Draft

10th Diesel Engine Emissions Reduction Conference
August 29-September 2, 2004

AGENDA

SUNDAY, AUGUST 29, 2004

3:00 – 10:00 p.m. Registration at the Atrium

5:00 – 6:25 p.m. Reception with cash bar on the Bay Terrace
Sponsored by Detroit Diesel Corporation

PLENARY SESSION – DIESEL EFFICIENCY AND EMISSIONS POLICY VIEW FROM THE BRIDGE
Chair: John Fairbanks, U.S. Department of Energy

6:25 – 6:30 p.m. ***DOE Welcome***
Ed Wall, Program Manager of Office of FreedomCAR and Vehicle Technologies, Department of Energy

Keynote Address
6:30 – 6:50 p.m. DOE's Perspective on Transportation Propulsion
Deputy Assistant Secretary Richard Moorer, Energy Efficiency and Renewable Energy, Department of Energy

6:50 – 7:10 p.m.
David Haugen, Environmental Protection Agency - Ann Arbor Laboratory

7:10 – 7:30 p.m. ***Diesel Engines: What Role Can They Play in an Emission Constrained World?***
Tom Cackette, California Air Resources Board (CARB)

7:30 – 7:50 p.m.
Chung Liu, South Coast Air Quality Management District (SCAQMD)

7:50 – 8:10 p.m.
Commissioner James Boyd, California Energy Commission (CEC)

8:10 – 8:30 p.m.
Ken Colburn, North East States for Coordinated Air Use Management (NESCAUM)

8:30 – 8:50 p.m. ***Assessment of Future IC Engine and Fuels Cell Powered Vehicles, and Their Potential U.S. Impacts***
John Heywood, MIT

8:50 – 9:10 p.m. North American Market Challenges for Diesel Engines
Gale Banks, Gale Banks Engineering

9:10 p.m. Adjourn for the evening

MONDAY AUGUST 30, 2004

Session 1 – EMERGING DIESEL TECHNOLOGIES
Chair: Carl Maronde, National Energy Technology Laboratory, Pittsburg, PA

6:30 – 7:30 a.m. Continental Breakfast on the Bay Terrace
Sponsored by John Deere

7:30 – 7:50 a.m. ***The Myth of Engine Maturity and the Reality of Engine Efficiency, Durability, Commercial Viability, and Potential Improvements***
John Fairbanks, Department of Energy

7:50 – 8:10 a.m. ***The Potential Market and Fuel Economy Impacts of Hybrid and Diesel Technologies***
David L. Greene, Oak Ridge National Laboratory

8:10 – 8:30 a.m. ***How Exhaust Emissions Drive Diesel Engine Fuel Efficiency***
George Muntean, Pacific Northwest National Laboratory

8:30 – 8:50 a.m. ***Design & Development of e-Turbo™ for SUV and Light Truck Applications***
S. M. Shahed, Honeywell Turbo Technologies

8:50 – 9:00 a.m. Q&A Session

9:00 – 9:10 a.m. Break

Session 2 – FUELS AND LUBRICATION, PART 1
Chair: Kevin Stork, Department of Energy

9:10 – 9:30 a.m. ***Plasmatron Fuel Reformer Development and Internal Combustion Engine Vehicle Applications***
Leslie Bromberg, MIT

9:30 – 9:50 a.m. ***Emissions and Operability Results from a Fleet Operating on GTL Fuel and Catalyzed Diesel Particle Filters***
Ralph Cherrillo, Shell Global Solutions

9:50 – 10:10 a.m. ***Effect of GTL-Diesel Fuels on Emissions and Engine Performance***
Rudolf R. Maly, DaimlerChrysler AG, Stuttgart, D

10:10 – 10:30 a.m. ***Certification of Shell GTL as an Alternative CARB Diesel Formulation***
Ralph Cherrillo, Shell Global Solutions Inc.

