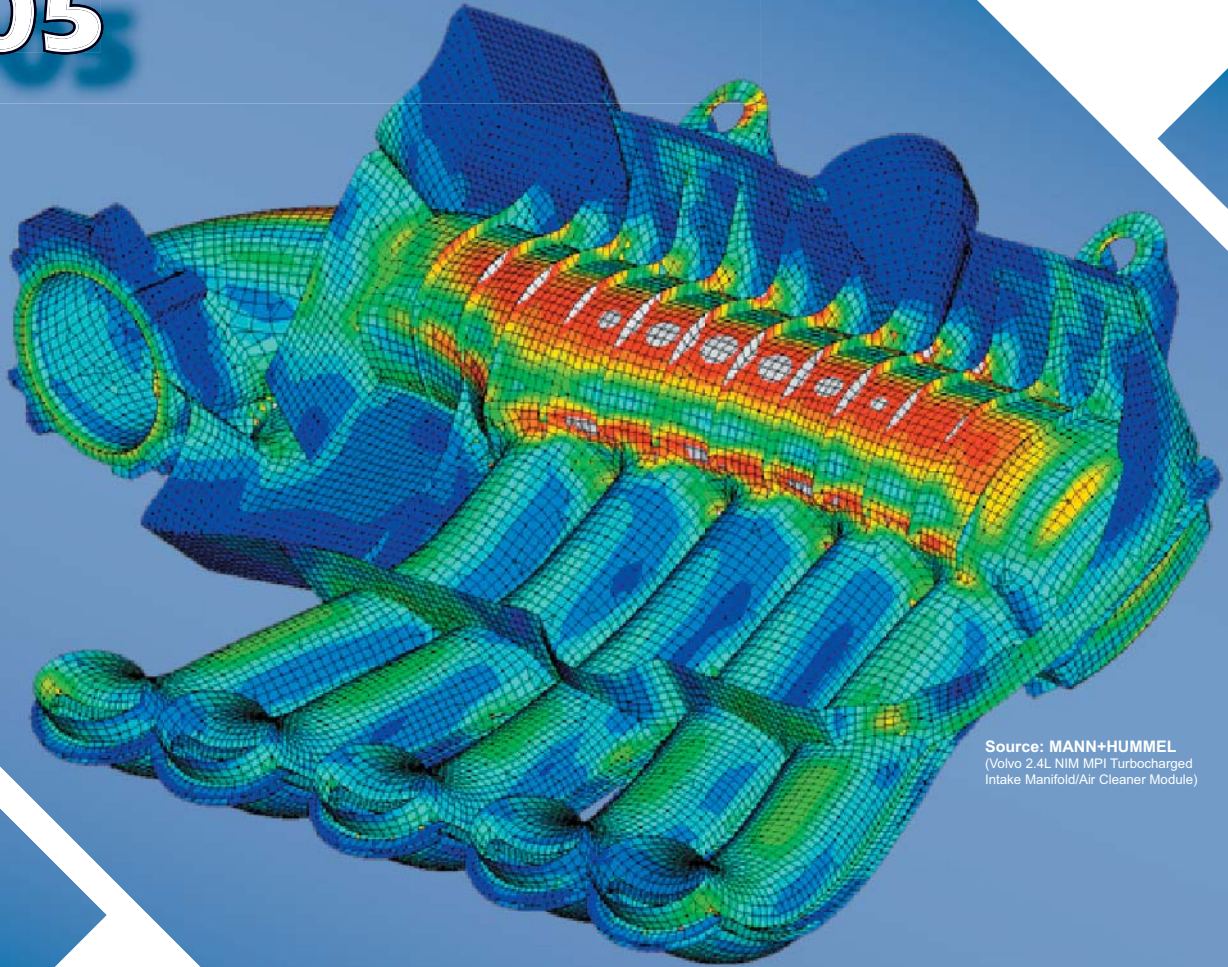


Automotive Air Induction Systems 2005

The
ITB
Group, Ltd.



Source: MANN+HUMMEL
(Volvo 2.4L NIM MPI Turbocharged
Intake Manifold/Air Cleaner Module)

Sponsors:



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Solvay
Advanced Polymers



Final Program

**September 30, 2005
Sheraton Detroit Novi
Novi, Michigan U.S.A.**

Automotive Air Induction Systems 2005

AGENDA

Please note that conference proceedings will not be available

7:00 -

8:15 a.m. Registration and Continental Breakfast

8:15 a.m. Opening Remarks

Dr. Joel Kopinsky, Principal, The ITB Group

10:00 a.m. Mid-Morning Break

Air Induction Components

Design and Development of Air Induction Systems

8:30 a.m. Design of Air Induction Systems for Environmental Sustainability

Visteon Corporation (U.S.A.)

A focus on reducing the total life cycle impact of air induction systems on the environment through system design and end-of-life analysis. This is accomplished through the use of recycled content resins, reducing landfill of filters through capacity improvement and the use of recyclable filters.

