Automotive Energy Storage Systems

Final Program
March 1 and 2, 2017
Sheraton Detroit Novi Hotel - Novi, Michigan U.S.A.
Day 1 Program Agenda - March 1, 2017

7:30 a.m.  Registration and Continental Breakfast

8:45 a.m.  Welcome and Introductory Remarks
            Dr. Joel Kopinsky, Managing Director
            The ITB Group (U.S.A.)

Material Developments

9:00 a.m.  Advantages of Aliphatic Polyketones in Automotive Fuel Systems
            President
            Esprix Technologies (U.S.A.)
            Aliphatic polyketone engineering thermoplastic resins have excellent chemical resistance and possess very low permeability. These materials are excellent candidates for fuel system components. The material can be compounded to improve electrical conductivity. The materials also exhibit dimensional stability, high strength and toughness, and good temperature resistance.

9:30 a.m.  Performance and Cost Enhancement of SCR Tank Application by Foaming
            Application Development Manager
            LyondellBasell (Germany)
            Physical and chemical foaming processing techniques have been used for many years for various materials that require improved stiffness with reduced lower weight. Lupolen GX 5038 has been developed for injection molded SCR tanks. The use of physical or chemical foaming for the production of SCR tanks is innovative and may provide specific advantages such as better dimensional alignment, shorter cycle time, weight saving, stiffness improvement, reduction of system cost, or the possibility of part integration.

10:00 a.m. MPACII - Macro-Porous Activated Carbon II
            Director of Global Product Development and Strategy
            MAHLE Filter Systems (U.S.A.)
            With the trend towards a reduction of purge air volume driven by new engine technologies offering improved fuel economy, MAHLE Filter Systems has further evolved its patented MPAC - Macro-Porous Activated Carbon technology to meet purge conditions of less than 100 bed volumes.

10:30 a.m. Networking Break

            Master Expert, Fuel System Testing and Specifications
            Plastic Omnium (U.S.A.)
            Global light duty vehicle evaporative emission regulations will be discussed with an emphasis on the evolution of the US EPA/CARB rulemaking. Fuel system architecture and materials differences arising from unique test procedures and test conditions will be explained in the context of fuel system hardware performance.

Fuel Tank System Developments

12:00 p.m. Modular Extruded Plastic Fuel Filler Pipe
            Global Director, Fuel Delivery
            Stant Corporation (U.S.A.)
            With the next phase of implementation of the Corporate Average Fuel Economy (CAFE) standards set to significantly require improved fuel efficiency for medium and heavy duty vehicles on the horizon, OEMs are seeking low-weight design and material alternatives. Together with strict evaporative emission, corrosion, and crash worthiness regulations is the challenge that we seek to address for fuel filler pipes that are primarily constructed of cold rolled or stainless steel. A unique plastic filler pipe design has been developed that is lightweight, robust, and able to maintain low emissions while providing commercial advantages.

12:30 p.m. Lunch

2:00 p.m. Optimal Refueling Behavior Independent from Tank Design: A Dream or Reality?
            Research Manager Senior Research Engineer
            Plastic Omnium (U.S.A.)
            With the appearance of reinforced plastic tanks for plug-in hybrid vehicles it is now possible to combine the lightness and design freedom of plastic tanks with the need to reduce canister
loading and engine purge. The presence of the tank pressure control valve and its related electronics open an entire new world of challenges and opportunities. A traditional fuel system challenge consists of achieving optimal refueling behavior in combination with a high usable volume. This presentation describes how this challenge can be dealt with by a pressurized system and how development time and costs can be saved while at the same time refueling behavior is improved.

2:30 p.m. Complete System Approach to Thermal Management in Electronically Controlled Diesel Fuel Delivery Systems
BFO Fuel Pump Modules and System
Engineer Fuel Delivery
General Motors (U.S.A.)
This presentation will delve into the challenges of managing the thermal energy in an electronically controlled diesel fuel delivery system. It will cover the reasons behind moving toward electronic fuel delivery control, the potential effects when implementing this control strategy, and the mitigating steps (including the data analysis) that can be taken by the fuel system engineer to manage the thermal energy.