10:30 – 10:50 a.m. ***A Life Cycle Assessment Comparing Select Gas-to-Liquid Fuels with Conventional Fuels in the Transportation Sector***
Robert Abbott, ConocoPhillips

10:50 – 11:10 a.m. ***Biodiesel Research Update***
Robert McCormick, National Renewable Energy Laboratory

11:10 – 11:30 a.m. ***Fuels Impacts on Soot Nanostructure and Reactivity***
Andre Boehman, Penn State University

11:30 – 11:50 a.m. ***Alternate Fuels-DME Rheology and Materials Studies***
Joe Perez, Penn State University

11:50 – 12:10 p.m. ***Evaluating Exhaust Emission Performance of Urban Buses Using Transient Heavy-Duty Chassis Dynamometer***
Kimmo Erkkilä, VTT Technical Research Centre of Finland

12:10 p.m. Adjourn for lunch on the Bay Terrace
Sponsored by Caterpillar® Inc.

Session 3 – FUELS AND LUBRICATION, PART 2
Chair: Gary Yowell, California Energy Commission
Robert McCormick, NREL

1:00 – 1:20 p.m. ***An Integrated Surface Modification Technique to Reduce Friction and Increase Durability***
Stephen Hsu, National Institute of Standard and Technology

1:20 – 1:40 p.m. ***Demonstrated Petroleum Reduction Using Oil By-Pass Technology on Heavy and Light Vehicles***

Jim Francfort, Idaho National Laboratory

1:40 – 2:00 p.m. ***X-Ray Characterization of Diesel Sprays and the Effects of Nozzle Geometry***
Christopher F. Powell, Argonne National Laboratory

2:00 – 2:20 p.m. ***Demonstration of the Low-Emission Potential for Urea Selective Catalytic Reduction and Diesel Particulate Filter Technologies***
Magdi Khair, Southwest Research Institute

2:20 – 2:40 p.m. ***Phosphorous Exhaust Chemistry and Catalyst Poisoning***
Bruce Bunting, Oak Ridge National Laboratory

2:40 – 3:00 p.m. ***Hydrocarbon Selective Catalytic Reduction Using a Silver-Alumina Catalyst with Light Alcohols and Other Reductants***
John Thomas, Oak Ridge National Laboratory

3:00 – 3:15 p.m. ***APBF-DEC Heavy-Duty NO_x Adsorber/DPF Project: Catalyst Aging Study***
Shawn D. Whitacre, National Renewable Energy Laboratory

3:15 – 3:20 p.m. Break

Session 4 – WASTE HEAT UTILIZATION
Chair: John Fairbanks, U.S. Department of Energy
Aaron Yocum, NETL

3:20 – 3:30 p.m. DOE's High Efficiency Thermoelectric Program
John Fairbanks, U.S. Department of Energy

3:30 – 3:50 p.m. ***Challenges and Opportunities in Thermoelectric Energy Conversion***
Arun Majumdar, University of California, Berkley

3:50 – 4:10 p.m. ***Development of an Underarmor 10 Kilowatt Thermoelectric Generator Waste Heat Recovery System for Military Vehicles***
Daniel Krommenhoek, Hi-Z Technology, Inc.

4:10 – 4:30 p.m. ***Progress Report for Scale-up of Multilayer Thin Film Thermoelectric Materials for Vehicle Applications***
P.M. Martin, Pacific Northwest National Laboratory

4:30 – 4:50 p.m. ***The Effects of an Exhaust Thermoelectric Generator on a GM Sierra Pick-up Truck***
Aleksander Kushch, Hi-Z Technology Inc.

4:50 – 5:10 p.m. ***Status of the Application of Thermoelectric Technology in Vehicles***
Lon E. Bell, Amerigon Incorporated

5:10 – 5:30 p.m. ***Diesel Engine Waste Heat Recovery Utilizing Electric Turbocompound Technology***
Ulrich Hopmann, Caterpillar, Inc.

