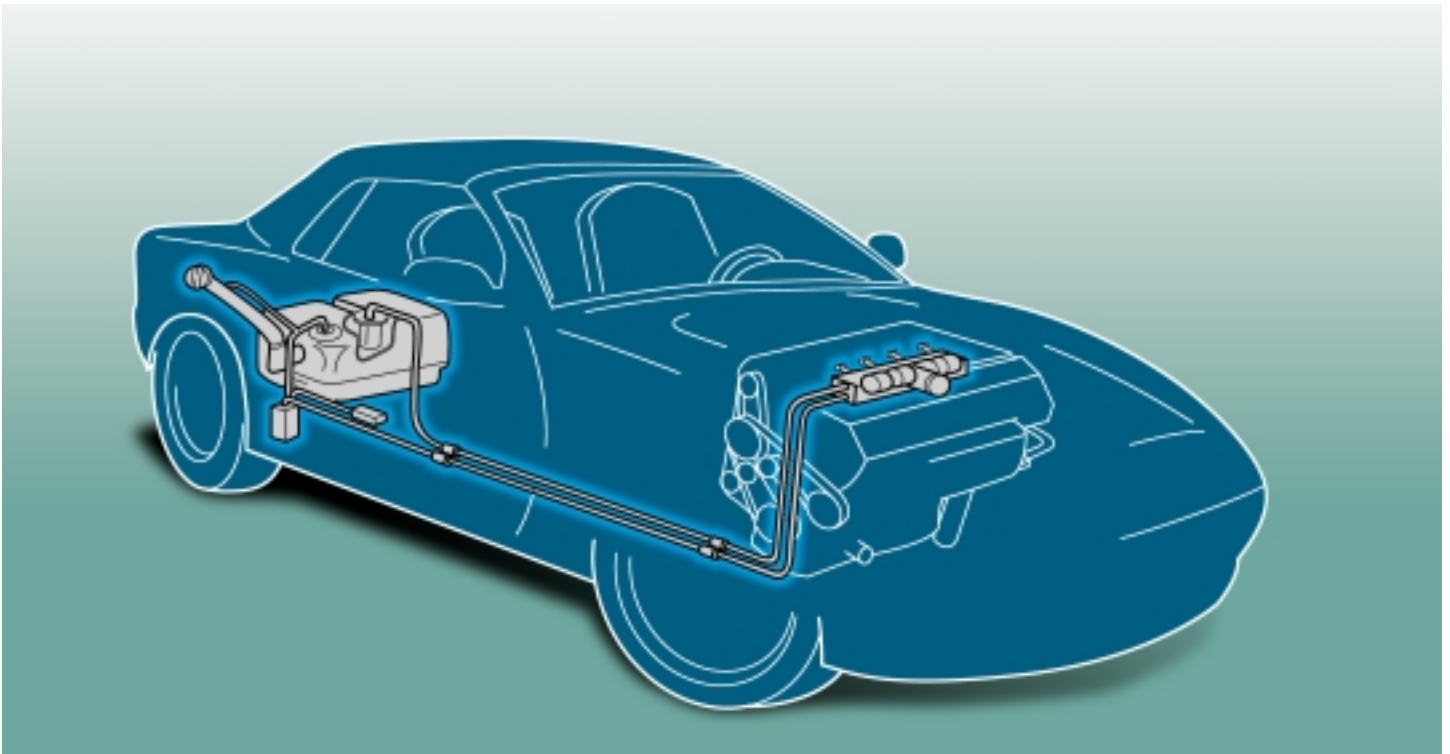


# AUTOMOTIVE FUEL SYSTEMS

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AUTOMOTIVE FUEL SYSTEMS 2001 is our second annual forum for international executives and engineers to address technological initiatives and legislative issues for reducing fuel emissions. This conference is your one-of-a-kind opportunity to get practical,

helpful information and advice from the industry's foremost authorities.

Friday, March 2, 2001  
The Ritz-Carlton Hotel  
Dearborn, Michigan, USA

Organized by:



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# AUTOMOTIVE FUEL SYSTEMS

## 2001

The only forum of its kind, the second annual AUTOMOTIVE FUEL SYSTEMS 2001 Conference will bring executives together from all over the world with a common purpose — to improve fuel system performance and efficiency.

Program sessions will be conducted by the world's leading experts. You'll learn from these practicing professionals in every key area of fuel systems:

- Government regulations and their impact on design and fuels

- Fuel developments and alternative fuels
- Key components and materials
- Emission control systems

To sum up, the program will be a well-balanced mix of technical, government and business issues. It's specifically designed to give you the information you need to meet your CAFE, LEV II and ZEV goals... while helping you enhance system performance.