3:00 p.m. Building Blocks to Improve Plastic Fuel Tanks
Senior Manager Core Functions
Kautex Textron (Germany)
Emissions are one of the main drivers of fuel system development. The development of PZEV systems was a challenge and now with the introduction of LEV III, the OEMs need to reduce fuel system limits slightly. China will change to approximately LEV II emission levels. This means greater quantities of low emission vehicles saddled with higher cost pressures. Hybridization with the use of pressurized tanks is another challenge. New design solutions have been developed to meet these challenges. This bigger “Toolbox” allows these requirements to be met in a cost effective way.

3:30 p.m. Networking Break

Vapor Control Systems

4:00 p.m. Latching Refueling Valve
Senior Product Engineer, Evap Segment Continental (Canada)
A bi-stable valve has been developed for use on pressurized fuel tank systems. Such a valve does not consume power in either the open or closed state. The operation of this valve and component material selection will be detailed.

4:30 p.m. Electronically Controlled Evaporative Emissions Venting System
Engineer
Eaton (U.S.A.)
A paradigm shift to replace current mechanically actuated vent valves with electronic actuation options is underway. One set of hardware can be used across multiple vehicle platforms and fuel tank variations, including high pressure hybrids. The fine tuning for dynamic, static and refueling venting can be analyzed and programmed via software changes. Superior performance has been achieved on a development platform in the laboratory and on a test vehicle.

5:00 p.m. An Evolution Design for the Traditional Two Chamber Carbon Canister
Product Development Director
MAST Automotive (U.K.)
Reduced purge volume has led to the need to have a better regeneration for the carbon canister. MAST will unveil the new design incorporating its unique design features that will further improve the performance of the traditional two chamber canister that one has not seen in the past 15 years or so.

5:30 p.m. Cocktail Reception
7:30 a.m. Registration and Continental Breakfast

8:45 a.m. Welcome and Introductory Remarks
Dr. Joel Kopinsky, Managing Director
The ITB Group (U.S.A.)

9:00 a.m. A Robust Modeling Tool for the Analysis of Solidification and Melting Processes in SCR Tanks
Research Officer and Team Leader
National Research Council Canada (Canada)
The modeling of the freezing/melting process is a challenging topic which has not been fully solved for the storage of Diesel Exhaust Fluid (DEF). Complex tank geometries and DEF density changes due to the phase-change present significant challenges. It becomes important to have potent simulation numerical tools to account for these challenges.

9:30 a.m. Thermal and Structural Simulations of SCR Systems
CAE Engineer
General Motors (Canada)
The introduction of SCR systems as integrated sub-systems of diesel powertrains necessitates the development of new simulation tools for validation. Diesel emission fluid systems are similar to fuel systems, yet present unique challenges, from exhibiting sloshing behavior in the summer and freezing in winter. Lessons learned, wins and challenges from the thermal and structural simulations will be discussed.

10:00 a.m. Magnetic Field Optimization for SCR Refilling Systems Based on ISO 22241
Sales Engineer, Bakker Magnetics
(The Netherlands) and
Project Manager, Reutter Group (Germany)
The magnetic forces and their interaction with refilling nozzles for SCR systems have been studied. The aim was to achieve cost reduction and optimize nozzle interaction.

10:30 a.m. Networking Break

11:00 a.m. How to Improve Robust SCR Systems for Most Effective NO\textsubscript{X} Reduction
Manager Core Function SCR
Kautex Textron (Germany)
Dieselgate led to a loss in confidence in diesel-based vehicles and showed the importance of a working NO\textsubscript{X} reduction system under real conditions. Kautex has developed innovative SCR system features to support this requirement including new CAE analysis, improved heating, avoiding ammonia odor and miss-filling protection.

