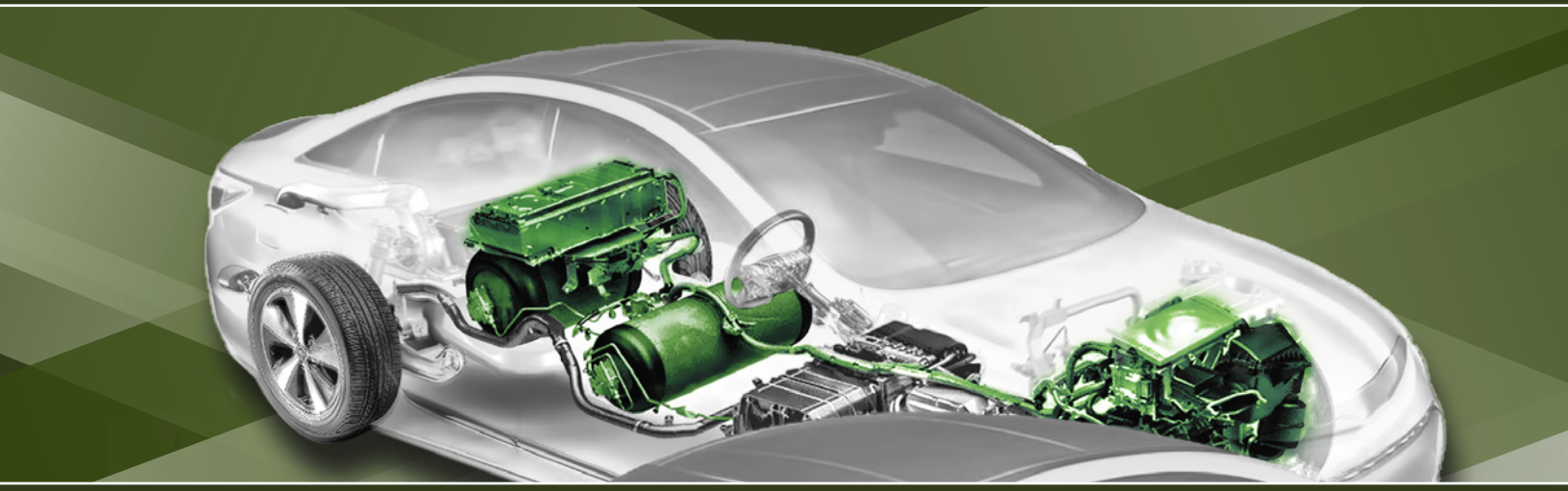
Fuel Systems for Mobility 2022

itB GROUP
when technology matters

May 11 and 12, 2022



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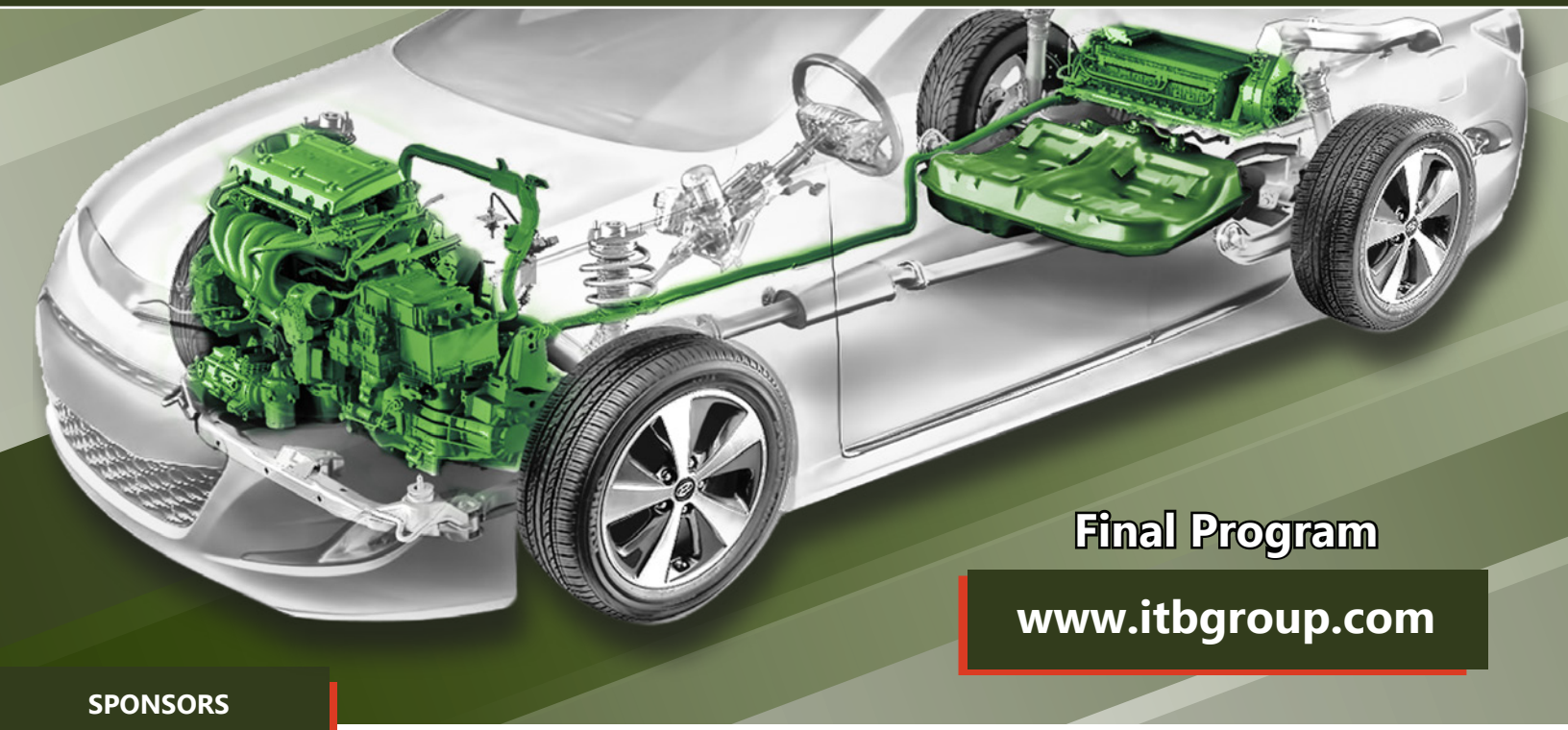

Final Program

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Day 1 Program Agenda - May 11, 2022

7:30 a.m. **Registration, Networking, and Continental Breakfast**

8:50 a.m. **Welcome and Introductory Remarks**
*Dr. Joel Kopinsky, Managing Director and Co-Founder - **The ITB Group***

Sustainable Resources

9:00 a.m. **Overview of the CHIPS for America Act**
Chief of Nanoscale Device Characterization Division
National Institute of Standards and Technology
This presentation will discuss the main objectives of the Act recently authorized by congress and the implications for companies involved in the semiconductor ecosystem.

9:30 a.m. **Building Circularity for End-of-Life Vehicles**
Customer Experience & Sustainability
PADNOS
For decades, industrial recyclers have shredded cars to capture metals. The remaining Auto Shredder Residue, over 5 million gross tons in the USA per year, is used as landfill cover for reducing odor and capturing methane gas. Attendees will learn about new advancements to separate and capture valuable plastics from end-of-life vehicles.

10:00 a.m. **KEYNOTE ADDRESS**
Sustaining the Use of Liquid Fuels

Examining Low Carbon Fuel Standards: What the Last Decade of Fuel Policy Can Teach Us About the Decade To Come
Deputy Director, UC Davis Policy Institute for Energy, Environment and the Economy
