



Advanced Emissions Controls for Highway Fleets

Dana Brewster

Today's Leading Technology for Tomorrow's Future

Engine Control Systems (ECS)

- An industry pioneer since 1980
- Locations
 - Reno, NV
 - Newmarket, ON
 - Malmo, Sweden



- Subsidiary of Catalytic Solutions Inc., Oxnard, CA
- Market leader in Cost Effective Verified retrofit emission control solutions

2 options ECS has to offer:

Option #1

Diesel Oxidation Catalyst(DOC)

no maintenance, less expensive

We offer a 40% and a 20% catalyst

Option #2

Diesel Particulate Filter(DPF)

-required maintenance, more expensive, 90%

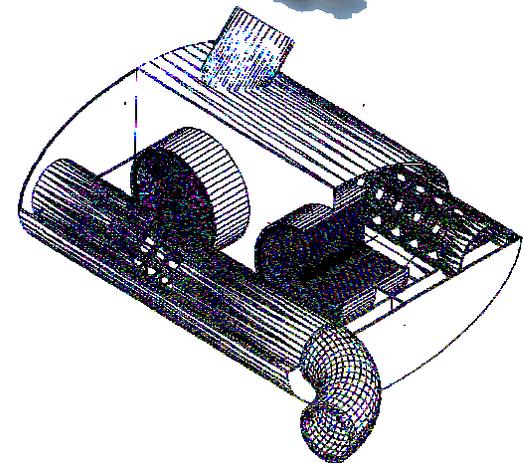
Add: Crankcase Ventilation System to Option #1 or #2

