7/28/06
3 p.m.

12th Diesel Engine-Efficiency and Emissions Research Conference
Detroit Marriott at the Renaissance Center
August 20-24, 2006

PLENARY SESSIONS

Monday, August 21, 2006
8:30 a.m. - Noon
A View from the Bridge Panel Discussion

Andrew Karsner, Assistant Secretary for Energy Efficiency and Renewable Energy at the U.S. Department of Energy
Elizabeth Lowery, Vice-President for Environment and Energy at General Motors
Gerhard Schmidt, Vice-President for Research and Advanced Engineering at Ford Motor Company
Margo Ogé, Director of the Office of Transportation and Air Quality at the U.S. Environmental Protection Agency (EPA)
John K. Amdall, Director of Engine Research and Development at Caterpillar
Tom Cackette, Chief Deputy Executive Officer at the California Air Resources Board
Michael Walsh, environmental consultant

Tuesday, August 22, 2006
8:30 a.m. - Noon
Accelerating Light-Duty Diesel Sales in the U.S. Market Panel Discussion

Charles Freese, General Motors
Simon Godwin, DaimlerChrysler
Kevin McMahon, Martec Group
Karl Simon, EPA
Wolfgang Mattes, BMW
Yasuyuki Sando, Senior Manager, Advanced Engine Research Division at Honda
Klaus-Peter Schindler, Volkswagen

Wednesday, August 23, 2006
8:30 a.m. - Noon
New Feedstocks and Replacement Fuels Panel Discussion

Loren Beard, DaimlerChrysler (invited)
Norman Brinkman, General Motors
Nigel Clark, West Virginia University
Herb Dobbs, TACOM
Craig Fairbridge, National Centre for Upgrading Technology
Robert McCormick, National Renewable Energy Laboratory
James Simnick, BP

TECHNICAL SESSIONS

Monday, August 21, 2006
1:30 – 4:10 p.m.
Technical Session 1 – Advanced Combustion Technologies, Part 1

Title	Speaker	Affiliation
Heavy-Duty HCCI Development Activities at Caterpillar	Kevin Duffy	Caterpillar
Low-Temperature Combustion for High-Efficiency, Ultra-Low Emission Engines	Dennis Assanis	University of Michigan
Evaluation of High-Efficiency Clean Combustion (HECC) Strategies for Meeting Future Emissions Regulations in Light-Duty Diesel Engines	Robert M. Wagner	Oak Ridge National Laboratory
Visualization of Unburned Hydrocarbon Emissions for Low-Temperature Diesel Engine Combustion	Mark P. B. Musculus	Sandia National Laboratories
Review of HCCI Engine Development	Thomas W. Ryan III	Southwest Research Institute
Application of a Diesel Fuel Reformer for Tier 2 Bin 5 Emissions	Joseph V. Bonadies	Delphi

Monday, August 21, 2006
Presentation Posters
on
Advanced Combustion Technologies, Diesel Engine Development, Emission Control Technologies, Fuels and Lubricants, Health Impacts, and Waste Heat Recovery
4:10 p.m. – 5:00 p.m.

Title	Speaker	Affiliation
Effect of Combustion Phasing on Emissions in a HSDI Diesel Engine in the Advanced LTC Regime (ALTC)	N. A. Henein	Wayne State University
Integration of Control System Components for Optimum Engine Response	Marc Allain	Detroit Diesel Corporation
A Soot Formation Model Based on Surface Chemistry	John M. Deur	Reaction Design
Effects on Using Synthetically Derived Fuels on the U.S. Army Tactical Fleet	Eric Sattler	U.S. Army RDECOM-TARDEC
Freight Transportation Shifts Toward and Within Trucking : Impacts on Long-Term and Recent Highway Diesel Fuel Consumption	Danilo J. Santini	Argonne National Laboratory
Cetane Performance and Chemistry Comparing Conventional Fuels and Fuels Derived from Heavy Crude Sources	Bruce Bunting	Oak Ridge National Laboratory
Assessment of Environmental Impacts of Shell GTL Fuel	R. A. Cherrillo	Shell Global Solutions
Impact of Low-Friction Surface Treatments on Engine Efficiency	George Fenske	Argonne National Laboratory
Emissions Benefits and Hardware Developments in the Use of Ethanol and Diesel Fuel Blends	Benjamin Kaufman	O2Diesel, Inc.
Fuel Effects on Ignition and Their Impact on Advanced Combustion Engines	Joshua D. Taylor	National Renewable Energy Laboratory
Application Experience with a Combined SRC and DPF Technology for Heavy-Duty Diesel Retrofit	Ray Conway	Johnson Matthey Environmental Catalysts & Technologies
Which Idling Reduction System(s) Will be Most Economical for Truck Owners?	Linda Gaines	Argonne National Laboratory