University of California, Davis
Low Carbon Fuel Standards have been identified as a mechanism for reducing carbon dioxide vehicle emissions. We will discuss the performance of the standards to-date and modeling by the UC Institute of Transportation Studies to evaluate how California could make its transportation sector carbon-neutral by 2045 and discuss what policy and technology changes may be needed to achieve deep decarbonization by mid-century.

10:45 a.m. **Networking Break**

Evolution of Fuel Tanks

11:15 a.m. **Material Transition from Plastic Fuel and SCR Tanks to Electro-Mobility**
Product Development Scientist
LyondellBasell
The evolution of the automotive industry continues to challenge plastics to comply with stringent regulations and excel in demanding applications. The transition from combustion engines to electric drives is no exception. Material developments and transitions to suitable plastic solutions for the next era of automotive engineering will be highlighted.

11:45 a.m. **Continued Evolution of PHEV Plastic Fuel Tank Systems Towards Cost Efficiency**
Senior Application Engineer
TI Fluid Systems
PHEVs are experiencing rapid growth and in-turn, technologies for pressurized fuel tank systems that support component simplification, weight reduction, and improved manufacturing/process technologies continue to be developed. New technologies enabling improved pressure resistance, tank shell deformation management, mass reduction of the stiffening components, and reduction of process cycle times will be discussed.

