

# **2007-2009 EMISSION SOLUTIONS FOR HEAVY-DUTY DIESEL ENGINES**

**Jeffrey A. Leet**

Southwest Research Institute

Manufacturers of heavy-duty diesel engines for sale in the United States face achieving an unprecedented reduction in emissions in 2007 and in 2010. A 90-percent reduction in PM must be achieved by 2007, and a full 90-percent reduction in NO<sub>x</sub> must be implemented by 2010 across 100 percent of the on-highway product line.

This presentation will focus on the technology solutions possible for engine makers for the interim 2007-2009 timeframe as well as discuss the additional NO<sub>x</sub> reduction strategies for a 2010-compliant engine. The ability to achieve the interim 2007-2009 NO<sub>x</sub> fleet average standard of 1.18 g/hp-hr via in-cylinder control methods, including diluent control, modified combustion, variable valve actuation, and model-based control strategies, will be presented. The possible means of achieving a larger portion of the required emissions reduction through in-cylinder control rather than by exhaust treatment will be discussed. The issues of oil consumption and closed crankcase ventilation systems and how they impact PM-control technologies will be discussed.