



South Coast AQMD Technology Advancement Office



Heavy-Duty Program



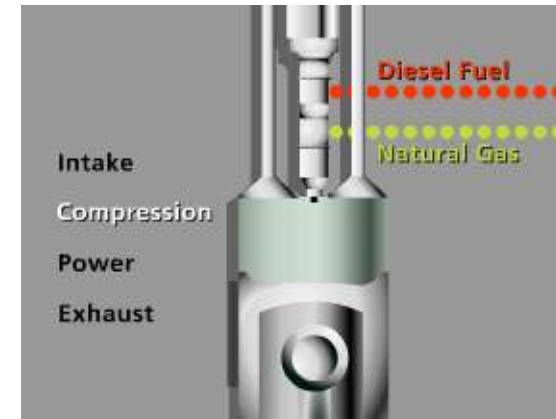
Advisory Group Retreat
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Heavy-Duty Engine Technology (LNG)

- Develop, demonstrate, & certify LNG HD HPDI engine (400-450) hp
 - 0.6g NO_x with HPDI, EGR, & DPF technology
 - 0.2 g NO_x + SCR
 - Assess performance, durability, & reliability
 - Early introduction of 0.2g LNG HD trucks
- Project cost: ~\$10 million, funded by
 - AQMD, CEC, POLA, POLB, Clean Energy, & Westport Power
- Status: Currently at 0.7g
 - 0.2 g HPDI engine development continues
 - Optimization on going (fuel economy, emissions)
 - Certification testing begins in November 2009



Heavy-Duty Engine Technology (Diesel Fuel)

- Develop Advanced Diesel Emission Control System (ADECS)
 - NOx & PM emissions from HD engines - ISL 8.9L 350 hp Cummins engine (2.5g NOx)
 - 0.2 g NOx & 0.01 g PM
 - Heavy EGR + SCR + PM Trap
 - Assess performance, durability, & reliability of ADECS
- Project cost: ~\$5.2 million, funded by
 - AQMD, DOE, CARB, Cummins
- Status:
 - Completed
 - Achieved 0.2 g NOx & 0.01 g PM at FTP
 - NH3 slip averaged 3.9 ppm over all cycle, Maximum spike of 53 ppm



Heavy Heavy-Duty Truck Retrofit Technology



- Develop & demonstrate control technology for NO_x & PM
 - HD trucks – 15 HHD, at least 6 DDC Series 60 & Cat C13 (13L 350 hp)
 - SCRT (CRT + SCR)
 - Assess reliability & emission reduction potential of technology
- Project Cost - ~ \$731,500, funded by
 - AQMD, Johnson Matthey, Ralphs
- Status:
 - Installation completed in 11/08 (most in August)
 - Drivers experience (positive)
 - Urea tank refueled the same time as fuel tank
 - Efficiency - >
 - NO_x (Low: 60% high >70%; avg. 70%); PM >85%: slip < 25ppm
 - Demonstration continues & followed by chassis emission test



Construction Equipment Retrofit Technology

Showcase Program

- Objective:
 - Demonstrate NOx & PM technologies on over 200 pieces of diesel construction equipment
 - Assess reliability & emission reduction potential of technology
- Equipment & Technology:
 - 185 machines - Scraper, excavators, dozers, loaders, backhoes, tractors (17 – 650 hp)
 - SCR, DPF, & other NOx & PM control strategy
- Project Cost - ~ \$5 million funded by
- AQMD, MSRC, CARB, aftertreatment technology providers, & 18 fleets
- Status:
 - 25 engines retrofitted by 9 manufacturers
 - Demonstration is on-going



Construction Equipment Retrofit Technology

Other Construction Programs

- Demonstrate SCR technology on construction equipment for 1100 hr
 - Assess reliability & emission reduction potential of technology
 - Project cost - ~ \$195k funded by AQMD, EF&EE, CSDLAC
 - Demonstration is on-going
- Demonstration of SCR & DPF technology on construction equipment for 1100 hr
 - Assess reliability & emission reduction potential of technology
 - Project cost - ~ \$670k funded by AQMD, Servo Tech, CSDLAC
 - Demonstration is on-going

