

A-Z Emissions Solutions Group

Committed to Cleaning The Air for Future Generations

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Why clean up diesel emissions

- In 1998, CARB identified Diesel Particulate Matter or PM (soot) as a toxic air contaminant.
- Each year in California alone, PM contributes to an estimated 2,900 premature deaths, 3,600 hospital admissions, 240,000 asthma attacks and over 600,000 lost work days.
- A plan was created in 2000 to reduce PM by 75% by 2010 and 85% by 2020.
- The release of NO_x, specifically NO₂ or Nitrogen Dioxide, results in ground level ozone formation and smog. Restricting the output of this contaminant is also being seriously addressed by CARB.



What is being done to mitigate these concerns

The California Legislature have passed 2 primary assembly bills (2766 and 923) which empowers local Air Districts to increase the motor vehicle registration fees a total of \$6.00 to be applied toward emission reduction programs. Carl Moyer is another source where Air District can attain grant funding.

The 4 primary options for owners of products with diesel engines:

- Replace vehicle
- Repower engine
- Retire vehicle
- Modify to meet new emissions standard (retrofit)

2 other big steps being taken:

- **The Use of Alternative Fuels:**

CNG, LNG, Propane, P-series, Ethanol, Hydrogen, Electrical, Methanol, and Biodiesel

- **The implementation of ULSD Standards:**

The average sulfur content in diesel fuel across America is 500 parts per million (ppm). CARB diesel contain about 125 ppm. As of September of this year it will be mandatory for retailers in California to only sell diesel fuel containing 15 ppm or less.

Fleet Rules and other ARB ATCM's (Air Toxic Control Measures)

- On Road – Main focus is <14,000 GVWR
 - Municipal and Utility Fleets
 - Solid Waste Vehicles
 - Private Fleets (Trucking companies +)
 - Public Transit Agencies
 - School Buses
- Off Road
 - Construction
 - Agriculture and airport – stationary and portable
- Port Vehicles
- Marine Vessels
- Rail Yards

A-Z represents 4 major Emissions Aftermarket Device OEM's:



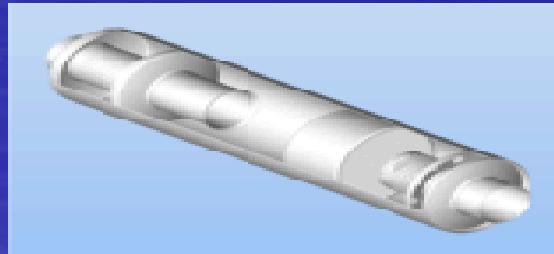
CARB verified devices must reduce PM by these amounts:

- Level 1 – between 25% - 49%
- Level 2 – between 50% - 84%
- Level 3 – Over 85%
- **BACT** or **Best Available Control Technology** must be used when your local Air District is providing the funds to the retrofit process

Diesel Oxidation Catalyst (DOC)

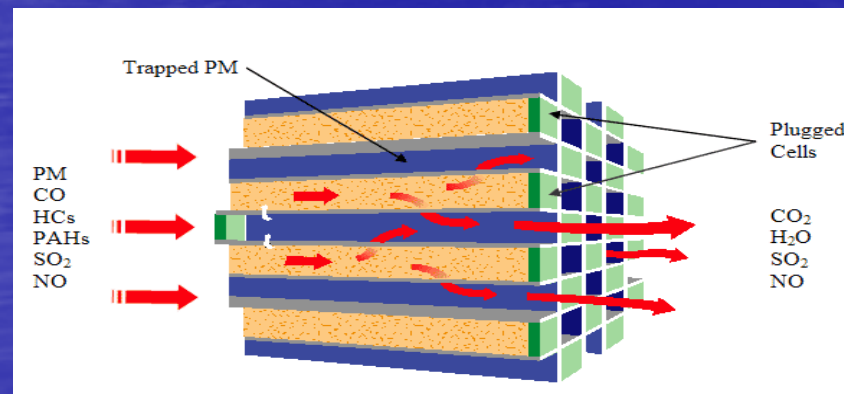
Normally a level 1 device

- Pass through system
- Ceramic sub-straight or Brick
- Coated with precious metal (catalyst) which causes PM to burn at normal exhaust temperatures.
- The use of ULSD very helpful and sometimes mandatory by OEM
- Most are verified by CARB for 1988 and new applications



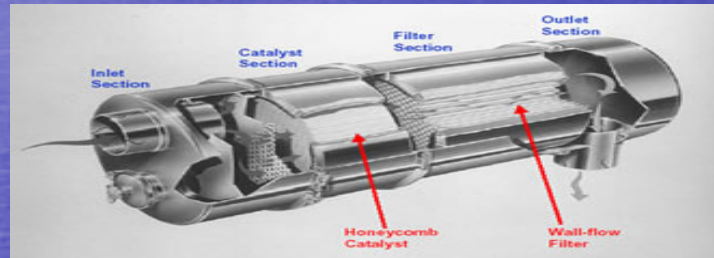
Passive Diesel Particulate Filter (DPF) Normally a Level 3 Device

- Traps soot in honeycomb design while passing through gases
- Made up of a silicon carbide or cordierite filter which withstands very high heat temperatures
- Also a catalyzed system, but must reach exhaust temperatures of 260-280 degrees Celsius for a certain % of the route to produce enough heat for regeneration or the soot burning process
- ULSD is mandatory for use these devices
- De-ashing or cleaning is required
- Only verified by CARB for 1994 and newer applications



Active Diesel Particulate Filter (DPF) Normally a Level 3 Device

- 2 primary ways to complete an active regeneration:
 - Inject urea or fuel into the exhaust stream
 - Increases temps to 600c, which will induce burn-off



- Plug in unit
 - This is an un-catalyzed system
 - Must be plugged for 5-6 hours to complete burn-off



Helpful Websites

ARB homepage:

www.arb.ca.gov/homepage.htm

Low Sulfur Diesel Fuel:

www.arb.ca.gov/fuels/diesel/diesel/htm

School Bus idling Restrictions:

www.arb.ca.gov/toxics/sbidling/sbidling.htm

Lower Emissions School Bus Program:

www.arb.ca.gov/msprog/schoolbus/schoolbus.htm

Fleet Rules:

www.arb.ca.gov/msprog/scfleet/scfleet.htm

Carl Moyer Program:

www.arb.ca.gov/msprog/moyer/moyer.htm

Verification Procedures:

www.arb.ca.gov/diesel/verdev/verdev.htm

Question and Answer