12:15 p.m. **Pressure Sensor Solutions Forecast and Accurate Leakage Detection in Fuel Tanks of Future Hybrids and ICEs**
Product Marketing Manager, Sensors Business Group
TDK Sensors
Recent developments in pressure sensor designs which enable the highest signal precision and allow for multiple integration options in various OEM fuel tank applications will be introduced. The use of pressure sensors for fast and accurate leakage detection in hybrid and ICE vehicles will be illustrated and field validation data on signal stability under environmental loads will be discussed. An outlook will also be given for alternative drive trains and how pressure sensor technologies can contribute to pressure control in hydrogen tanks and fuel cell systems.

12:45 p.m. **Lunch**

Presentations from both conference days will be made available to conference attendees two weeks after the conference has concluded AND when provided permission by the speaker

1:45 p.m. **ROUND TABLE DISCUSSION**
Enabling Developments in a Challenging Investment Environment

Formerly Ford Motor Company *- Technical Leader, NAE Fuel Systems*

General Motors *- Global Subsystem Leadership Team, Fuel Systems*

Kautex Textron *- VP Customer Business Unit 2*

Plastic Omnium *- Clean Energy Systems VP R&D*

Stellantis *- Fuel Systems Senior Manager*

Diesel Topics

2:30 p.m. **Cutting Carbon with Biodiesel and Renewable Diesel: Immediate Solutions for OEMs and Fleets**
OEM Market Development Manager
Clean Fuels Alliance
Biodiesel is typically blended with petroleum diesel to achieve sustainability goals while keeping strong fleet performance, but forward-looking fleets are now looking beyond B20 to higher blends all the way up to 100 percent biodiesel (B100). This presentation will provide an overview of the growing biodiesel and renewable diesel industry and discuss technical roadmaps for how OEMs and fleets can significantly reduce emissions with diesel fuel replacements.

3:00 p.m. **Development and Implementation of Optimized SCR Modules and Sensors to Meet BS VI and RDE Norms**
DGM, Cost Engineering, and GM Engineering Research Center
Tata Motors
Countries adopting stringent emission norms, typically BS VI or equivalent and beyond, are seeking increased dependency on after-treatment systems. Yet a balanced approach between cost, environment stewardship, and technology innovations must be considered. This presentation will discuss and highlight experimental investigations on various possibilities of an optimized system to ensure compliance with emission standards.

3:30 p.m. **Networking Break**

Improved Evaporative Emission Control

4:00 p.m. **Effective Evaporative Emissions Control on the Way to Fleet Electrification**
Senior Engineering Manager
BorgWarner
The role of the carbon canister in traditional fuel systems is reviewed from the perspective of government regulations and system requirements, and the importance of efficient canister regeneration is addressed. Key aspects of canister design and adsorbent selection will be highlighted to ensure that available purge is efficiently utilized to improve canister regeneration and reduce overall emissions of evaporative pollutants.

4:30 p.m. **Optimize a Cannister Design for Evaporative Bleed Emissions, Vehicle Versus Laboratory, Close the Gap**
Senior Technical Manager Fuel Systems and Project Engineer
Idiada
This presentation will demonstrate the impact on the bleed emissions by purging the canister with a dynamic profile on the bench equivalent to the vehicle purge rather than the typical bench-based constant flow purge. Results will be discussed and opportunities to optimize canister design will be considered.

4:55 p.m. **Next Generation Honeycomb Bleed Control for Low Purge Applications**
Principal Engineer
Ingevity
New emission regulations and advanced powertrain trends have resulted in greatly reduced canister purge opportunities. Typical canister systems, designed for LEVIII/Tier 3, are being challenged to meet the evaporative BETP requirements at low purge conditions. A new activated carbon bleed element that better meets this challenge will be presented.

5:15 p.m. **Cocktail Reception**

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Day 2 Program Agenda - May 12, 2022

8:00 a.m. **Registration and Continental Breakfast**

8:55 a.m. **Welcome Remarks**
Dr. Joel Kopinsky, Managing Director and Co-Founder
The ITB Group

9:00 a.m. **KEYNOTE ADDRESS**
Prospects for Hydrogen as a Fuel

The Carbon Intensity of Hydrogen: What Moves the Needle?
Senior Manager Life Cycle Assessment Center of Excellence
GTI Energy
GTI and its partners established the Open Hydrogen Initiative with the goal of defining protocols and practices for measuring hydrogen's life cycle emissions at the asset level, enhancing functionality of carbon accounting methods, and increasing transparency in hydrogen markets. A summary of hydrogen production cases will highlight which aspects of the supply chain have the greatest impact on hydrogen's carbon intensity.

