NO_X ADSORBER REGENERATION PHENOMENA IN HEAVY-DUTY APPLICATIONS

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ABSTRACT

Hydrocarbon species are being measured with a gas chromatograph/mass spectrometer and Fourier transform infrared at NO_x adsorber inlet and outlet locations in the exhaust system of a heavy-duty diesel engine. The engine is equipped with electronic throttle and exhaust gas recirculation, in-pipe fuel injection, and various diesel oxidation catalysts upstream of a catalyzed diesel particle filter (CDPF) and a high-temperature NO_x adsorber catalyst. Raw diesel fuel injected into the exhaust system is readily cracked into lighter compounds over catalysts, and the NO_x adsorber more readily utilizes certain compounds during regeneration. Augmenting the CDPF with oxidation catalysts produces preferred species such that comparable NO_x reduction can be achieved with less supplemental fuel.