11:30 a.m. DINOx Solid: An Intelligent System to Store and Supply Ammonia Gas to a Passenger Car SCR System
SCR Solid Project Director and SCR Business Development Director
Plastic Omnium (France)
Current SCR systems use ammonia in the form of an aqueous solution which evaporates and hydrolyzes in the exhaust system. A prerequisite to this evaporation is a minimum exhaust temperature which can be a challenge at low engine load usage. Ammonia can instead be supplied as a gas directly into the exhaust system. This presentation describes an intelligent system which is a safe and efficient means of storing and supplying ammonia gas onboard the vehicle.

12:00 p.m. Future Challenges on DEF Systems Due to RDE Requirement
Product Manager, Fluid Components and Systems
Röchling Automotive (Italy)
An update on the requirements for diesel emission fluid (DEF) systems will be provided that includes changing requirements due to increased DEF consumption, heating, slosh and de-icing. Changes to filling systems...
resulting from more frequent refilling will be described together with improvements to packaging, odor reduction, cost and simulation tools.

12:30 p.m. Lunch

Clean and Sustainable Vehicle Energy Usage

1:40 p.m. At the Heart of a Fuel Cell System: W. L. Gore’s Clean Energy Technology
North America Sales Leader, Electrochemical Products Group
W.L. Gore & Associates (U.S.A.)
W.L. Gore has been pioneering the use of its ePTFE reinforced membranes in hydrogen fuel cell systems. These membranes unleash the latent energy of hydrogen through an electrochemical reaction. As the fuel cell industry experiences growing acceptance, we strive to deliver products of the highest performance and durability, enable lower system cost, and allow for faster adoption and acceleration of this technology.

2:10 p.m. Department of Energy Co-Optima Initiative
Senior Chemist
National Renewable Energy Laboratory (U.S.A.)
The Department of Energy has undertaken a new initiative to accelerate the introduction of sustainable biofuels and high-efficiency, low emission vehicles by providing science-based, actionable data on vehicle engine architectures and fuels. Our charter is to execute on high-risk research and provide data to stakeholders and policy makers. This presentation will introduce the Co-Optima project with particular emphasis on biofuels properties and market barriers.

2:30 p.m. Ethanol - Enormous Potential and Feasible Manufacturing Technologies
Technology Expert (U.S.A.)
Recent results have shown that with high compression an engine’s thermal efficiency can be improved by 5 to 10% by using mid-level ethanol blends. Despite the benefits, questions continue concerning the supply and economic viability of ethanol. Different ethanol production routes will be discussed with a focus on natural gas reforming with exogenous carbon dioxide fixation since it is the route that can help overcome these challenges.

2:50 p.m. Outlook for Fuel Use by On-Road Vehicles in the United States
Mechanical Engineer
U.S. Energy Information Administration (U.S.A.)
The Energy Information Administration’s Annual Energy Outlook (AEO) contains projections for conventional and alternative fuel usage by on-road vehicles. Based on AEO2017, alternative fuel capable light-duty vehicles are expected to continue to increase their market share through 2050. Light-duty vehicle diesel consumption continues to increase throughout the projection. This presentation will discuss the state of diesel consumption from on-road vehicles in light of the newly finalized GHG and fuel economy standards.

3:10 p.m. Low Pressure On-board Natural Gas Storage Enables a True Paradigm Shift
President and CEO
Adsorbed Natural Gas Products (U.S.A.)
The combination of adsorbent monoliths and second generation conformable tanks significantly improves low pressure natural gas storage tank capacity and mounting options. Conformable tank designs have received significant attention in recent years to improve the volumetric storage of compressed natural gas on vehicles. A patent-pending conformable tank design has been developed that provides up to 80% tank conformance.

3:30 p.m. Closing Remarks

4:00 p.m. Exhibits Close

National Research Council Canada
Plastic Omnium
PolySource
Rayconnect
Sanoh Industrial
SGS Testing Services Group
Stant
Strategic Alliance for Steel Fuel Tanks
TDK
A.Raymond / Rayconnect Inc.
Many automotive and truck customers prefer to use ARaymond™ Quick Connectors from Rayconnect because they answer their needs: ease of operation, locking safety, traceability, range diversity and integrated functions (valves, sensors, regulators). Our connectors are found in many types of fluid systems: fuel, fuel vapor, SCR, HVAC, engine cooling, battery cooling, oil cooling, power steering, brake vacuum and many other fluid applications.