Hydrogen-Fueled Vehicles

9:30 a.m. **Hydrogen: Concepts of Tank Systems for Long Range Heavy Duty Trucks**
Director of Engineering
MAGNA Energy Storage Systems
The performance characteristics of hydrogen powered heavy duty trucks using liquid or gaseous storage systems will be evaluated with a focus on high volume 4x2 tractor applications. Comparisons of future hydrogen systems and alternative energy systems regarding customer and legal related functions, performance characteristics, cost, system integration, carbon dioxide footprint, refueling and time-to-market will be discussed.

10:00 a.m. **SCR's Role in Hydrogen Combustion Engines**
CC Director- NA Truck and Bus and Systems ApplicationEngineering Manager
Plastic Omnium
Hydrogen internal combustion engines show a promising stop-gap allowing conventional powertrains to be used while being nearly emissions free. Although already lower than with conventional fuels, nitrogen oxide emissions must be further mitigated. SCR systems capable of meeting worldwide emission regulations for hydrogen-based ICEs will be discussed.

10:30 a.m. **Networking Break**

Filling of Compressed Gas Tanks

11:00 a.m. **Development and Implementation of Integrated Fuel Filling Unit for CNG Applications**
DGM, Cost Engineering, and Senior Manager Cost Engineering
Tata Motors
The development and implementation of an advanced integrated CNG fuel filling system for commercial vehicle applications will be presented. A reduction of the number of components and joints provide increased safety, functionality and enables the reduction of the total CNG fuel system cost.

EXHIBITORS:

Arkema | BorgWarner | Eaton | Evonik | Kuraray | Plastic Omnium | Polyplastics | Schrader Pacific | TDK Sensors | TI Fluid Systems

11:30 a.m. **Hydrogen Filling Standard Developments H35, H70MF and H70HDD**
General Manager and Chief Executive Officer
WEH Technologies
An overview of current H35 and H70 filling nozzles and operator interface hardware, not limited to J2600 filling protocols, will be discussed. An outlook into future high flow H2 fueling and dispensing requirements, and limitations based on WEH's DOE funded developments for High Flow High Pressure H2 dispensing will be highlighted.

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

Compressed Hydrogen Storage Tanks

1:00 p.m. **State of the Art Hydrogen Valves: Safe, Reliable and Effective On-Board Storage Systems for Fuel Cell Powertrain Mobility Applications**
Project Manager
OMB Saleri
Valves and regulators used in on- and off-road fuel cell powered mobile applications will be discussed along with the needs and requirements of fast-developing global fuel cell markets. High-pressure hydrogen storage applications as well as the low-pressure valves used in fuel cell system anode loops will be highlighted.

1:20 p.m. **Modeling of Hydrogen Permeation in Blow Molded Plastic Liners for an On-Board 700 Bar Hydrogen Tank Using BlowView Software**
Senior Research Officer
National Research Council of Canada
An important KPI for Type IV tanks is hydrogen permeation through the inner liner material. BlowView simulation software, including Fick's diffusion law, allows an efficient predictive/virtual analysis of hydrogen diffusion through a blow molded liner. This offers significantly shortened design/development cycles.

1:40 p.m. **Durethan® as a Liner Material for High Pressure Tank Systems**
Application Development Engineer
LANXESS
High pressure fuel storage tanks are complex systems with challenging requirements. A specially tailored polyamide 6 grade has been developed for type IV tank liners to ensure efficient manufacturing and safe operation.

2:00 p.m. **Smart Rotomolding Production Systems for H2 Tank Liners with Co-Molded Bosses and High Productivity**
Director of Sales and Marketing
Persico Engineering
Rotomolding offers a number of benefits for the production of Type IV tank liners. This approach has a number of benefits including: co-molded bosses, high productivity, flexible tank sizes, a variety of polymers and the potential for using vacuum, nitrogen, compressed air and cooling air during the process. Post-processing will also be presented that can be used irrespective of the plastic molding process.

2:20 p.m. **Closing Remarks**

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Arkema

Arkema provides the latest advancements in the High Performance Polymers product offering for alternative energy systems, such as hydrogen storage tanks & hoses, as well as traditional fuel systems. Stop by our booth to discover how Rilsan® polyamides can answer your needs for high performance, sustainable fuel delivery.

