

Automotive Fuel Systems



2008



Source: Inergy Automotive Systems

Thursday, March 6, 2008

Ford Motor Company Conference and Event Center
Dearborn, Michigan USA

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MORE PLASTICS WITH MORE PERFORMANCE



Automotive Fuel Systems 2008

AGENDA

Please note that conference proceedings are not available

7:00 a.m. -
8:15 a.m. **Registration and Continental Breakfast**

8:15 a.m. **WELCOME and OPENING REMARKS**
*Dr. Joel Kopinsky, Managing Director
The ITB Group (U.S.A.)*

Fuel Tank Innovations

8:30 a.m. **TSBM™ (Twin Sheet Blow Molding) - A
New Production Process Optimized for a
Wide Range of Architectures and Evaporative
Emissions**

*Dr. Paul Wouters, Vice-President of Research
Inergy Automotive Systems (Belgium)*

Plastic fuel tanks have to face increasingly severe emission regulations applicable to large production volumes. The TSBM tank technology combines PZEV performance with the integration of a large diverse set of components. By releasing the process constraints, this technology provides more freedom for fuel tank design. TSBM allows a wide range of architectures to be covered, embedding for instance, large modules. Validated and implemented into serial production this year, TSBM will be applied on new programs to address PZEV and high performance specifications.

9:00 a.m. **Barrier Characteristics of EVOH when
Exposed to Ethanol and Diesel Fuels**
Speaker TBD

EVVAL Company of America (U.S.A.)

Laboratory data will be presented showing the permeation characteristics of multilayer structures containing EVOH when exposed to ethanol fuels. Results will be presented for both an industry standard grade and a new formulation EVOH designed for elevated ethanol levels. The second part of this presentation will focus on hydrocarbon emissions related to diesel fuel systems and multilayer structures. Data will be presented that shows the permeation characteristics using a variety of diesel and biodiesel fuels. Both parts of the presentation will also discuss SHED tests results.

9:30 a.m. **Magnetic Sealed Level Sensing Unit for Fuel
Systems**
*Eduardo Santos, Program Development Manager
TI Automotive (Brazil)*

High content ethanol fuels require specific attention to protect the fuel sensing unit and electrical contacts from chemical degradation. An innovative design and process has been developed to protect the wiping unit from contact with fuel. Movement of a traditional float is coupled through the sealed body via a magnet pair. Technical features are highlighted together with lessons learned from development, manufacturing and testing.

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

Simulation and Testing

10:30 a.m. **Development and Application of an
Evaporation Model for an Automotive
Refueling System with Ethanol/Iso-Octane
Binary Mixture**

*R. Banerjee, C. Burke, J. Dumas and D. Gepper
Fluid Routing Solutions (U.S.A.)*

An evaporation model for alcohol fuels is being developed. The first steps consider the fuel as a binary mixture of ethanol and iso-octane. Both experimental and theoretical methods have been developed to understand the evaporation of the binary mixture. The results have been used to simulate a refueling system.

10:50 a.m. **Gas, Vapor and Liquid Permeation Analysis
Systems using Gas Chromatography**
*Bill Graham, National Sales Manager
GTR TEC (U.S.A.)*

A system has been developed for determining permeation from different fuel components such as tubes, small resin tanks and gaskets. The system allows for the separation of the permeate into individual species with a qualitative and quantitative analysis.

11:10 a.m. **Carbon Canister Evolutionary Trends on
On-board Diagnostics**
*Kevin Mulkeran, Director, R&D and Program
Management*

MAHLE Technology (U.S.A.)

A review of the methods used for vehicle on-board diagnostics for emissions control will be provided. The latest technologies will be identified along with the testing methodologies used to meet the requirements. The use of carbon canisters will be shown to maximize efficiency while minimizing cost.

11:30 a.m. **Fuel Tank Slosh Noise Simulation**
*Mitsuhiro Hashimoto, Engineering Director
TI Automotive (Germany)*

To-date, slosh noise solutions have been based mostly on experience together with trial and error. If the origin of the slosh noise is associated with the movement and contact of the fuel within the tank, tank designs can be improved prior to a physical part test. Cases have been developed that simulate fuel tank vibration due to fuel movement and analyze the frequency response on the tank wall to predict slosh noise.

