

Opening Address

Conference on the Development and Promotion of Environmentally Friendly Heavy-Duty Vehicles such as DME Trucks

Ladies and gentlemen, I would like to extend a hearty welcome to all of you attending this conference.

I am very pleased that we can co-host today's "Conference on the Development and Promotion of Environmentally Friendly Heavy-Duty Vehicles such as DME Trucks" here in Washington D.C. with the National Traffic Safety and Environment Laboratory.

I would like to express my deep gratitude to Nissan Diesel Motor Co., Ltd. for lending us their full support for this conference, especially allowing us to display a newly developed heavy-duty DME truck (here) free of charge.

In addition, please allow me to express my sincere appreciation for the cooperation of our distinguished guests who will act as keynote speakers and panelists in this conference.

Let me introduce these guests in alphabetical order. They are:

Dr. Andre Boehman from Pennsylvania State University,

Mr. Shigenori Hiraoka from the Japan International Transport Institute,

Dr. Shuichi Kajitani from the University of Ibaraki,

Mr. Jim McCandless from AVL Powertrain Technologies,

Mr. Gene Tierney from the U.S. Environmental Protection Agency,

Mr. Jean-Alain Taupy from TOTAL S.A., France,

and

Dr. Yoshio Sato from NTSE Laboratory Japan, who will give us a presentation on the heavy-duty DME truck on display in front of this building.

Thank you very much.

As you are all probably already aware, environmental issues related to automobiles can be divided into two issues; one concerns CO₂ emissions reduction and the other concerns reduction of harmful substances contained in exhaust gases.

The former issue relates to the environment of the entire planet, and concerns not only automobile usage, but a broad expanse of human activities in general.

The latter, on the other hand, is not a global issue, but rather, a regional one, and

specifically involves automobile traffic. This has a more direct impact on human health than the CO₂ problem.

Governments of all countries are seriously addressing the issues concerning such harmful substances found in exhaust gases. For example, over the past decade, Japan, the United States, and the EU have practically competed with each other to tighten their regulations regarding particulate matter (PM) and nitrogen oxide (NO_x) contained in automobile exhaust gas emissions. If we compare the current Japanese exhaust gas regulations for heavy-duty vehicles with those of ten years ago, and suppose the NO_x emission level of ten years ago to be 100, the current level would be only 33. Similarly, the current PM emission level would be only 4, or a mere twenty-fifth of what it was ten years ago.

Furthermore, the Japanese and U.S. governments, which are earnestly addressing these issues, have proposed to drastically tighten their current regulations by the year 2009 and 2010 respectively, so as to reduce the emissions per KWh to two decimal places or less [that is, to 0.01g/KWh for PM].

This is a very welcome trend, but I think there are presently two problems .

The first problem is that the automobile industry views it as extremely difficult to clear such stringent regulations with the current level of technology, and says it would be impossible to clear them for large, heavy-duty vehicles.

Now, is this really true? In order to show how untrue such a perception is, we have brought over a large, 20-ton plus truck all the way from the other side of the Pacific Ocean.

A truck that emits far less NO_x and PM than the United States' EPA 2010 standards was already built in 2005, five years before the 2010 target.

Now let us turn to the second problem. Can we say that the automobile exhaust emissions problem has been resolved at least with respect to PM and NO_x, once the vehicles clear the very strict 2010 standards laid down by the U.S. and Japanese environmental authorities?

I regret to have to say that the 2010 standards are still insufficient to clear the problem as far as PM is concerned. The mainstream approach to reducing PM emissions with the current level of technology is to finely atomize the fuel when injecting it into the diesel engine. This process reduces the size of PM from a micron level to a nano level, and indeed, it is true that no soot will be emitted at this level. However instead, very fine, micro particulate matter, that is, nano-sized carbon particulates, will be emitted. These will penetrate through the cell membranes of the lungs, and affect the human body immeasurably. Accordingly, we will not be able to resolve the PM issue

with the current level of technology by using the engine approach alone. We need to look at the fuel itself. In that regard, DME has oxygen in its own molecular structure, so it does not produce any carbon particulate, which in turn means no PM emissions.

Nevertheless, I am personally no expert on fuels or engines, so for the benefit of the conference proceedings I will hand over this discussion to the experts who are present here today.

What I want to stress, however, is that heavy-duty DME trucks may not be spotlighted as a revolutionary and eye-catching technology such as nuclear fusion or genetic engineering, but they have invaluable significance for our daily health as we continue to live in an automobile society.

I ask you to precisely judge the potential of this new technology by listening to the presentations by these top experts who have gathered today from Japan, the United States, and the EU. We will also run the engine of the truck we have brought over from the other side of the Pacific, so please observe its excellent performance for yourself.

Thank you for your attention.