



Department of Energy

Washington, DC 20585

CHAIRMAN'S OVERVIEW

This is a very timely Workshop for us to update diesel engine emissions issues. Diesel engine manufacturers in the U.S. have dramatically reduced emissions over the last 12 years. Specifically, oxides of nitrogen (NO_x) by 73% and particulates (PM) by about 90% as measured by EPA's Federal Test Cycle for Classes 7 & 8 heavy duty trucks. In an historic agreement between the diesel engine manufacturers, EPA, and CARB, the NO levels for the year 2004 will be essentially 50% of the 1998 standards while PMs will remain unchanged. Recent studies by the human health community indicate that PM size is a far more important criteria than mass. The regulators are reviewing this as we meet. Light trucks are being environmentally challenged. Regulators are considering making diesel engine emissions standards close to those of gasoline engine powered vehicles. Some would have them the same!

The major reductions in diesel engine emissions have been achieved with advanced fuel injection equipment (FIE) and the enhanced understanding of combustion achieved with laser diagnostics. Further emissions will most probably require exhaust gas aftertreatment. The leading candidate in aftertreatment is the non-thermal plasma family of devices to which we have dedicated a full day. These systems have in early stages shown simultaneous reduction of NO_x and PM of over 70%. Much of these advances in this technology have been made in the past 18 months. Microwave regenerative particulate traps are over 80% efficient and are getting close to commercial introduction. NO_x reducing catalysts for diesel engines still have some challenges.

Currently there is concern about the 4% contribution of carbon dioxide(CO₂) from the combustion of fossil fuels to the atmosphere and its role in the "Greenhouse Effect" for global climate warming. The Department of Energy's Diesel Engine Development for Light Trucks (sport utility vehicles, vans, and pick-up trucks) Program will produce diesel engines that are 70% more fuel efficient than the current gasoline engines in these vehicles and will reduce CO₂ emissions by 60% percent! The challenge is to meet or better the emissions standards.

These are the core activities and their interrelationships that are the focus of this Workshop among the Agencies involved, the engine manufacturers and affiliates, Academia, National Laboratories, and the Health Effects Organizations.

We would like to express our appreciation for the excellent response of the invited speakers and their spirited participation in discussions. Once again Professor Richard Herz of the Department of Chemical Engineering has done an excellent job of coordinating the Workshop with the University of California-San Diego. Greg Gregory did his typical excellent work with all the administrative details and deserves a "BRAVO ZULU" (well done for the land lubbers) along with Rebecca Dyer who earned her share of this award. This is the 5th of our Workshops for which Greg has handled the myriad administrative aspects and done so with the competence one would expect from a West Point Grad, Air Force Officer, and engineer with experience in industry, and the Department of Energy. His efforts have been reflected in the high esteem he is held in by his colleagues.

We are planning to hold a DEER Workshop next summer in Castine, Maine and to return again to the University of California-San Diego in 1999.

Sincerely,

A handwritten signature in cursive script that reads "John Fairbanks".

John Fairbanks
Chairman, Diesel Engine
Emissions Reduction Workshop