*Please note that conference proceedings will not be available.*

## AGENDA

7:00 – 8:20 a.m.

REGISTRATION AND CONTINENTAL BREAKFAST

8:20 a.m.

OPENING REMARKS

### SESSION 1:

EMERGENCE OF VERY LOW EMISSION FUEL SYSTEMS

8:30 a.m. Evaporative Measurements: The Frontier Separating Technology and Regulations

*Marek Lockhart, Ford Motor Company (U.S.A.)*

Change in the regulatory environment has driven evaporative emission controls toward the brink of zero emissions. Measurement is the lens through which we judge the merit of emergent innovations, and it serves to form a border between meaningful technology and effective regulations for OEMs and regulators alike. It is a frontier toward which technology and regulations will march but should not trample.

9:00 a.m. Zero Emission Tank Systems as a Lifetime Challenge

*Dr. Justus Kloeker, Mannesmann VDO (Germany)*

Beside the new emission regulations, fuel system lifetime regulations have been strengthened. Different ideas have been developed, not only for the fuel delivery module to reach this

challenge, but also for the system layout. Different design alternatives to blow molded plastic tanks are considered in addition to solutions for vapor management.

9:30 a.m. Emerging Low Emission Fuel Systems from a Dynamic Supply Base

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

Breakthrough technologies from gas cap to fuel injectors are emerging for vehicle PZEV fuel systems. Incremental innovations and processing improvements are required for LEV II systems. Such systems are emerging amidst a background of supplier consolidation and extreme cost pressures.

10:00 a.m. Mid-Morning Break

### SESSION 2:

FUEL LINE AND HOSE DEVELOPMENTS

10:30 a.m. Fuel Hose Evolution – Past, Present and Future

*Jay Butler, Mark IV Automotive (U.S.A.)*

From the early development of fuel resistant tube materials and environmentally robust cover materials, fuel hose has evolved into a complex design utilizing high-performance nitrile rubbers, fluoropolymers and reinforcement fibers together with a myriad of cover materials that meet increasingly stringent environmental constraints.

*Exhibitors will display their latest fuel system technologies.*

## 11:00 a.m. PTFE-Based Ultra-Low Permeation Fuel and Vapor Tubing

*Dr. Charles P. Marino, Markel (U.S.A.)*

Fluoropolymers have emerged as one of the leading barrier materials for low emission fuel systems. PTFE is one of the leading choices for low emission fuel and vapor tubes. The theoretical, practical and economic reasons for its selection are presented.

## 11:30 a.m. Low Permeation and High Heat Resistance Multilayer Fuel Tubes with New Test Methods

*André Sturzel, EMS-CHEMIE (Switzerland)*

High-pressure diesel injection and direct gasoline injection add significantly to the technical challenges for fuel tube materials. Multilayer tubes have been developed that offer excellent price/performance ratios. Permeation performance has been rated using unique test methods including hot fuel equipment.

12:00 – 1:15 p.m. Lunch

### **SESSION 3:**

#### FUNCTIONAL COMPONENTS

## 1:15 p.m. Fuel and Vapor System Quick Connect Technologies

*Sean Osborne, ITT Industries (U.S.A.)*

Quick connectors are being continuously improved to ensure robust, low cost connections that meet increasing government and customer requirements. Current standards and new developments, including alternative materials, designs and processes will be highlighted.

## 1:45 p.m. New Gasoline and Diesel Fuel System Requirements and Their Impact on the Respective Functional Parts and Materials

*Bernhard Forschler and Dwight Smith, Ticona (Germany and U.S.A.)*

Direct injection and common rail technologies represent a new generation of diesel engines that raise the performance requirements for fuel system materials. New materials for such systems together with materials for returnless gasoline systems and alternative fuels are discussed.

## 2:15 p.m. Diagnosis Module for Fuel Tank Leakage Detection to Comply with OBD II Standards

*Dr. Hans-Martin Streib, Dr. Karl-Bernhard Lederle and Dieter Dambach, Robert Bosch (Germany)*

The Diagnosis Module for Fuel Tank Leakage Detection (DM-TL) uses an electrically driven vane pump for the detection of leaks in the evaporative system. The method is based on the effect of how the pressure level generated by the pump and the current consumption of the pump depend

on the amount of leakage in volume tested. The method is very robust with respect to fuel evaporation and influence of fuel tank stiffness. The method complies with all the current and foreseeable EVAP and OBD II standards.

2:45 p.m. Afternoon Break

### **SESSION 4:**

#### FUEL TANKS FOR THE NEW CENTURY

## 3:00 p.m. End-of-Life Recycling of Plastic Fuel Tanks: Achievements and Forecasts

*Paul Wouters, Inergy Automotive Systems (France)*

New European regulations regarding end-of-life recycling are considered together with the requirements for the recycled resin and the regeneration process. Achievements obtained from transforming old fuel tanks into new ones are highlighted.