5:30 – 5:50 p.m. ***Regulated 2-Stage (R2S™) Charging System for High Specific Power Engines***
Patrick Sweetland, BorgWarner Turbosystems

5:50 – 6:00 p.m. Q&A Session

6:00 – 7:00 p.m. Reception with cash bar
Government Laboratory Poster Session on Advanced Diesel Engine Technologies, Commodore A & B Ballroom
Sponsored by Aaqius & Aaqius

7:00 p.m. Adjourn for dinner with cash bar on the Bay Terrace
Sponsored by Cummins, Inc.

TUESDAY AUGUST 31, 2004

Session 5 – GLOBAL CLIMATE CHANGE/EMISSION MEASUREMENT
Chair: James Eberhardt, Department of Energy

6:30 – 7:30 a.m. Continental Breakfast on the Bay Terrace
Sponsored by Argillon

7:30 – 7:50 a.m. ***There is no Silver Bullet: Regionalization and Market Fragmentation in Greenhouse Gas Mitigation Strategies***
Gerald Stokes, Joint Global Change Research Institute

7:50 – 8:10 a.m. ***Pollutants Emissions, Global Warming Potential Effect, First Comparison using External Costs on Urban Buses***
Emmanuel Joubert, Aaqius & Aaqius

8:10 – 8:30 a.m. ***Impact of Clean Diesel Technology on Climate Change***
Robert McGraw, Brookhaven National Laboratory

8:30 – 8:50 a.m. ***Mass Correlation of Engine Emissions with Spectral Instruments***
Nick Collings, Cambridge University

8:50 – 9:10 a.m. ***Bifunctional Catalysts for the Selective Catalytic Reduction of NO by Hydrocarbons***

Christopher L. Marshall, Argonne National Laboratory

9:10 – 9:30 a.m. ***Making Mobile Measurements Using an EEPS™ Spectrometer***
Tim Johnson, TSI Incorporated

9:30 – 9:40 a.m. Q&A Session

9:40 – 10:00 a.m. Break

Session 6 – ENVIRONMENTALLY CONCERNED PUBLIC SECTOR ORGANIZATION PANEL

10:00 a.m. – 12:00 noon
Moderator: Michael Block, NESCAUM, session coordinator

Panelists: Don Anair, Union of Concerned Scientists;
Diane Bailey, Health & Environmental Program Natural Resources Defense Council;
Louise Bedsworth, Union of Concerned Scientists;
John Heywood, Massachusetts Institute of Technology;
Rich Kassel, National Resources Defense Council
Drew Kodjak, National Commission on Energy Policy
Patricia Monohan, Union of Concerned Scientists

12 noon Adjourn for lunch on the Bay Terrace
Sponsored by Corning Inc. and Emitec Inc.

Session 7 – COMBUSTION AND HOMOGENEOUS CHARGE COMPRESSION IGNITION REGIMES
Chair: Gurpreet Singh, U.S. Department of Energy

1:00 – 1:20 p.m. ***Are There Practical Approaches For Achieving the Theoretical Maximum Engine Efficiency?***
Dave Foster, University of Wisconsin

1:20 – 1:40 p.m. ***Factors Affecting HCCI Combustion Phasing for Fuels with Single- and Dual-Stage Chemistry***
John Dec, Sandia National Laboratory

1:40 – 2:00 p.m. ***HCCI Fuel Selection: An Engine Heat Release Based Approach***
Tom Ryan, Southwest Research Institute

2:00 – 2:20 p.m. ***Heavy Duty HCCI Development Activities***
Kevin Duffy, Caterpillar, Inc.

2:20 – 2:40 p.m. ***Advanced Air Handling, Combustion, and Fuel Efficiency in Gasoline Engines***
Bruce Bunting, Oak Ridge National Laboratory

2:40 – 3:00 p.m. ***Mixed-Mode Diesel HCCI/DI with External Mixture Preparation***
S. Midlam-Mohler, Ohio State University

3:00 – 3:10 p.m. Break

3:10 – 3:30 p.m. ***Achieving High Efficiency Clean Combustion in Diesel Engines***
Robert Wagner, Oak Ridge National Laboratory

3:30 – 3:50 p.m. ***New Methodologies for Analysis of Premixed Charge Compression Ignition Engines***
Salvador Aceves, Lawrence Livermore National Laboratory