9:00 a.m. High-Performance Air-Flow Management: Solving the Materials Selection Puzzle

DuPont Automotive (U.S.A.)

Tight under-hood packaging constraints in today's vehicles can make the designs for air induction components look more like spaghetti than a logical fuel and air system. The proper design and materials selection can significantly reduce cost, weight and improve performance.

9:30 a.m. Engine Mounted Air Cleaner Modules - A Study in Cost and Packaging Space Optimization Through Integration

MANN+HUMMEL (U.S.A.)

Functional components of the engine system are integrated into the engine mounted air induction system. Examples include: beauty covers with integrated air filtration, acoustic attenuation devices and other functions. This approach is optimal not only for space conservation, but also for an overall cost reduction.

10:30 a.m. Development of a New Joining Technology in a Plastic/Metal Fuel Rail

Dana Corporation (U.S.A.)

A simple, low risk plastic/metal hybrid joining technology has been developed. It provides a hermetic seal for fluid handling components and eliminates costly welding, brazing and plating processes.

11:00 a.m. Blow-Molded Charged Air Ducts

Mark IV Automotive (U.S.A.)

Developments continue concerning the clean air ducts to the turbocharger, the duct between the turbo and the intercooler and the duct from the intercooler to the manifold with a clear orientation to integration of functions. Example products, designs and the main qualification tests are presented. The presented processes include blowmolding (2D / 3D Battenfeld / 3D suction) and assembly by welding technologies.

11:30 a.m. Throttle Body Housings Molded from High Performance Polysulfone

Solvay Advanced Polymers (U.S.A.)

Many throttle body housings, traditionally formed in metal, are now being designed in plastic. Until now, the use of plastic in this area has been limited to smaller diameter applications. A new material is introduced, based on Polysulfone chemistry, that offers a cost effective alternative to metal and other thermoplastics.

Exhibitors:

Dana Corporation

Dyneon

DuPont Automotive

EMS-GRIVORY

12:00 p.m. Automotive Engine Air Intake System with Variable Noise Control

Visteon Corporation (U.S.A.)

Market differentiation, brand imaging and a perceived improvement in quality are major drivers to provide vehicle specific sound quality targets. An electronically controlled variable noise control device for engine air intake systems that is capable of adjusting the air intake system's frequency response, as commanded by the engine operating conditions will be introduced.

12:30 p.m. Lunch

Materials and Processes for Air Induction Systems

1:30 p.m. Injection Molding Short Air Ducts Using TPVs

ExxonMobil Chemical (U.S.A.)

Cost comparisons are described between three primary methods for the production of short air ducts. Cost and performance comparisons between rubber injection molding, extrusion blow molding and thermoplastic injection molding are presented.

2:00 p.m. Alternative Joining Technologies for Composite Air Intake Manifolds

BASF Corporation (U.S.A.)

Alternative joining technologies for composite multi-piece air intake manifolds will be described. Focus will be placed on laser and IR-assisted-vibration welding.

2:30 p.m. 150°C Capable Thermoplastic Elastomer for Turbo Diesel Charge Air Ducts

Zeon Chemicals (U.S.A.)

Copolyester and polypropylene-based turbo diesel air ducts face limitations as underhood temperatures rise to 150°C and higher. High temperature TPVs enable air ducts capable of meeting temperatures from -40° to 175°C, adhesion to nylon ducts via welding or overmolding, and sequential blow molding with nylon.

3:00 p.m. Afternoon Break

Intake Manifolds

3:30 p.m. Steps Towards a Cost Effective Laser Welded Plastic Intake Manifold

Siemens VDO (U.S.A.)

Hans Herfurth, Fraunhofer Research (U.S.A.)

Laser welding of plastics can allow novel geometry in the design of intake manifold joints and cut planes. A cut plane has been proposed which greatly simplifies the molding process. Various materials have been tried and clamping approaches developed that have resulted in the fabrication of complete test manifolds.

4:00 p.m. New Variable Intake Manifold for 6 Cylinder Engines

Mahle (U.S.A.)

New in-line and V-6 cylinder engines are equipped with variable plastic intake manifolds. Innovative solutions have been used to improve power, torque and emissions for the different engine concepts that have a common part strategy. The manifolds are developed with a high degree of integration to meet demanding performance requirements and cost targets.

4:30 p.m. 3-D Simulation of the Flow Dynamics of an Intake Manifold and its Influence on Engine Performance

MANN+HUMMEL (Germany)

The use of 1-D gas exchange simulation tools play an important role in air induction component design in the development of a new engine. Changing requirements for emissions and performance behavior now require more accurate prediction methods than a 1-D simulation tool can accomplish. One approach is to consider a 3-D CFD manifold model and an 1-D engine model. A simulation method that allows considering the 3-D geometry of the air intake manifold but with strongly reduced simulation times compared to the coupled 3-D/1-D approach will be discussed.

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

Consulting Expertise



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