

Attaining Tier 2 Emissions Through Diesel Engine and Aftertreatment Integration - Strategy and Experimental Results

R. Aneja, B. Bolton, N. Hakim, Z. Pavlova-MacKinnon

Detroit Diesel Corporation, DaimlerChrysler Powersystems

The feasibility of diesel engines to meet the stringent emissions regulations of 2007 and beyond is an important consideration for light trucks and other personal transportation vehicles. Integrated engine and aftertreatment systems have been developed at Detroit Diesel Corporation for multiple engine and vehicle platforms. Tier 2 emissions technologies have been demonstrated with significant fuel economy advantage compared to the respective production gasoline engines while maintaining excellent drivability.

The performance and emission results were achieved by integrating advanced combustion strategies with prototype aftertreatment systems. The system development methodology included the integration of experimental and digital tools. Further, the experimental development approach included systematic testing on steady-state dynamometer, transient dynamometer and chassis dynamometer test beds.