3:50 – 4:10 p.m. ***High-Energy, Pulsed-Laser Diagnostics for the Measurement of Diesel Particulate Matter***
Peter Witze, Sandia National Laboratory

4:10 – 4:30 p.m. ***3D-Combustion Simulation Strategy Status, Future Potentials and Applications Issues***
Ruediger Steiner, DaimlerChrysler AG, Stuttgart, D

4:30 – 4:50 p.m. ***New Developments of the NADI^{TM} Concept to Improve Operating Range, Exhaust Emissions, and Noise***
Bertrand Gatellier, Institut Français du Pétrole

4:50 – 5:00 p.m. Q&A Session

Session 8 – DIESEL ENGINE EMISSIONS, PART 1
Chair: Roland Gravel, U.S. Department of Energy

5:00 – 5:20 p.m. ***Development of an Active Regeneration Diesel Particulate Filter System***
Mike Anderson, Donaldson Company, Inc.

5:20 – 5:40 p.m. ***Excellent Fuel Efficiency While Achieving 2007 Emissions Goals***
Chris Nelson, Cummins, Inc.

5:40 p.m. Adjourn for dinner with cash bar on the Bay Terrace
Sponsored by Diesel Technology Forum

WEDNESDAY SEPTEMBER 1, 2004

Session 8 – DIESEL ENGINE EMISSIONS, PART 2
Chair: Roland Gravel, U.S. Department of Energy

6:30 – 7:30 a.m. Continental Breakfast on the Bay Terrace
Sponsored by NGK Insulators, LTD

7:30 – 7:50 a.m. ***Rypos Trap-Field Demonstrations and Recent Developments***
Frank DePetrillo, Rypos, Inc.

7:50 – 8:10 a.m. ***Transient Simulation of a 2007 Prototype Heavy-Duty Engine***
W. Kent Rutan, Caterpillar, Inc.

8:10 – 8:30 a.m. ***Aftertreatment Modeling Status, Future Potential and Application Issues***
Dr. Houshun Zhang, Detroit Diesel Corporation

8:30 – 8:50 a.m. ***Advanced Diesel Common Rail Injection System for Future Emission Legislation***
Roger Busch, Robert Bosch GmbH

8:50 – 9:10 a.m. ***Performance and Durability Evaluation of an Integrated NO_X Adsorber Aftertreatment Subsystem***
Jim Li, Cummins, Inc.

9:10 – 9:20 a.m. ***Long-Term Aging of NO_X Sensors in Heavy-Duty Engine Exhaust***
John Orban, Battelle Memorial Institute

9:20 – 9:30 a.m. ***NO_X Sensor and NO_X Removal Technologies at Ceramatec, Inc***
Balakrishnan G. Nair, Ceramatec, Inc.

9:30 – 9:40 a.m. Q&A Session

9:40 – 9:50 a.m. Break

Session 9 – DIESEL ENGINE DEVELOPMENT AND DURABILITY
Chair: Ken Howden, U.S. Department of Energy

9:50 – 10:10 a.m. ***Ten Years of Development Experience with Advanced Light Truck Diesel Engines***
John Stang, Cummins Inc.

10:10 – 10:30 a.m. ***The Diesel Engine Powering Passenger Cars - Today and Tomorrow***
Klaus-Peter Schindler, Volkswagen, Wolfsburg, Germany

10:30 – 10:50 a.m. ***Lowest Engine Out Emissions as the Key to the Future of the Heavy-Duty Diesel Engine – New Development Results***
Franz Moser, AVL List GmbH, Graz, Austria

10:50 – 11:10 a.m. ***Cummins/DOE Light Truck Diesel Engine Progress Report -- 2004***
John Stang, Cummins Inc.

11:10 – 11:30 a.m. ***An European Perspective of US 07 / EURO 5 HD Engines and Chassis Technologies***
Jean-Paul Fayolle, Volvo-Renault Division, Lyon, France

11:30 – 11:50 a.m. ***Light Duty Diesel Engine Technology to Meet Future Emissions and Performance Requirements of the US Market***
Adrian Greaney, Ricardo, Inc.

