ESW Group®



Diesel Retrofit Workshop

Tel Aviv

September 2014

Outline

- ESW Group overview
- Verified ESW Retrofit Systems
- ESW experience
- Examples of Bus retrofits with ESW systems
- Summary and Questions

ESW Group Overview

- ESW Group (OTC: ESWW) is a US company with about 60+ employees
- Headquarter, manufacturing and testing in Montgomeryville, PA, facilities in Toronto, San Diego, Los Angeles and San Francisco area
- ESW's emission test laboratory capable of EPA and CARB certification and verification; fully CFR compliant
- ESW is system integrator: we purchase core technologies and build retrofit DECS, verified to the highest level of PM reduction in the United States

Diesel retrofit is our core business.

ESW Emissions Testing Services Overview

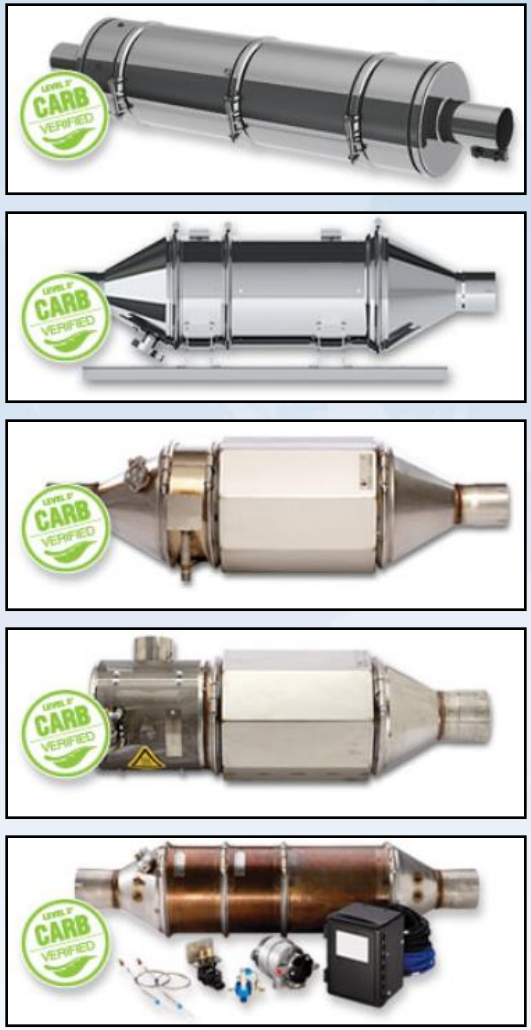
- ISO 9001/2008 accredited facility
  - Best-in-class independent test facility located in the Northeast of the US
- Durability, performance and emissions testing
  - Six engine dynamometer test cells (from 5 to 1,000 HP)
  - Two chassis dynamometer test cells for light duty and medium/heavy duty
  - Motorcycle-ATV-UTV AC transient motoring chassis dynamometer
- Testing for CARB and EPA certification



Leading Level III+ CARB Verified Product Line

- With over 22000 systems in the retrofit market, ESW is a leading diesel emission control manufacturer for on-road and off-road heavy duty diesel engines. www.eswgroup.com

- Largest portfolio of CARB verified retrofit products for on-road and off-road engines originally certified without DPF's
  - 5 on-road CARB verified DPF retrofits
  - 3 off-road CARB verified DPF Retrofits



ESW Systems

- Rely on SiC wall flow filters
- Designed and built to be the most rugged and serviceable systems in the marketplace
  - Stainless steel construction
  - Gasketless flanges
  - Formed inlet and outlet cones

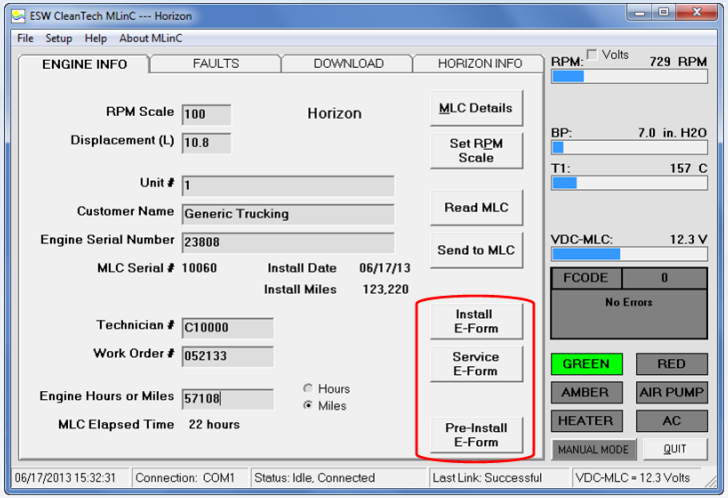


- Applications in some of the most challenging areas
  - Ports, lack of maintenance, various levels of neglect
- Warranty coverage up to 5 years including progressive damage

ESW Electronics and Software

- ESW owns its own “Best in Industry” electronic control module (MLC) and software (MLinC)
  - Download and analyze data
  - Generate commissioning and service reports
  - Manage warranty with cloud-based system (NetSuite)







Examples of ESW systems in bus applications

There more than 5500 buses retrofitted with ESW systems

Transit buses, school buses, coaches and shuttle buses

- ~ 1600 Longview in San Francisco Bay area (2004 -2007)
  - SF Muni, AC Transit, VTA, County Connection)
- ~ 450 ThermaCat-e in Chicago (2013-2014) (CTA)





ESW Bus Retrofit Example: SFMTA

System: Longview

- Coated SiC DPF
- 25% NOx reduction
- 9 -11L engines (MY 99-04)
- Urban bus operation
  - Stop and go
  - Steep hills
- Transit agency technicians trained to install and service





Many buses are still in operation with fully functional system

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ESW Bus Retrofit Example: Chicago CTA

System: ThermaCat-e

- Coated SiC DPF
- Active and passive regeneration
- 11L engines (MY 99-04)
- ~2000 hours/year
- Fully integrated in CAN bus
- AVM (advanced vehicle monitoring) certified
- Local Distributor to install and support
- Transit agency technicians trained to service



Summary

- ESW systems on over 22000 applications
- Largest portfolio of California Air Resources Board verified systems
- Highest standard PM control technology
- Robust, proven, serviceable design

Excited to bring our products to markets outside of the US

End

Questions?