

NOx Emissions Reductions Using Biodiesel and SCR Technologies

- City of Santa Monica
- National Renewable Energy Laboratory
- California Energy Commission
- LA BioFuel
- Extengine Transport Systems
- Combustion Components Associates
- EF & EE, Inc. (Engine, Fuel & Emissions Engineering)

Goals

- Demonstrate potential reduction of all regulated pollutants - including NOx
 - Selective Catalytic Reduction (SCR)
 - Biodiesel (B20 / B99)
 - Two systems (ADEC II / Elim-NOx)
 - CARB Verification
 - High visibility project
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Biodiesel

➤ Significant Reductions

- PM
- CO
- Hydrocarbons
- Carcinogenic polyaromatic hydrocarbons
- CO₂

➤ Not Significant Reductions

- NO_x

SCR

- 70-90% NOx reduction
- No research using biodiesel
- Relatively inexpensive for fleets
- Results to SCAQMD & CARB

Approach

- 2 tractors with Cat C-13 diesel engines
- 2 SCR Urea-based systems (Extengine / CCA)
- Biodiesel - Fuel retrofit to reduce:
 - PM, CO, HC, PAHs and CO₂
- In field - (PEMS) / datalogger
- Chassis Dynamometer testing (LA MTA facility)
 - (verification test protocols outlined in CCR Title 13, Section 2703)
 - Heavy Duty UDDS - ULSD / B20 / B99
 - Ammonia slip testing

Benefits

- Demonstrate potential of using biodiesel and SCR to lower impact of operating diesel vehicles and equipment in congested urban environment
- Compliment ongoing B20 CARB verification
- Biodiesel/SCR could prove to benefit AQMD as a cost-effective option for fleet rule compliance
- Reduce our dependency on petroleum diesel without sacrificing efficiency or performance