Diesel Oxidation Catalysts

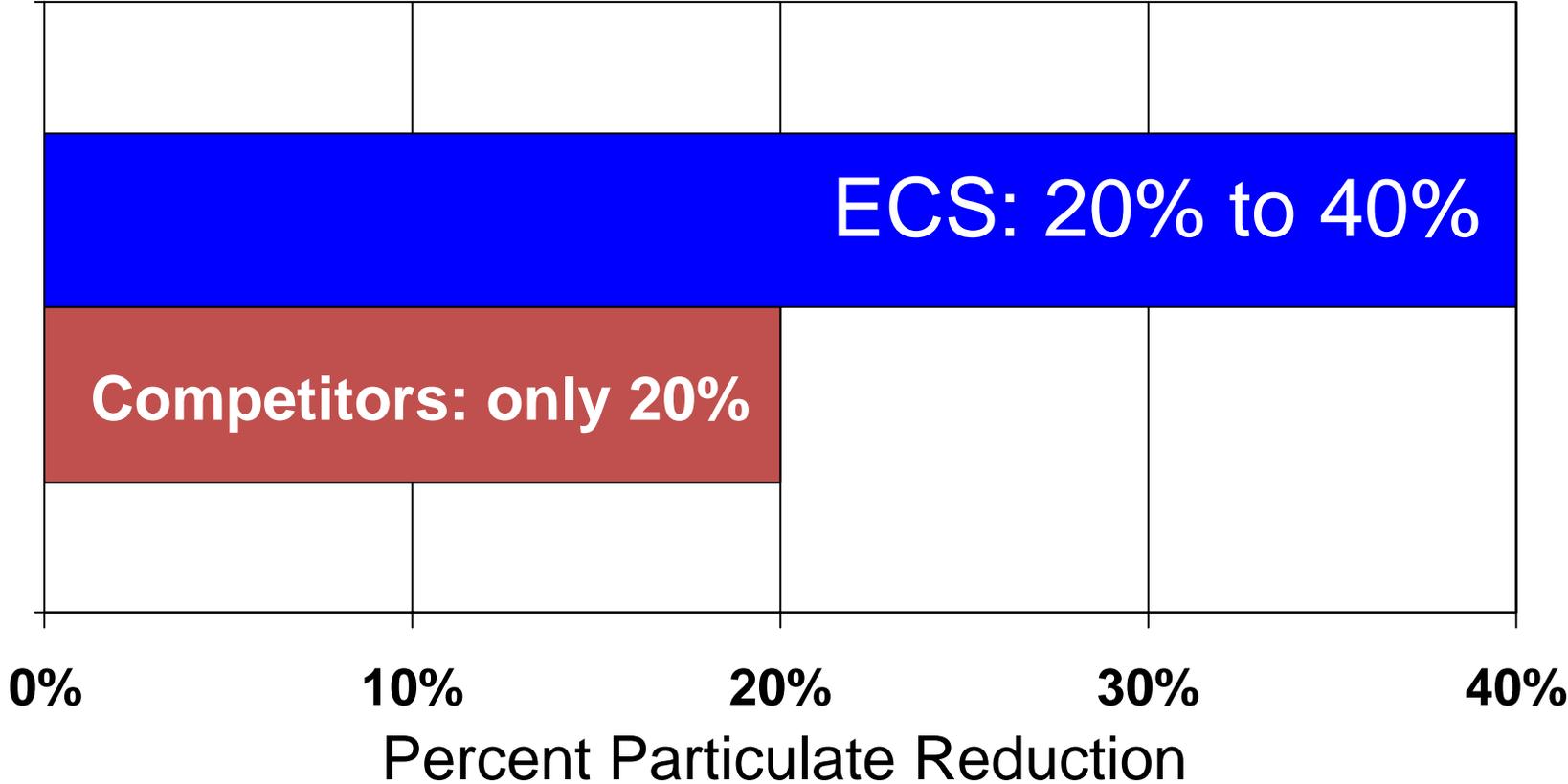
AZ Purifiers and AZ Purimufflers™

- ECS provides an exact replica of your current muffler with our DOC.
 - Standard converters
 - Standard converter mufflers
 - Hundreds of direct fit converter mufflers
- Employ equal or larger catalysts than competitive products for superior performance = 40% reduction!

We provide the most cost effective DOC solution in the industry!