Catalysts by Design – Theoretical and Experimental Studies of Model Catalysts for Lean NO_x Treatment	C. K. Narula	Oak Ridge National Laboratory
Current Virtual Simulation of the Next-Generation Heavy-Duty Truck	Houshun Zhang	Detroit Diesel Corporation
Technology Required for a 10% Efficiency Improvement in an Over-the-Road Diesel-Powered System by the Application of Advanced Thermoelectrics Implemented in a Hybrid Configuration	Harold Schock	Michigan State University
A Hydrogen Injection System Driven by Exhaust Powered Thermoelectric Generator	John C. Bass	Hi-Z Technology, Inc.
Experimental Validation of a Bifurcated LNT System with By-Pass Regeneration	Midlam-Mohler	Ohio State University
Turbo-Expansion for Emissions and Performance Improvements	C. Whelan	WDL Ltd
The Health Impacts Program of the DOE Office of FreedomCAR and Vehicle Technologies	Douglas R. Lawson	National Renewable Energy Laboratory
Challenges in Meeting Euro-II Emission Limits on Commercial Vehicle Engines with Cost Effective Technologies: An Experience	P .V. Deshpande	TATA Motors Ltd.

Monday, August 21, 2006

Posters

on

Advanced Combustion Technologies, Diesel Engine Development, Emission Control Technologies, Fuels and Lubricants, Health Impacts, and Waste Heat Recovery

5:30 – 7:00 p.m.

Title	Author	Affiliation
Status of the Advanced Collaborative Emissions Study (ACES)	Chris Tennant	Coordinating Research Council
CFD Modeling for Diesel Particulate Filter	Yong Yi	Fluent Inc.
The Size and Composition of Individual Ultrafine Diesel Emission Particulate from 2007 Diesel Engines with and without Aftertreatment	Alla Zelenyuk	Pacific Northwest National Laboratory

Evaluation of a Miniature Partial Flow Dilution System (MPS) for the U.S. EPA Heavy-Duty 2007 PM Rule	D. R. Booker	Sensors, Inc.
Laboratory Testing of SCR Catalysts for Heavy-Duty and Light-Duty Diesel Applications	James Girard	Ford Motor Company
The Free Piston Floating Stroke (FPFS), Four-Cycle, Four-Cylinder, HCCI, ICRE (4" Bore x 4" Stroke with Duplex Piston Geometry Illustrated at Mid Stroke)	John W. Fitzgerald	Energy Transition Technology, Inc.
Using Tracers to Quantify In-Cabin Concentrations of School Bus Exhaust and Crankcase Emissions	Thomas W. Hesterberg	International Truck and Engine Corp.
Evidence from Laboratory Studies on the Cancer Risk of Diesel Exhaust	Thomas W. Hesterberg	International Truck and Engine Corp.

Tuesday, August 22, 2006
1:30 p.m. – 4:10 p.m.
Technical Session 2 – Emission Control Technologies, Part 1

Title	Speaker	Affiliation
Diesel Emission Technology in Review	Tim Johnson	Corning
Electrostatic Neutralization: A Key to Repeatable PM Filter Weighing	Richard E. Chase	Ford Motor Company
Intra-Catalyst Reductant Chemistry and NO_x Conversion of Diesel Lean NO_x Traps at Various Stages of Sulfur Loading	Matt Swartz	Oak Ridge National Laboratory
Hybrid LNT/SCR NO_x Aftertreatment System for On-Highway Heavy-Duty Diesel Engines	Haoran Hu	Eaton Corporation
NO_x Measurement Errors in Ammonia-Containing Exhaust	John Hoard	Ford Motor Company
California's Efforts for Advancing Ultrafine Particle Number Measurements for Clean Diesel Exhaust	Tao Huai	California Air Resources Board

Tuesday, August 22, 2006

Presentation Posters
on
Emission Control Technologies
4:10 p.m. – 5:00 p.m.

