



ADVANCED
TECHNOLOGY FOR A
CLEANER FUTURE®

VERT Forum

March 2015

ESW Group Overview

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

Diesel emissions control is our core business.



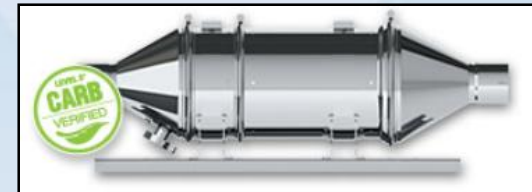
ESWA Emissions Testing Services

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



Leading Level III+ CARB-Verified Product Line

- Over 20,000 systems in the retrofit market, ESW is a leading diesel emission control manufacturer for heavy duty diesel engines in the US
- Over 11 years of experience with these systems on challenging application and various levels of neglect
- Largest portfolio of CARB-verified retrofit products for on-road and off-road engines originally certified without DPFs
 - 5 on-road CARB-verified DPF retrofits
 - 3 off-road CARB-verified DPF Retrofits



Leading Level III+ CARB Verified Product Line

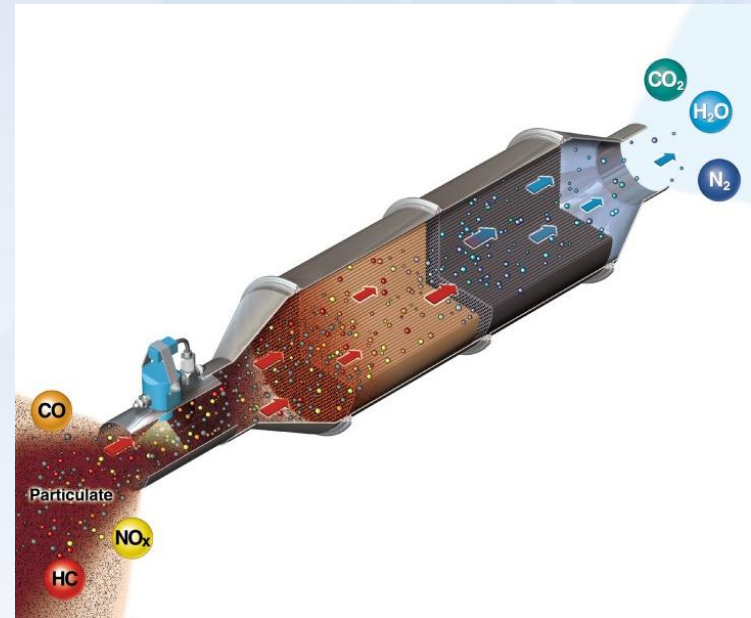
- Products include actively and passively regenerated systems
- Active:
 - Off-line burner
 - Off-line electrical regeneration
 - On-line fuel injection to raise temperature
- Passive:
 - DOC + DPF
 - DOC + cDPF
 - NRC + DPF