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BorgWarner

For more than 130 years, BorgWarner has been a transformative global product leader bringing successful mobility innovation to market. Today, we're accelerating the world's transition to eMobility — to help build a cleaner, healthier, safer future for all.

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Chinaust Automotive

Chinaust provides system solutions for automotive fluid tubing applications, from the research and development to production and deliveries of products, providing excellent services to customers all the time. Chinaust, who produces assemblies for almost all automotive fluid tubing applications, focuses on production of tube assemblies for fuel systems and cooling systems. Chinaust aims to improve the quality of human being by providing products of safety and sustainability.

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Eaton

Eaton's Vehicle Group provides vehicle manufacturers with products and systems designed to improve a vehicle's overall efficiency, performance, and safety. Our broad portfolio of technologies covers all propulsion systems – from internal combustion, to hybrid, to pure electric. So, bring us your technical challenges and we'll deliver innovative, forward-thinking solutions.

Contact: Christy Roadknight, Fuel Emissions Business Unit Director
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EVONIK Corporation

Evonik is one of the world's leading specialty chemicals companies. Its VESTAMID® long chain polyamides have been the material of choice to produce sophisticated fluid handling systems for the automotive industry. Based on its innovative capabilities and leading technology positions, Evonik enables its customers to offer cost- and resource-efficient fuel and hydrogen solutions to the automotive industry.

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Kuraray America Inc.

Kuraray is a globally recognized specialty materials company that creates quality, sustainable solutions that strengthen products throughout a diverse range of industries. As part of Kuraray's ongoing commitment to the automotive industry, in May 2019 we opened an office in Novi, MI. Kuraray's GENESTAR™ resin, a heat resistant polyamide (PA9T), is particularly suited for tough automotive applications requiring heat resistance, chemical resistance, low wear/low friction, and even excellent electrical insulation properties.

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Plastic Omnium

Plastic Omnium is a major player to provide tomorrow's components for clean, safe and connected cars. Worldwide leader in fuel systems, Plastic Omnium's Clean Energy Systems Division is committed to providing energy storage and delivery systems as well as depollution systems for conventional gasoline and diesel powertrains, and Plastic Omnium's New Energies Division is providing hydrogen storage systems and fuel cells to support the transition to truly clean energy.

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Polyplastics USA

Polyplastics (a wholly owned subsidiary of the Daicel Group) is a global leader in the development and production of engineering thermoplastics solutions – with a focus on POM, PPS, PBT, LCP, PET, LFT PP and COC products. With more than 50 years of experience, our technical experts enhance manufacturing and product performance backed by a strong global network of R&D, production and sales resources. Polyplastics creates advanced solutions and expands customer value in a technically evolving market.

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TI Fluid Systems

Global automotive manufacturers turn to TI Fluid Systems to develop and produce award-winning, industry-leading automotive fluid systems. For nearly 100 years, TI Fluid Systems has provided its technology to vehicles around the world. With 104 manufacturing locations in 29 countries, our strength lies in our ability to creatively meet the ever-changing needs of the global automotive industry.

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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 and building a successful business. We are a specialized consulting firm with strategy, data, and insight for energy storage, powertrain, thermal management, sustainability, body, and cabin evolution.

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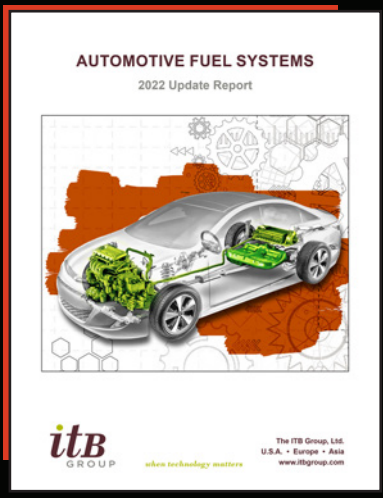
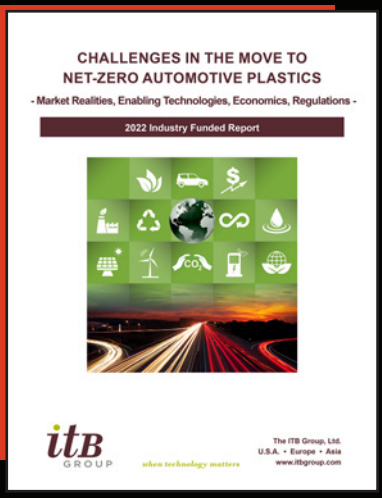
Industry-Funded Technical Reports





Contact The ITB Group for more information

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