Title	Speaker	Affiliation
On-Board, In-Use Sensitivity Study of an Electrical Aerosol Detector (EAD) and Condensation Particle Counter (CPC) for Second by Second Diesel PM Measurements	Robert C. Anderson	TSI Inc.
The Extengine ADEC II System	Richard Carlson	Extengine
To Detect Diesel Fuel Dilution Level in Engine Oil	SuChee Wang	Delphi Research Lab
NO Oxidation in Emissions Testing Sample Bags	Sandip D. Shah	Ford Motor Company
Operation of a Combined Single Leg NO_x Adsorber Fuel Processor System to Achieve NO_x Control over a Wide Range of Engine Conditions	R. Dalla Betta	Catalytica Energy Systems, Inc.
Testing an Active Diesel Particulate Filter on a 2-Cycle Marine Engine	Frank S. DePetrillo	RYPOS
Progress with a Ceramic Fiber Diesel Particulate Filter	Richard D. Nixdorf	Industrial Ceramic Solutions, LLC
Optimized SCR System	M. Rice	AVL
Emissions Performance of Diesel Particulate Filter Systems for Heavy Duty Off-Highway Applications	Brent Rubeli	Natural Resources Canada
Detailed Characterization of Lubricant-Derived, Ash-Related Species in Diesel Exhaust and Aftertreatment Systems	Alexander G. Sappok	Massachusetts Institute of Technology
Wiremesh Substrates for Enhanced Particulate Oxidation and Efficient Urea SCR NO_x Reduction Systems	Sivanandi Rajadurai	ACS Industries Inc.
Electrical Tailpipe PM Sensor for Diesel Engine Emission Measurements	Juha Tikkanen	Dekati Ltd.
Development and Field Evaluation of an Actively Regenerating DPF System for Retrofit Applications	Ajay Joshi	Johnson-Matthey

Simulation of Diesel Particulate Filters Using STAR-CD	Alan Mueller	Ford Motor Company
SCReaming for Low NO_x: Development of Selective Catalytic Reduction for the Light-Duty Market	L. Kramer	IAV Automotive Engineering, Inc.
SCR Systems for Heavy-Duty Trucks: Results of Development for Series Production Meeting Euro 4/5 Emissions Standards	Thomas Wilhelm	Purem North America
The Development of A Small Engine-Based Accelerated Ash Loading Protocol and Application to a New Substrate Material	Bruce G. Bunting	Oak Ridge National Laboratory
Emission Control of Some Diesel Engines Used in Goods Movement	J. Wayne Miller	University of California, Riverside
Impact of External Heat-Shielding Techniques on Shell Surface Temperature and Dynamic Shell Thermal Deformation of Diesel Engine Emission Control Systems	Russ Hornback	3M Automotive
Recent Advances in Plasma Fuel Reformer Regeneration of Lean NO_x Trap Systems	Sam Crane	Arvin Meritor Inc.
Stabilization of Soot in the Single Channel	Heather Dillon	PNNL

Tuesday, August 22, 2006

Posters
on
Emission Control Technologies
5:30 p.m. – 7:00 p.m.

Title	Author	Affiliation
PMF Sintered Metal Filters for Superior Performance and Durability with Reduced Maintenance	Jim Biddinger	Purem North America
Case Study: Real World Implementation of Five Novel Diesel Emissions Reduction Technologies at a Major Construction Project in NYC	Michael C. Block	Emisstar LLC
Future Breathing System Requirements for Clean Diesel Engines	Robert Czarnowski	BorgWarner