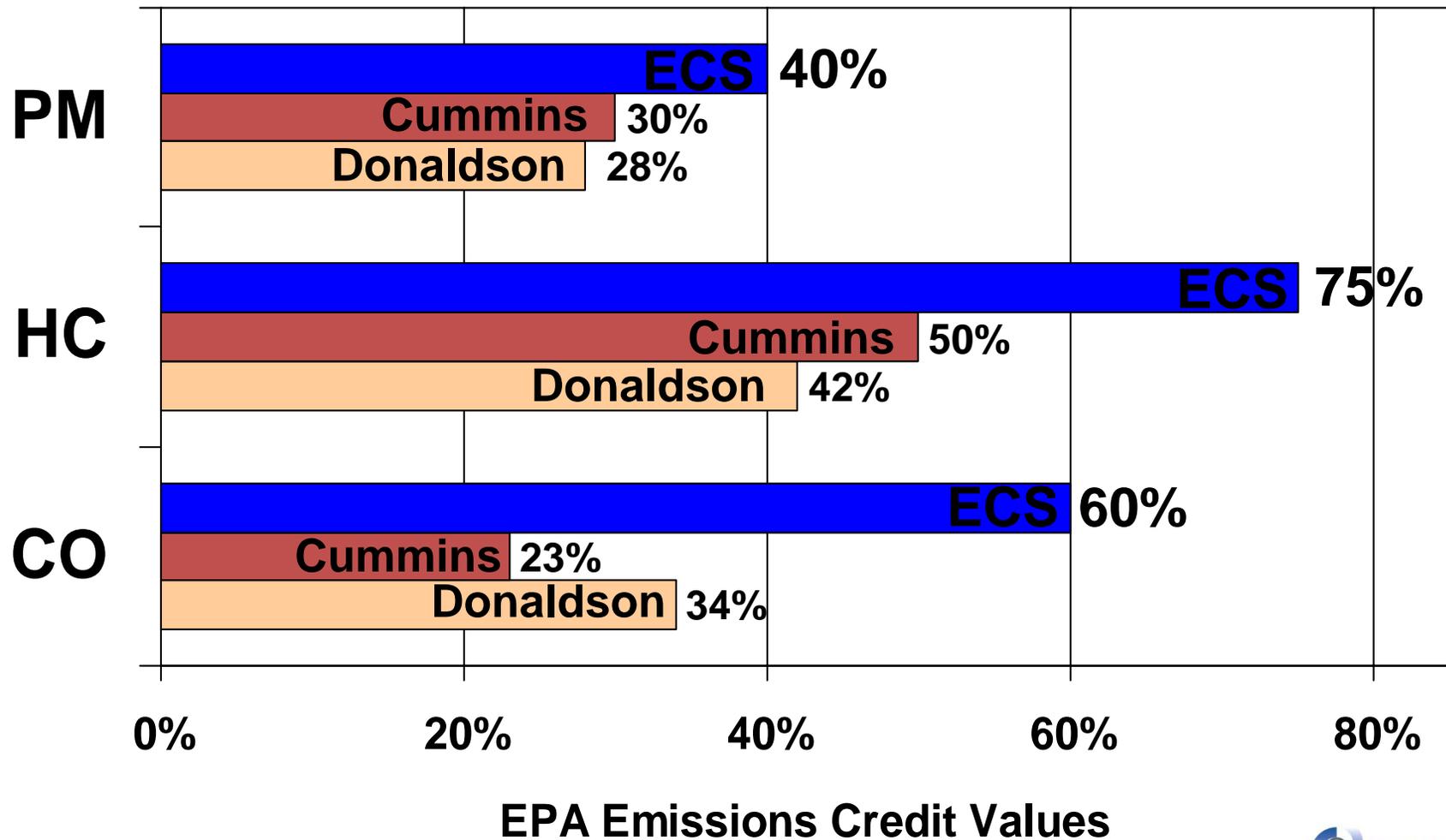


EPA PM Emissions Credit Values for DOC's

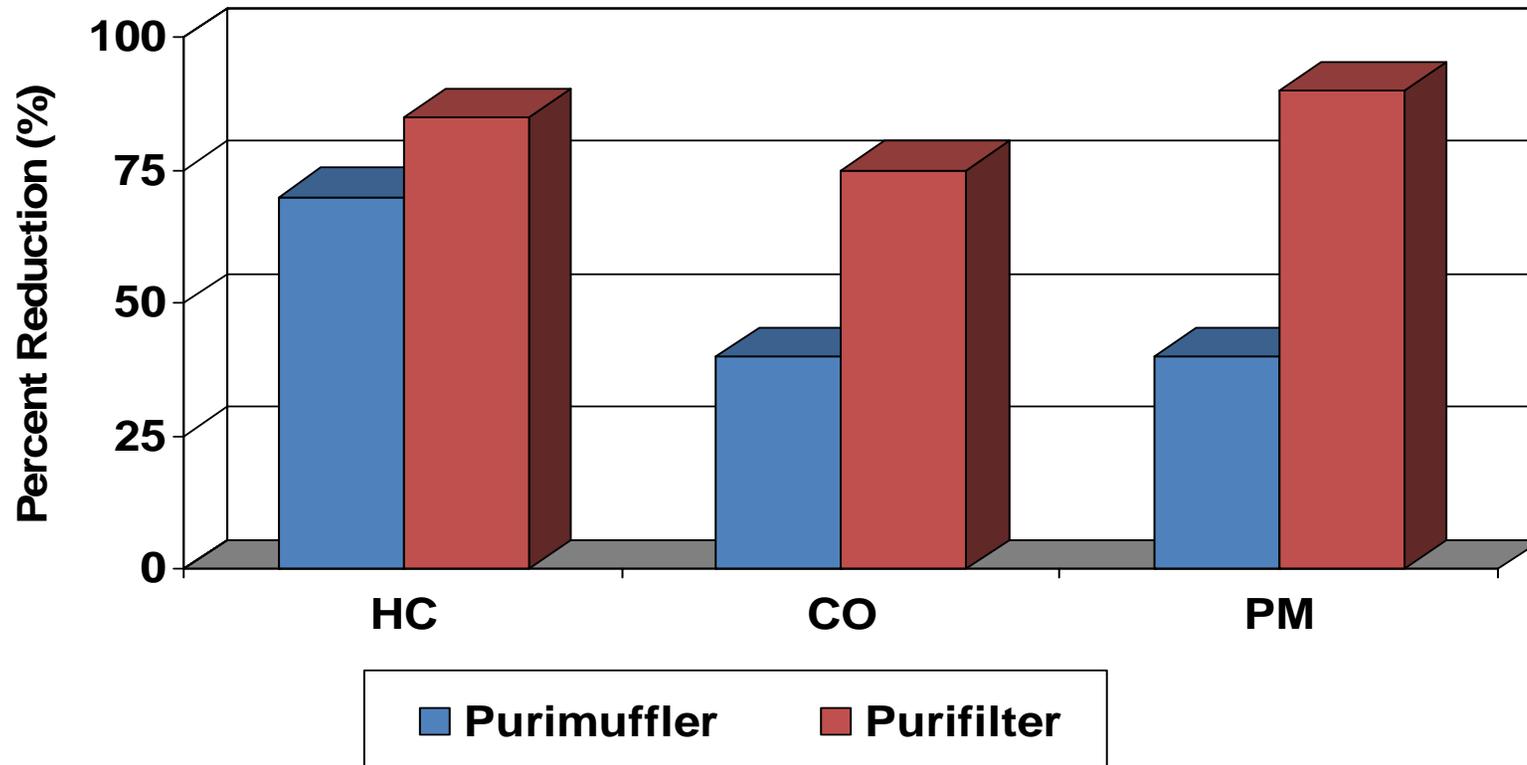


Comparative EPA DOC & CCV Verifications

<http://www.epa.gov/otaq/retrofit/verif-list.htm>



Purimuffler(DOC) vs. Purifilter(DPF)



Crankcase Ventilation Filter System(CCV)

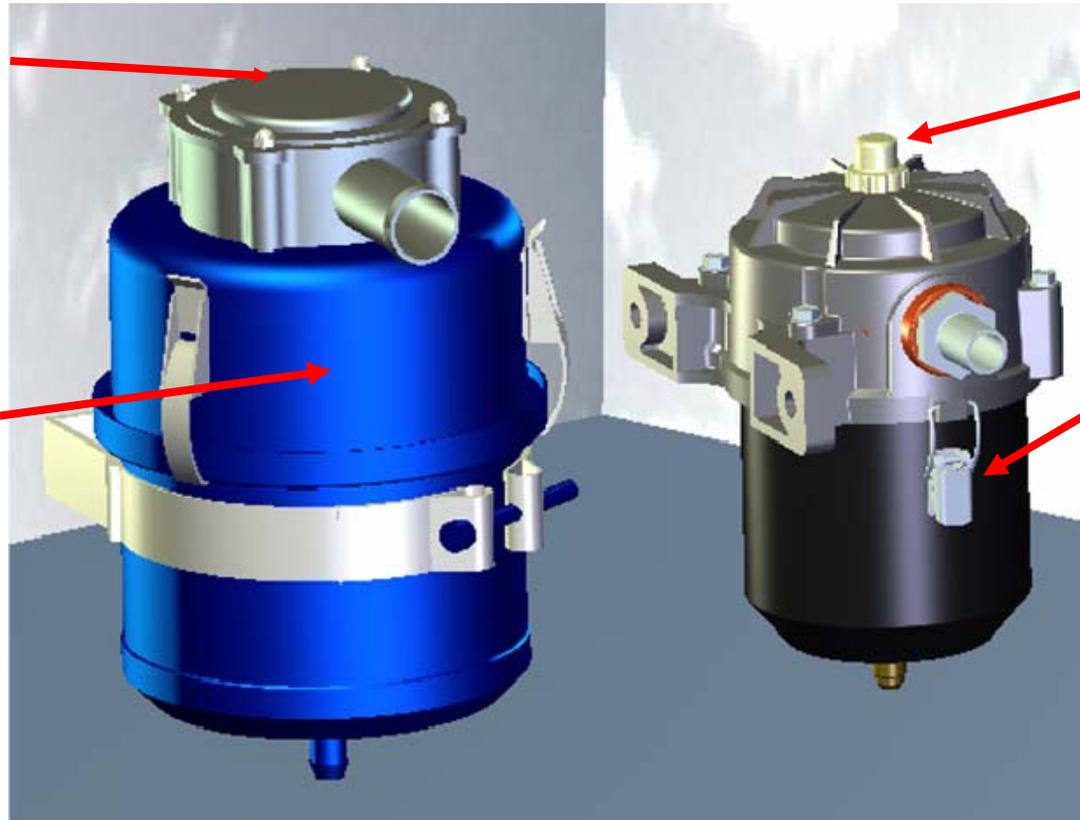
No Filter Change Indicator!

Cover AND regulator are removed to access the element.

Large hoses are required to move during servicing.

Change Filters every oil change !

Separate external Bypass - with no Indication when Bypass has occurred



**Larger Size
Other**

**Smaller Size
ECS CCV**

Filter Change Indicator
(Optional dash Mounted indicator Available)

Canister lowers with two easy latches.

No hoses are attached to the canister.

Change Filters every other oil change !