Examples of ESW Systems: Longview

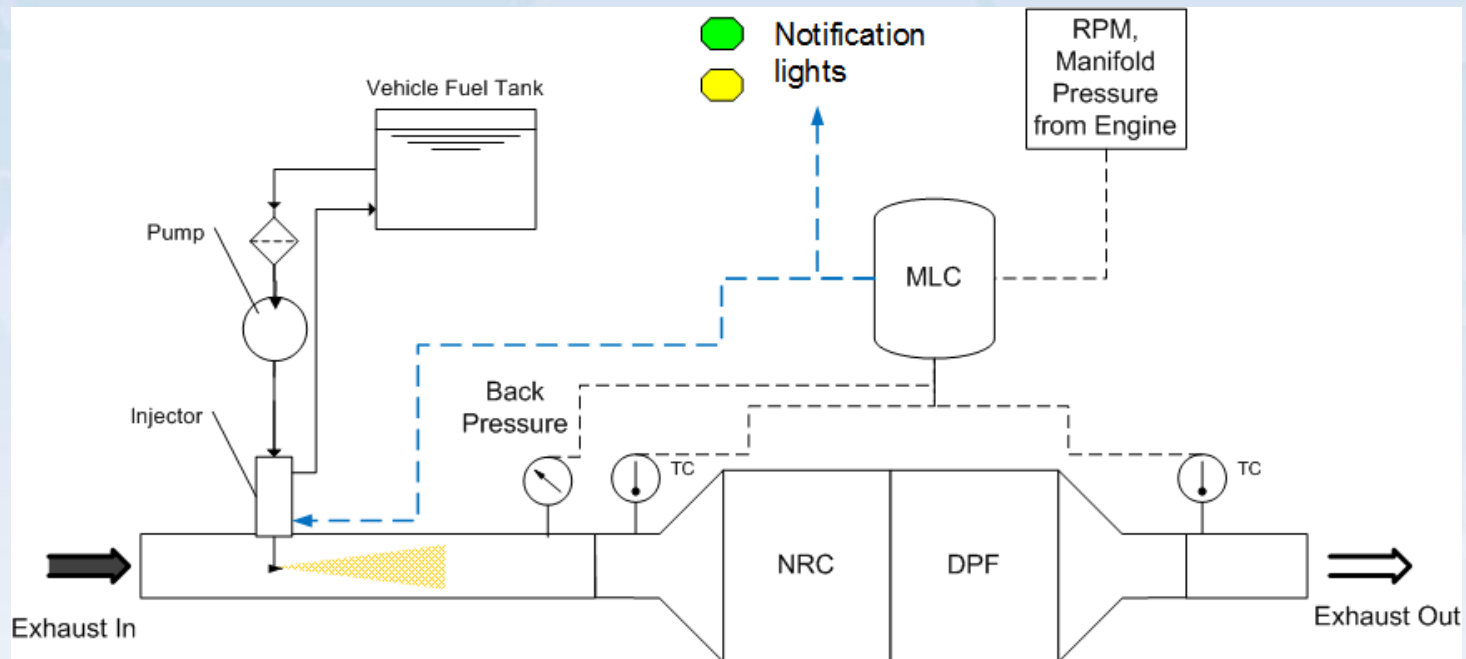
Longview: NO_x + PM control

- Verified to reduce NO_x by 25% on transient in addition to PM control with a catalyzed SiC wall flow DPF
- Uses diesel fuel as a reducing agent
 - >50% NO_x reduction at steady state
 - Fuel cooled injector
 - Static mixing
- Applications:
 - Transit buses
 - Refuse vehicles
 - Off-road machines



Examples of ESW Systems: Longview

Longview schematic:



ESW Bus Retrofit Example: Longview on SFMTA

System: Longview

- 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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Examples of ESW Systems: “World Filter”

Many DPF systems exist for well maintained recent model engines, fewer solutions exist for older worn out engines, but...

- Diesel engines have a long useful life
- Old, worn out engines often generate most of pollution

“World Filter”: affordable PM control

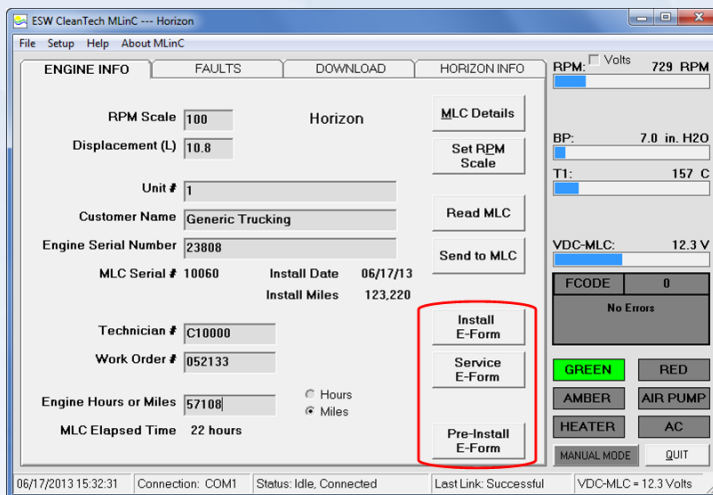
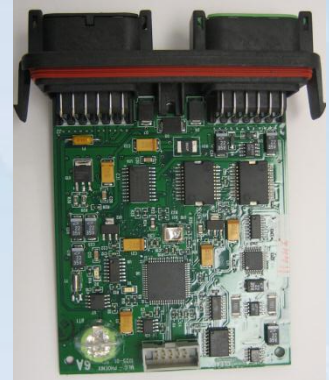
- Based on proven robust Horizon system
- Independent of diesel fuel quality (= high sulfur tolerant)
- Uses off-shore power (50/60 Hz and 208, 220, 240VAC) to regenerate
- Has been successfully tested in China with high fuel sulfur levels for 228,000 km in 2007

=> highest filtration efficiency at a low cost



ESW Electronics and Software

- ESW owns and produces one of the best in class electronic control module (MLC) and software (MLinC)
 - Proven robustness
 - Capture, download and analyze data
 - Generate commissioning and service reports
 - Manage warranty with cloud-based system (NetSuite)



ESW Electronics and Software

Latest revision plans to include upgrades in :

- Safety: Dual core ARM processors running in lockstep
- Communication: USB, Bluetooth, CAN, Wifi
- Data storage: years of operation, service history, data downloads onto a removable device
- Inputs and outputs: more and programmable channels

MLC is available as a “stand alone” controller



ESW's Cloud-based Database

Cradle to grave cloud based database tracks:

- Part creation
- Inventory
- Orders and shipments
- Installation and commissioning
- Distributors and end users
- Service and warranty reports

Distributor log in to:

- Order directly through an ESW software tool
- Resolve warranty
- Add trained technicians
- Receive service bulletins and manuals



Summary

- Diesel emissions control is our business
- Largest portfolio of California Air Resources Board verified DPF systems
- Over 20,000 Retrofits in the field
- Robust, proven, serviceable design
- One of the best in industry controllers

Excited to bring our products to markets outside of the US



End

Questions?



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