## 3:30 p.m. Simulation in the Development of Plastic Fuel Tanks

*Andreas Wüst, Basell Polyolefins (Germany)*

Development of plastic fuel tanks may be facilitated if the blow molding process and the drop test are computer simulated. The results can help optimize the fuel tank wall thickness distribution and space utilization. Examples are considered together with thermoforming applications.

## 4:00 p.m. Hydroforming as an Enabling Technology for Near-Zero Emission Fuel Tanks and Systems

*Stefan Geissler, hde Metallwerk (Germany) and Ray Sheffield, Pilot Industries (U.S.A.)*

Today's widely-used fuel tank materials and manufacturing technologies fall short in simultaneously meeting zero emissions, 15-20 year life, maximum fuel capacity, minimum weight, and cost-effectiveness. Recent developments in hydroforming make it possible to combine much of the design flexibility of the plastic blow molding process with the impermeability of steel, while enabling innovative system architecture.

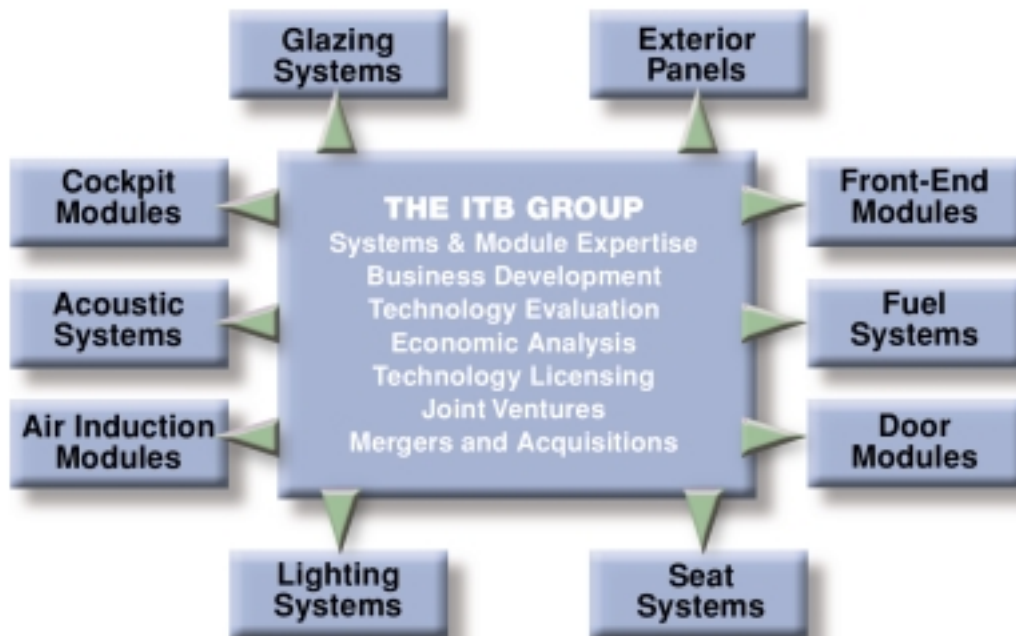
## 4:30 p.m. A Plastic PZEV Fuel Tank System

*Erich Vorenkamp, Visteon (U.S.A.)*

Emission regulations, such as LEV II, ZEV and Stage III, mandate changes to the fuel system. A plastic fuel tank system has been developed to help OEMs meet these challenging standards. The system uses thermoforming as an enabling technology to effectively and efficiently control the evaporative emissions.

5:00 p.m. Cocktail Reception

# About your organizer...



Established in July 1992, The ITB Group is dedicated to serving participants in the global automotive market. By combining strong technical and business skills, The ITB Group helps senior managers develop and implement strategies that provide sustainable long term competitive advantages.

## The ITB Group's core competencies are:

### International Presence

The firm's presence in North

America, Europe and the Far East provides a solid basis for automotive consulting assignments. Global automotive OEM requirements now require ITB to seek expanded presence in South America and Asia.

### Technical Expertise

Advanced engineering degrees — together with many years of experience — provide the firm's consultants with the relevant expertise to understand difficult technical issues that face their clients. Such issues may be

related to product design, materials, processes, or vehicle assembly.

### Business Recognition

Widespread marketplace recognition and business experience enable the firm's consultants to interact with key automotive participants around the world. Participants include senior level managers, automotive research and design engineers, sales and marketing personnel, and government officials.

## Exhibitors:

AISI

Beko

DuPont

LNP

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AtoFina

BP Amoco

Expert

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NORMA Products

Titeflex

Basell

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