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Fraenkische USA
Fraenkische, founded in 1906, is now known as the industry leader in the design and development of plastic corrugated tubing solutions. We invented the corrugated tubing process, and are still leading the way in cutting edge solutions for the ever changing marketplace. We strive to develop tailored solutions to suit the individual needs of our customers.

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Kautex Textron
NGFS®: Enabling advanced fuel system solutions. Kautex NGFS-technology has been introduced in more than 20 projects successfully over the last years. We will show detailed solutions for low emissions, robust functional integration and hybrid pressure tanks stabilization.

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Kuraray
Kuraray, established in 1926 in Japan, has since evolved into a global specialty chemical producer supplying resins, chemicals and synthetic fibers to the automotive, consumer, industrial and medical markets. EVAL™ brand EVOH, characterized by its outstanding gas and fuel barrier properties and Genestar, a high barrier, heat resistant polyamide resin (PA9T), are particularly suited for fuel delivery and component applications.

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LyondellBasell
As innovators of the world’s first plastic fuel tank, LyondellBasell has been delivering proven performance and value since the industry’s beginnings. More than 400 million PFTs have been produced globally with our Lupolen 4261 AG polyethylene resin, which offers the properties and performance OEMs demand. Visit our booth and discover how LyondellBasell can help you succeed.

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Plastic Omnium
Through its Auto Inergy division, Plastic Omnium is a tier-one automotive supplier of plastic fuel tank systems and emission reduction related fluids systems. Worldwide leader on its market, the division employs more than 6,000 people and operates 35 manufacturing facilities in 19 countries. Plastic Omnium remains at the forefront of pioneering technology which is a major factor in its competitiveness, pride and success.

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Stant
Stant is a global leader in the design, development and manufacture of technology-driven fuel closure, liquid transfer, and vapor management sub-systems and products for the automotive OEM and industrial markets. Stant’s global footprint and technical expertise enables us to provide innovative solutions that exceed customers’ expectations and needs. Operational excellence provides our customers with reliable and cost competitive solutions.

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The ITB Group
The ITB Group was established in 1992 with a simple premise: to bridge the gap between developing a suitable technology platform and building a successful business. We are a highly specialized consulting firm with sub-specializations in acoustics, fuel systems, exhaust systems, plastic engine parts, interior/exterior systems and thermal management from a component and modular perspective.

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Developing / Implementing Strategic Vision
- Creating sustainable value
- Identify appropriate activities - product / customer portfolio optimization
- Globalization strategy
- Technology selection

Technology Feasibility Analysis
- Voice of the customer
- Market trends
- Competitive environment
- Apparent value

Capitalizing on Legislative Trends
- Fuel consumption & GHG developments
- Safety
- Emissions (exhaust and evaporative)

Optimizing Customer Base & Product Portfolios
- Value proposition (what and how products are offered)
- Resource optimization
- Customer portfolio
- Identify threats & opportunities

Leveraging Opportunities in the Competitor and Supply Base Arenas
- Competitor analysis
- Supply base optimization
- Make and buy decisions
- Tier One or Two positioning (tiering strategy)

Creating New Relationships
- M & A - target identification, due diligence & implementation assistance
- Technology licensing
- Product partnering
- Consortiums

Conference Schedule
Plan now to participate in ITB’s upcoming automotive conferences. Opportunities to present, sponsor and/or exhibit are available.

- **Plastic Powertrain Parts 2017** - June 1, 2017. Novi, Michigan, U.S.A.
- **Smart Automotive Surfaces** - October 11 and 12, 2017. Novi, Michigan, U.S.A.

For more information, please contact Bryan Eldredge, Program Manager at: beldredge@itbgroup.com or (1) 248-380-6310.