11:50 – 12 noon Q&A Session

12:00 – 12:05 p.m. Rules of the Road, Ride & Drive Info
Ken Howden, Department of Energy

12:05 p.m. Adjourn for box lunch picnic on the Bay Terrace
Sponsored by Hilite International and Particle Instruments

1:00 – 5:00 p.m. Ride and Drive event at the Bay Terrace parking area

5:00 – 6:20 p.m. Reception with cash bar on the Bay Terrace
Sponsored by Bosch
Dessert station sponsored by Caterpillar® Inc.

Session 10 – ENVIRONMENTAL SCIENCE AND HEALTH IMPACTS
Chair: James Eberhardt, Department of Energy

6:20 – 6:40 p.m. Q&A session for the Ride & Drive
Moderator: Ken Howden, Department of Energy

6:40 – 6:50 p.m. ***History of the FreedomCAR Environmental Science & Health Impacts R&D Activity***
James Eberhardt, Department of Energy

6:50 – 7:10 p.m. ***DOE's Gasoline/Diesel PM Split Study***
Doug Lawson, National Renewable Energy Laboratory

7:10 – 7:30 p.m. ***2007 Diesel Particle Measurement Research Project***
Imad Khalek, Southwest Research Institute

7:30 – 7:50 p.m. ***On-Road Exposure and Emission Measurements***
David Kittelson, University of Minnesota

7:50 – 8:10 p.m. ***Relationship between Toxicity and Composition of Inhaled Diesel Exhaust***
Jacob McDonald, Lovelace Respiratory Research Institute

8:10 – 8:30 p.m. ***Assessment of Health Hazards of Repeated Inhalation of Diesel Emissions, with Comparison to Other Source Emissions***
Joe Mauderly, Lovelace Respiratory Research Institute

8:30 – 8:50 p.m. ***The California Demonstration Program for Control of PM from Diesel Backup Generators (BUGs)***
Wayne Miller, University of California, Riverside

8:50 – 9:10 p.m. ***Diesel Exhaust: Physical, Chemical and Cellular Response Characterization***
Jim Cowin, Pacific Northwest National Laboratory

9:10 p.m. Adjourn for the evening

THURSDAY SEPTEMBER 2, 2004

Session 11 – EMISSION CONTROL / NO_X REDUCTION
Chair: Ron Graves, Oak Ridge National Laboratory

6:30 – 7:30 a.m. Continental Breakfast on the Bay Terrace
Sponsored by Donaldson Filtration

7:30 – 8:00 a.m. ***Diesel Emission Control Technology in Review***
Tim Johnson, Corning Incorporated

8:00 – 8:20 a.m. ***New Diesel Emission Control Strategy for US Tier II and Post Euro IV***
Jeffrey A. Leet, Southwest Research Institute

8:20 – 8:40 a.m. ***Urea SCR and DPF System for Diesel LDT/SUV Meeting Tier 2 Bin 5***
Robert Hammerle, Ford Research & Advanced Engineering

8:40 – 9:00 a.m. ***SCR Potential and Issues for HD Applications in the USA***
Kuno Flathmann, Detroit Diesel Corporation

9:00 – 9:20 a.m. ***A Fast Start-up On-Board Diesel Fuel Reformer for NO_X Trap Regeneration and Desulfation***

Rudy Smaling, ArvinMeritor Inc.

9:20 – 9:40 a.m. ***Impact of SO_2 on Lean NO_x Trap Catalysts***
Sonia Hammache, University of New Mexico

9:40 – 10:00 a.m. ***Use of a Diesel Fuel Processor for Rapid and Efficient Regeneration of Single Leg NO_X Adsorber Systems***
R. Dalla Betta, Catalytica Energy Systems, Inc.