11:50 a.m. **Lunch**



Alternative Fuels and Material's Resistance

- 1:00 p.m. Life Cycle Assessment of Biofuels — Well-to-Wheels Analysis**
*Dr. May Wu, Environmental Scientist
Argonne National Laboratory (U.S.A.)*
The U.S. has positioned itself as the world's leading user of biofuels, yet it needs about six times today's production to reach proposed 2017 levels. Argonne's life cycle assessment tool, GREET, may be used to assist decisions about biofuels by providing energy and emission estimates for fuel production pathways.
- 1:30 p.m. The Permeation Effect of Ethanol Containing Fuels on Fluoropolymers**
*Todd Fukushi, Research and Technology Engineer
Dyneon (U.S.A.)*
The permeation of fluoropolymers was determined using cup and weight loss methods. Additional techniques, including the determination of vapor pressure, are discussed. Weight and volume changes of materials are considered together with the crystallinity index and glass transition temperature.
- 1:50 p.m. HDPE with Biodiesel in Plastic Fuel Tanks**
*Hendrik Schönfelder, Business Manager, BU
Plastic Fuel Tank, Basell Polyolefins (Germany)*
New HDPE resins based on patented chemical technology have been developed that can accommodate emerging biodiesel fuels. Test data shows a significant increase in chemical resistance to biodiesel compared with current HDPE grades.
- 2:10 p.m. High Performance Barrier Materials for Fuel System Components**
*Maria Gallahue, Global Market Manager
Solvay Advanced Polymers (U.S.A.)*
Higher performing materials are required to meet the challenges of emissions, temperatures and the growing list of global fuels. Aromatic nylon compounds can be used for a variety of fuel system applications.
- 2:30 p.m. Next Generation of Low Temperature Fluoroelastomers**
*Philip Schild, Business Development Manager
Solvay Solexis (U.S.A.)*
With the use of a new monomer technology, new fluoroelastomers have been developed that deliver superior fuel resistance and low temperature performance.
- 2:50 p.m. Electroless Nickel Plating of HDPE and Acetal for Alternative Fuels**
*Dr. Jack McCaskie, Senior Business
Development Manager, Rohm and Haas
Electronic Materials (U.S.A.) and
Thomas Schmoyer, Sales Engineer
Surface Activation Technologies (U.S.A.)*
A process that activates a plastic material's surface followed by metallization will be described. This provides fuel system components with improved chemical resistance to biofuels, reduced permeation and a conductive surface.
- 3:10 p.m. Afternoon Break**

Component Developments

- 3:30 p.m. Tomorrow's Integrated Urea SCR System for the Passenger Car Market**
*Jim Thompson, NAO Research Director
Inergy Automotive Systems (U.S.A.)*
A first generation urea SCR system designed for 2008 applications offers excellent results in terms of performance and robustness. Performance has been demonstrated under hot and cold conditions. The development phase was concluded with two production and several pre-development awards. A second generation system, featuring a fully integrated SCR approach, is now being developed for 2010 applications.
- 4:00 p.m. Automatic Water Separation of a Diesel Fuel Filter System**
*Hans Jensen, Vice President Product
Development
MAHLE Technology (U.S.A.)*
Water separation is an important task for diesel fuel filters. A new automatic water disposal system that does not need any service or maintenance by the driver of the vehicle has been developed. The filter module detects when the separated water needs to be released and then disposes the high quality water into the environment.
- 4:30 p.m. Purge Efficiency and Purge Boosting in EVAP Systems with Low Air Volume Purge**
*Dr. Andrzej Kalina, Engineering Supervisor and
Jan Jasinski, Engineering Leader
Delphi (Poland)*
Reduction of carbon dioxide emissions can be achieved if more efficient engine solutions such as turbocharging, direct injection and hybrid engines are used. However, low purge conditions are typical for such systems which complicates the control of evaporative emissions. An innovative approach is presented that comprises purge boosting together with a hydrocarbon sensing technique. A feed forward algorithm is used for engine fueling to improve purge control and engine combustion conditions.
- 5:00 p.m. Fuel Line Compatibility with Biofuels**
*Anthony Carman, Principal Engineer
Cooper-Standard Automotive (U.S.A.)*
Biofuel usage is increasing and brings with it questions about material compatibility. There is a significant body of knowledge regarding ethanol and methanol compatibility with fuel system components. Biodiesel material compatibility is less well understood. This presentation will outline the standards and issues relevant to validating fuel line materials. Analyses will be shown regarding specific fuel line constructions which have been demonstrated to be compatible or not compatible with different types of biofuels.
- 5:30 p.m. Closing Remarks and Cocktail Reception**



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1151 Village Road, Dearborn, Michigan (U.S.A.)

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Basell Polyolefins
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EVAL Company of America
Evonik Degussa

Expert
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GTR TEC
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Precix
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