

NOXTECH'S PLASMA-ASSISTED CATALYST PROGRAM

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Diesel emissions reduction technology remains a key obstacle in achieving cleaner and healthier environmental standards. It is estimated the diesel emissions will have to be reduced by as much as 90 percent from current levels to meet the 2007 and beyond standards being sought by the U.S. Environmental Protection Agency and the California Air Resources Board.

Non-thermal plasma-assisted catalyst (NTPAC) technology being developed at Noxtech, Inc., continues to focus on achieving the 2007 and beyond standards. Noxtech's NTPAC technology utilizes an efficient non-thermal plasma reactor working in harmony with a solid-state pulsed power supply to efficiently convert NO to NO₂ in the presence of a suitable hydrocarbon generated on-board from diesel fuel. NO₂ is then converted to N₂ in the presence of an A9 monolithic sulfur-tolerant catalyst.

Noxtech has made major progress in the development and enhancement of the NTPAC system under the U.S. Department of Energy-sponsored program. Noxtech has designed, built, and demonstrated an 80-HP NTPAC system with up to 94-percent NO_x reduction from an 80-HP diesel engine genset using a diesel as a source of reductant for the NTPAC system.

Major improvements have been made in the Noxtech's NTPAC system components. Noxtech has successfully designed, built, and tested a diesel fuel converter, which uses the exhaust energy to convert diesel into a suitable gaseous hydrocarbon so it can be used by the NTPAC system as a reductant. The NO₂ conversion catalyst performance has been improved, and the ceramic spheres have been replaced with a monolithic unit. Noxtech continues to screen additional catalysts to find more active and better catalysts than A9. The efficiency of the pulser and reactor has been enhanced, and their size and components have been greatly reduced.

Noxtech plans to demonstrate its advanced 80-HP NTPAC system at the DEER 2002 Conference. The system developed at Noxtech will be integrated with an 80-HP series B diesel engine genset. This system will be operated with a load bank and a NO_x analyzer. Metered diesel fuel will be used as a reductant for the NTPAC system demonstration. The plasma reactor will be powered by a solid-state power conditioner/pulser, and the system will be operated at steady state with manual controls.