10:00 – 10:10 a.m. Break

10:10 – 10:30 a.m. ***High Throughput Program for the Discovery of NO_X Reduction Catalysts***
Richard Blint, General Motors

10:30 – 10:50 a.m. ***Economic Comparison of LNT versus Urea SCR for Light Duty Diesel Vehicles in U.S. Market***
John Hoard, Ford Motor Company

10:50 – 11:10 a.m. ***Development of a Durable Low-Temperature Urea-SCR Catalyst for CIDI Engines***
Donovan A. Peña, Sandia National Laboratory

11:10 – 11:30 a.m. ***Review of SCR technology for Diesel Emission Control: European experience and perspectives for 2010***
Emmanuel Joubert, Aaqius & Aaqius

11:30 – 11:50 a.m. ***Decomposition Phenomena of Urea in SCR Systems***
John Storey and Scott Slunder, Oak Ridge National Laboratory (Invited)

11:50 – 12:10 p.m. ***Diesel Aftertreatment Systems Development***
J. Josh Driscoll, Caterpillar, Inc.

12:10 p.m. Adjourn for lunch on the Bay Terrace
Sponsored by Delphi Corporation

Session 12 – EMISSION CONTROL/PM REDUCTION
Chair: Mike Bogdanoff, SCAQMD

1:10 – 1:30 p.m. ***Particle Sensor for Diesel Combustion Monitoring***
David Kittelson, University of Minnesota

1:30 – 1:50 p.m. ***Reliability and Design Strength Limit Calculations in DPF's***
James Webb, Corning Incorporated

1:50 – 2:10 p.m.	***A New CFD Model for Understanding and Managing Diesel Particulate Filter Regeneration*** Z. Jason Hou, Donaldson Company, Inc.
2:10 – 2:30 p.m.	***Diesel Particulate Filter Technology for Low Temperature and Low NO_X/PM Applications*** Sougato Chatterjee, Johnson Matthey Catalysts
2:30 – 2:50 p.m.	***Advanced Ceramic Filter for Diesel Emission Control*** Cheng G. Li, Dow Automotive
2:50 – 3:10 p.m.	***A New Active DPF System for Duty Cycle Vehicles: Durability and Improvements*** Thierry Seguelong, Aaqius & Aaqius
3:10 – 3:20 p.m.	Break
3:20 – 3:40 p.m.	***DPF Systems Comparison – Fuel Borne Catalyst or Catalyzed Particulate Filter for Diesel Passenger Cars*** J. Michelin, Tenneco Automotive
3:40 – 4:00 p.m.	***Improvement and Simplification of DPF System Using a Ceria-based Fuel-borne Catalyst for Diesel Particulate Filter Regeneration in Serial Applications*** Pierre Macaudiere, Rhodia Electronics & Catalysis
4:00 – 4:20 p.m.	***Retrofit Program on EURO 1 and EURO 2 Bus Fleet in La Rochelle using a Ceria Based Fuel Borne Catalyst for Diesel Particulate Filter Regeneration - Status after one Year Experience*** Laurent Rocher, Rhodia
4:20 – 4:40 p.m.	***Diesel Particulate Filters Market Introduction in Europe: Review and Status*** Thierry Seguelong, Aaqius & Aaqius
4:40 – 4:50 p.m.	***Soot Nanostructure: Definition, Quantification and Implications*** Randy Vander Wal, NCMR c/o the NASA-Glenn Research Center
4:50 – 5:00 p.m.	***SCR Technology – Using SCR to Create Emission Credits*** Daniel Sloan, Emission Reduction Specialists
5:00 – 5:10 p.m.	***Emission Control Systems and Components for Retrofit, and First-Fit Applications*** Brad Edgar, Cleaire Advanced Emission Controls, LLC

5:10 – 5:20 p.m.	***Catalyzed Particulate Filter: Development and Application for Diesel Engine Emission Control*** Yinyan Huang, Süd-Chemie Prototech, Inc.
5:20 – 5:30 p.m.	***Measurements of PM Traps*** Nigel Clark, West Virginia University
5:30 – 5:40 p.m.	Q&A Session
5:40 – 5:45 p.m.	Chair's Closing Remarks John Fairbanks, Department of Energy
5:45 p.m.	Adjourn conference

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