**No bypass
-A truly closed Crankcase !**

ECS Direct Fit Kit for International DT444 engines



CCV Filter Cartridge Change



Open Canister



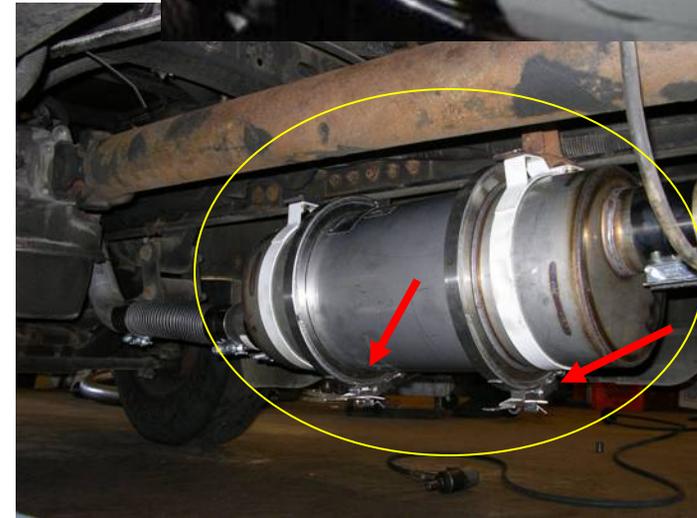
**Remove filter, replace
& close**

Diesel Particulate Filter(DPF)

- **Silicon carbide substrate**
- **ARB and EPA Verified for most 1993 to 2006 Hwy applications**
 - The first DPF to receive PM emissions reduction credit of 90%
 - Verification pending for non-road engines
 - CombiClean™ Station



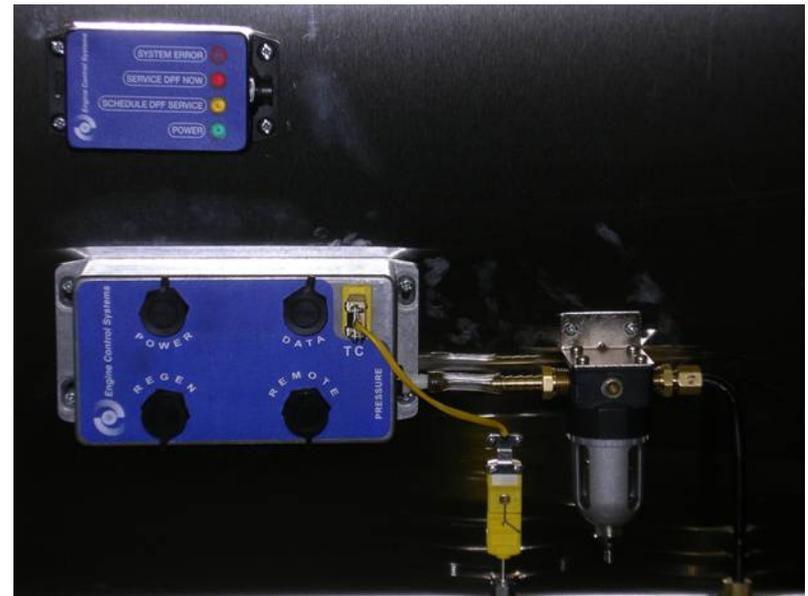
Purifilter Highway Installations



New Backpressure Monitor/Logger

(used with DPF's only)

- Extended datalogging capability (up to 2 yrs)
 - BP and Temperature
 - Regeneration frequency
- **Multi-light** displays to indicate system faults, warnings and alarm conditions
 - Real time monitoring
- Includes data analysis software



Diesel Particulate Filters(DPF's) in Non-road Applications



Recent Projects

- 300 DOC's installed Indiana DOT
- Majority of Ground Zero equipment use our DPF's
- Hamilton County School buses CCV/DOC. 60 buses
- \$34,000 CCV's Wisconsin DNR
- Sold over 200 DPF's in California in 2007
- Over \$2mm in bids for 1st quarter 2008

Why choose Engine Control Systems?

- Highest rated DOC on the market. 40%!
- DOC, DPF's customized to each application
- Superior distributor network to provide installation, service, repairs and mechanical assistance.
- #1 reason is **cost effectiveness** per dollar spent:

ECS → \$800 DOC at 40% reduction

Brand X \$650 DOC at 20% reduction

(equivalent to \$1300 for 40% reduction)

Simply put, ECS provides you the **BEST DOC SOLUTIONS**
in the industry period!



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