Advanced Support Mats for Diesel Emission Control Devices	Serfio David Fernandes, Jr.	Unifrax
Homogeneous Alloy Foam Technology for Diesel Particulate Traps	David Han	INCO Special Products
NO_x and PM Control for In-Use Diesel Vehicle in Korea and Japan	Do-Woam Kim	SK Corporation
Durability and Performance Review of the New DuraTrap AT (Aluminum Titanate) Filters	Nathan Majiros	Corning Inc.
University of Houston Diesel Dynamometer Raw Gas Testing: -- Fuel and Exhaust Measurement Upgrades	Rachel L. Muncrief	University of Houston
Flow-Through Filter Technology: A Study in Design	John Muter	DCL International Inc.
Mobile Source Air Toxics at the Watt Road Environmental Laboratory	Jim Parks	Oak Ridge National Laboratory
Effect of Barium Loading on the Sulfation and Desulfaction of $Pt/BaO/Al_2O_3$ Lean NO_x Trap Catalysts	Do Heui Kim	Pacific Northwest National Laboratory
FBC-DPF-EGR Retrofit System to Meet the Current Japan's NO_x-PM Law with the Hydro-EGR Accumulator System Added for the Future NO_x-Regulation	N. Yoshikawa	Doubletree Tech-Intermet, Ltd.
NO_x Reduction Aftertreatment for City Utility Truck	Hamid Servati	ServoTech Engineering
On-Road Emissions of NO, SO_2, CO, and NH_3 from 1600 HDDV	Donald H. Stedman	University of Denver
Will Future NO_x Reductions Increase Ozone?	Donald H. Stedman	University of Denver
Further Development in Lean-Rich Engine Cycle Monitoring by 5-Hz FT-IR	John Lake	MKS Instruments

Wednesday, August 23, 2006
1:30 p.m. – 5:10 p.m.
Technical Session 3 – Diesel Engine Development (concurrent)

Title	Speaker	Affiliation
Heavy-Duty Engine Technology for High Thermal Efficiency at EPA 2010 Emission Regulations	Rakesh Aneja	Detroit Diesel Corporation
50% Brake Thermal Efficiency Achieved at 2010 Emissions	Christopher R. Nelson	Cummins
Demonstration of a 50% Thermal Efficient Diesel Engine	D. M. Milam	Caterpillar
Multicylinder Diesel Engine Design for HCCI Operation	William de Ojeda	International Truck and Engine
Stoichiometric Compression Ignition Engine Concept	Richard Winsor	John Deere
Integration of Control System Components for Optimum Engine Response	Craig Savonen	Detroit Diesel Corporation
Effect of Biodiesel Blends on Diesel Particulate Filter Performance	Aaron Williams	National Renewable Energy Laboratory
Engine System Approaches to Exhaust Energy Recovery	R. W. Kruiswyk	Caterpillar
Spray Structure Measured with X-Ray Radiography	Alan L. Kastengren	Argonne National Laboratory

Technical Session 4 – Fuels, Lubricants, and Health Impacts (concurrent)

Title	Speaker	Affiliation
Distributing Urea to the On-Road Vehicle Market	Michael Jackson	TIAX
100,000-Mile Evaluation of Transit Buses Operated on Biodiesel Blends (B20)	Robb Barnitt	National Renewable Energy Laboratory
Correlations between Metallic Lubricant Additive Species in the Ring Pack and Ash Emissions and Their Dependence on Crankcase Oil Properties	Simon A. G. Watson	Massachusetts Institute of Technology
The Potential of GTL Diesel to Meet Future Exhaust Emission Limits	Paul Schaberg	Sasol Technology
After Petroleum	James J. Eberhardt	U.S. Department of

		Energy

An Assessment of the Evidence for the Carcinogenic Potential of Diesel Exhaust	William Bunn	International Truck and Engine
Contributions of Particulate and Non-Particulate Components to the Health Hazards of Emissions: Recent Results for Gasoline and Diesel Emissions	Joe Mauderly	Lovelace Respiratory Research Institute
In Vitro Mutagenic and DNA and Chromosomal Damage Activity by Surfactant Dispersion or Solvent Extract of a Reference Diesel Exhaust Particulate Material	William Wallace	U.S. Centers for Disease Control and Prevention

Thursday, August 24, 2006
8:30 a.m. - Noon
Technical Session 5 – Emission Control Technologies, Part 2 (concurrent)

Title	Speaker	Affiliation
Urea SCR and DPF System for a Tier 2 Diesel Light-Duty Truck	Christine Lambert	Ford Motor Company
Injection System Injection System and Engine Strategies for Advanced Emission Standards	Marcus Parche	Robert Bosch
Modeling the Regeneration Chemistry of Lean NO_x Traps	Richard S. Larson	Sandia National Laboratories
Investigation of DPF System Size Reduction by Vehicle Testing	Frank Mao	Dow Automotive
Improved Lifetime Pressure-Drop Management for DuraTrap® RC Filters with Asymmetric Cell Technology (ACT)	Krishna Aravelli	Corning
Transmural Catalysis – High-Efficiency Catalysts for NO_x Adsorbers and SCR	Chris Atkinson	Pandora Energy Technologies
Thermal Enhancer– Airless Exhaust Thermal Management Device	Adam Coker	ArvinMeritor
Experimental Diesel Particulate Filter Capabilities at PNNL	Tom Gallant	Pacific Northwest National Laboratory
NO_x Remediation on Heavy-Duty Diesel Using On-Board Diesel Fuel	Mark Hemingway	Delphi Corporation

