NOXTECH'S PLASMA-ASSISTED CATALYST SYSTEM DEVELOPMENT AND DEMONSTRATION

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ABSTRACT

The non-thermal plasma-assisted catalyst (NTPAC) technology being developed at Noxtech, Inc., continues to focus on achieving the 2007 and beyond emissions standards for heavy- duty vehicles. Noxtech's NTPAC technology utilizes an efficient non-thermal plasma reactor with a solid-state pulsed power supply to efficiently convert NO to NO_2 in the presence of a suitable hydrocarbon generated on-board from diesel fuel. NO_2 is then converted to N_2 in the presence of a sulfur-tolerant catalyst that contains no precious metals.

Noxtech has made significant 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 generator using diesel fuel as a source of reductant.

Noxtech's emphasis for its 2003 program has been to improve and enhance the performance, reliability, and commercial capability of its NTPAC system. It is working with a commercial partner to reduce the size and cost and improve the efficiency of the pulser for its plasma reactor. Noxtech has also redesigned and improved its diesel fuel converter to produce effective hydrocarbons to act as a catalyst and reductant for the NTPAC system. Several new catalysts have been formulated and evaluated to enhance performance (surface efficiency/availability and selectivity) as well as to improve durability and operating temperature range. The goal is to produce a system that is commercially capable in the near future.

Noxtech has conducted a demonstration of its NTPAC system at a third-party test site for assessment by Government and private industry representatives. The result of this test will be presented at the DEER 2003 Conference.