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Contractor: Southwest Research Institute

Partners: Beijing Environmental Protection Bureau, Beijing Automotive Research Institute (BARI); Consolidated Parts and Accessories, Ltd; Cummins Emissions Solutions; Johnson Matthey; Cleaire

Overview

Originally planned for 25 transit buses in Beijing
6 Euro I
19 Euro II

Devices (originally planned)

Diesel oxidation catalysts (8)
Partial flow filters – wire mesh technology (8)
Wall flow Diesel particulate filters – passively regenerated (9)
(Euro II buses only)

Devices (at end of project)

Diesel oxidation catalysts (8)
Partial flow filters (4) metal foil technology
Wall flow Diesel particulate filters – (6) electrically regenerated

Fuel

ULSD for buses with DPFs
Normal (~200 ppm S) Fuel for other buses

Dates

Project kickoff -- November 2005
Device installation – Spring 2006
Conclusion -- December 31, 2007

Problems encountered

Buses were in poor repair and had much higher than expected engine-out emissions. Euro II buses were generally worse than Euro Is. Exhaust temperatures were also very low. These factors necessitated mid-project engine repairs and shifts of the partial flow filters and the wall flow filters.

Test results

Buses were tested in real world traffic with simulated loads. Two Dekati DMM 230 Portable emission monitoring systems (PEMS) were used to measure PM upstream and downstream of the retrofit devices. Reduction efficiencies were calculated.

Emission results were in the ranges expected for these devices: >90% for the wall flow filters; 35% for the wall flow filters; and 20% for the DPFs