Reforming		

Technical Session 6 – Waste Heat Recovery (concurrent)

Overview of Thermoelectric Applications for Vehicles	John W. Fairbanks	U.S. Department of Energy
High-Efficiency Waste Heat Recovery System for Vehicle Applications	John W. LaGrandeur	BSST
Develop Thermoelectric Technology for Automotive Waste Heat Recovery	Jihui Yang	General Motors
Cost-Effective Fabrication Routes for the Production of Quantum Well Structures and Recovery of Waste Heat from Heavy-Duty Trucks	Rhonda Willigan	United Technologies Research Center
Progress in Thermoelectric Energy Recovery from a Light-Duty Truck Exhaust	Brian Helenbrook	Clarkson University
Auto HVAC System using Peltier Thermoelectrics	Lon Bell	BSST
A Quantum Leap for Heavy-Duty Truck Engine Efficiency – Hybrid Power System of Diesel and WHR-ORC Engines	Gerhard Regner	AVL Powertrain Engineering
Electric Turbo-Compounding – A Technology Whose Time has Come	Carl T. Vuk	John Deere
In-Vehicle Exhaust Energy Recovery for Thermal Efficiency Improvement	Christopher R. Nelson	Cummins

1:30 – 5:10 p.m.
Technical Session 7 – Emission Control Technologies, Part 3 (concurrent)

Title	Speaker	Affiliation
Emissions Control for Heavy-Duty Trucks	Jim Clerc	Cummins
Technical Demonstration of 2010 Heavy-Duty Emissions Regulations over Transient Operation	Rakesh Aneja	Detroit Diesel Corporation
Status Report on the Development of Rapid Aging and Poisoning Protocols for Diesel Aftertreatment Devices	Bruce Bunting	Oak Ridge National Laboratory

The Effects of Thermal Aging and Phosphorus Exposure on Performance of Diesel Particulate Filters	Herbert DaCosta	Caterpillar
LNT or Urea SCR Technology: Which is the Right Technology for Tier 2 Bin 5 Passenger Vehicles?	Richard Dorenkamp	Volkswagen
Safe and Compact Ammonia Storage/Delivery Systems	Tue Johannessen	Amminex A/S, Denmark
Diesel Desulfurization Filter	Ron Rohrbach	Honeywell
Stabilization of Soot in the Single Channel	Heather Dillon	Pacific Northwest National Laboratory
Comparative HRTEM and XPS Analysis of Diesel Engine and Related Soots	R. L. Vander Wal	National Aeronautics and Space Administration

Technical Session 8 –Advanced Combustion Technologies, Part 2 (concurrent)

Title	Speaker	Affiliation
High-Efficiency Clean Combustion Design for Compression Ignition Engines	Michael Potter	General Motors
On Soot Reduction by Post-Injection under Dilute Low-Temperature Diesel Combustion	Anders Hultqvist	Lund University
Adaptive Control to Improve Low-Temperature Diesel Engine Combustion	Ming Zheng	University of Windsor
Effects of Ambient Density and Temperature on Soot Formation under High-EGR Conditions	Lyle M. Pickett	Sandia National Laboratories
Low-Temperature Heat Release Behavior of Conventional and Alternative Fuels in A Motored Engine	James P. Szybist	Oak Ridge National Laboratory
Premix Charge, Compression Ignition Combustion System Optimization	Richard J. Gustafson	Cummins
Low-Temperature Combustion and Diesel Emission Reduction Research	Rolf D. Reitz	University of Wisconsin
New Methodologies for Analysis of Premixed Charge Compression Ignition Engines	Salvador Aceves	Lawrence Livermore National Laboratory
A Micro-Variable Circular Orifice (MVCO) Fuel Injector for Zoned Low-Temperature Combustion	Deyang Hou	Quantilogic