

**STEP FORWARD IN DIESEL ENGINE EMISSIONS REDUCTION:
SYSTEM INCORPORATING
A NOVEL LOW EMISSION DIESEL FUEL & CONVENTIONAL LUBRICANT**

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The diesel engine, while being a key element in the success of worldwide commerce through its fuel efficiency, is also a source of numerous air pollutants. The health and environmental concerns related to nitrogen oxide (NO_x) and particulate matter (PM) emissions are well known and documented.

A high impact approach to delivering benefits in terms of emission reduction is through the use of novel diesel fuels. One technical approach, which has been discussed in the literature, is the blending of diesel fuel with water, which causes a reduction in the formation of NO_x during the combustion process. In the past, these fuels have been difficult to blend consistently and have caused fuel system durability problems.

Lubrizol has done research on a novel, low emission diesel fuel - a blend of regular diesel fuel, water, and a proprietary fuel additive form-

ulation. This system is blended in a quality-controlled fashion using a self contained blending system. The blending system can be located at a fueling terminal site or even directly at the equipment site for fuel delivery at the point of use. The technology is economical and fully retrofittable to existing vehicle and engine populations. Since the water improves overall distribution of the fuel/air mixture within the cylinder of the engine and lowers peak combustion temperatures, both PM and NO_x emissions are significantly lowered simultaneously.

This presentation will detail the concepts described above with supporting data which will include the laboratory chemical and engine testing done to date as well as the field test results obtained. Additionally, side-by-side results of lubricant performance tests with conventional and novel, low emission diesel fuel will be discussed.