

ADVANCED DIESEL ENGINE AND AFTERTREATMENT TECHNOLOGY DEVELOPMENT FOR TIER 2 EMISSIONS

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ABSTRACT

Advanced diesel engine and aftertreatment technologies have been developed for multiple engine and vehicle platforms. Tier 2 (2007 and beyond) emissions levels have been demonstrated for a light-truck vehicle over a FTP 75 test cycle on a vehicle chassis dynamometer. These low-emissions levels are obtained while retaining the fuel-economy advantage characteristic of diesel engines.

The performance and emissions results were achieved by integrating advanced combustion strategies (CLEAN Combustion[®]) with prototype after-

treatment systems. CLEAN Combustion[®] allows partial control of exhaust species for aftertreatment integration in addition to simultaneous NO_x and particulate matter reduction. Analytical tools enabled the engine and aftertreatment subsystems development and system integration. The experimental technology development methodology utilized a range of facilities to streamline development of the eventual solution, including utilization of steady-state and transient dynamometer test-beds to simulate chassis dynamometer test cycles.