

# ECS Technology Presentation

June '08

# Agenda Items

- Company Overview
- ECS Product line
  - Technology Portfolio
  - Product Selection
- ECS Success stories
  - Resume
  - Case Studies
- Questions / Discussion

# Engine Control Systems (ECS)

- **Founded in 1980**
- **Acquired by Catalytic Solutions Inc. Jan 2008**
- **Market leader in emission control solutions for non-automotive applications**



# Engine Control Systems

- Complete Catalytic Muffler, Diesel Particulate Filter and regular muffler manufacturing capabilities
- Complete line of accessories
  - Clamps
  - Brackets
  - Flex Tube



# AZ Purifiers and AZ Purimufflers

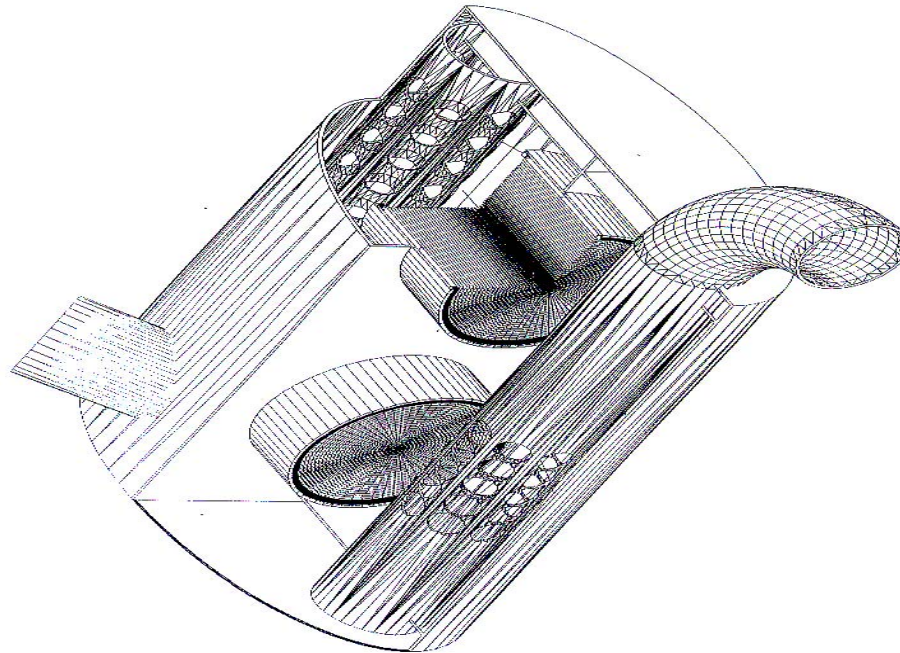
- **Diesel oxidation catalyst**
  - EPA and ARB Verified
- **Available as HD Purifiers and Purimufflers, SD Purifiers and Purimufflers and Direct Fits**
- **Fuel sulfur tolerant**



# Purimuffler™ Features

Direct Fit Converter  
Mufflers

Low Backpressure



Stainless Steel  
Construction

Maintenance  
Free

Superior Low  
Temperature  
Activity

Applications  
Engineered

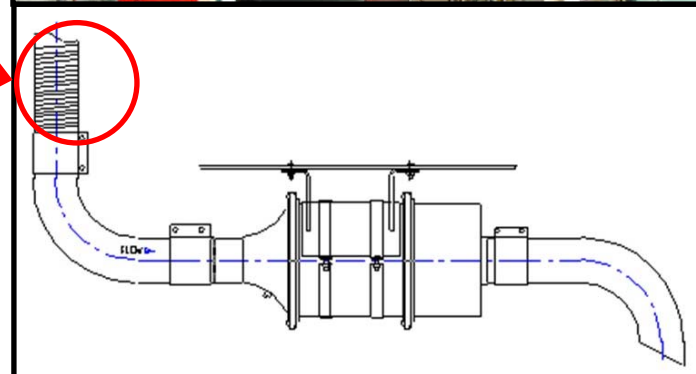
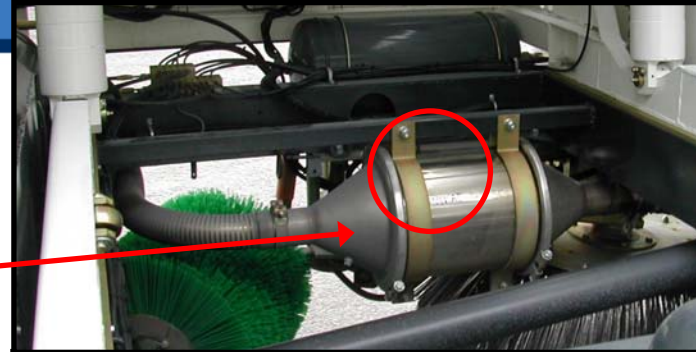
# ECS Purifilter™

- Passively Regenerating Diesel Particulate Filter
- EPA and ARB Verified
- Precious metal catalyst on Silicon Carbide
- PM, HC and CO emissions reduction of >90%
- Modular “muffler” product format



# Installation

- Due to the increase in weight, additional support brackets may be required
- For a direct fit replacement, remove the original muffler and install the Purifier with new clamps
- Depending on the temperature trace, wrapping the filter with a heat blanket may be required
- Make sure if the Purifier is rigid to the chassis there must be flex before the inlet of the DPF
- If the DPF is part of the engine mount, the flex must be installed after the DPF



# Other Purifilter Applications



# Combifilter Models

## Types V&K



- 8 hour regeneration
- Air supplied from panel
- K model uses SiC filter
- V model uses cordierite

## Types S



- 60 min. regeneration
- Closed loop element control
- On & Off-Board regeneration
- ARB Verified

# CombiClean™

- Diesel particulate filter cleaning station designed to safely perform maintenance on all DPF's
- Easiest and most efficient way to clean and restore a filter
- Built with over 25 years of proven regeneration technology
- 3-step system of vacuum–heat–vacuum
- Vacuum system removes soot and ash from filters
- Does not allow contaminants to escape into the air
- Clean cordierite & silicon carbide filters between 3 and 20 liters



# LPG AND CNG PRODUCTS

- **2-Way Purimuffler - Propane**
  - Precious Metal Catalyst for CO & HC reduction.
  - Integrated Venturi to enhance oxygen content
- **3-Way Purimuffler - Propane**
  - Precious Metal Catalyst for CO, HC & NOx reduction.
  - For use with Customer closed loop fuel management.
- **3-Way Purimuffler™ - CNG**
  - Precious Metal Catalyst for CO, HC & NOx reduction.
  - For use with Customer closed loop fuel management.



# Success Stories

# SCAQMD

- City of LA, County of LA, City of Long Beach, City of Pasadena
- 324 Public Works Vehicles retrofit with Purifilters, 8 CombiClean units supplied to maintain the Purifilters and other filters
- Six months to supply and install all of the units in the fall of 2004 and spring of 2005
- Contact: Dipankar Sarkar 909-396-2273

# Fairfax Virginia

- Fairfax County Schools, Virginia
- 573 School Buses retrofit with AZ Purifiers or direct fit AZ Purimufflers
- Three months to supply and install (Fall of 2004)
- Contact: Dave Duval 703-324-3554

# NYPA

- New York City Public Schools, New York
- 1000 Contractor School Buses retrofit with direct fit AZ Purimufflers
- 1000 units installed in just over 6 months
- Project extended by 88 units based on satisfactory performance, completed early Jan 06
- Contact: John Markowitz 914-390-8209

# Thank You

## Engine Control Systems

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