



Company Presentation to VERT Annual Meeting

March 2015

Nigel Standley – Managing Director



Company Background



- **GreenUrban. Established 2004. Based North West United Kingdom;**
 - 100 + years senior manager level career experience in diesel emissions control, catalysis and OEM automotive sectors
- **Main products;**
 - diesel engine emissions control systems & technology integrators
 - Fleet fuel saving interventions
 - Urban space product integration (eg ecopod defibrillator cabinets)
- **Products engineered in United Kingdom, locally fitted and fully supported anywhere in the world**
- **ISO 9001 quality assurance accredited. Emissions products accredited by UK VCA, substrates VERT**
- **Global support partner Leyland Bus Parts Ltd on specific overseas programs and 10 year parts support.**

People - experience



Over 100 + years career experience in diesel emissions control, catalysis and OEM automotive sectors!

➤ **Alex Mullen**

- **Over 25 years diesel emissions and catalysis including Engelhard UK, USA, Canada**

...Alex introduced the first Engelhard catalysed wall-flow DPF (Corning) into the Canadian mining sector in 1986 !!!

➤ **Nigel Standley**

- **Over 25 years OEM Product including Rolls Royce, Bentley, Aston Martin, Ford, Leyland**

➤ **George Slater**

- **10 year career in manufacturing / engineering of Truck & Bus exhaust & emission systems**

➤ **Alan Barnard**

- **Over 25 years diesel emissions including Engelhard, Clean Air, STT, Baumot**

➤ **Jim Mason**

- **Over 25 years Bus & track aftermarket and emissions; Scania , Mercedes Benz, EminoX**



GreenUrban Strengths & Innovations



➤ GreenUrban Strengths

- Automotive Heavy Vehicle Engineers
- Diesel Emissions Engineers
- System Design, Integration & Applications Engineering
- Emissions Intervention Solutions Providers for fleet operators / policy enforcers / policy makers

➤ Innovation

- We turn our supply partners cutting edge technologies and innovations into products that meet our customers and market demands
- We also invest in significant system level R&D alongside our technology suppliers
- Our strength in innovation lies in our supplier relationships and application solutions



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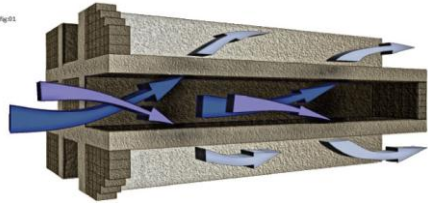
Lower costs, lower emissions. Just good eco-nomics...



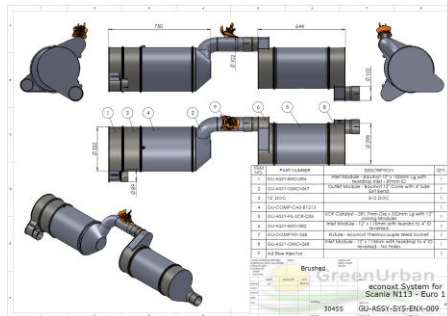
Emissions Product Strategy



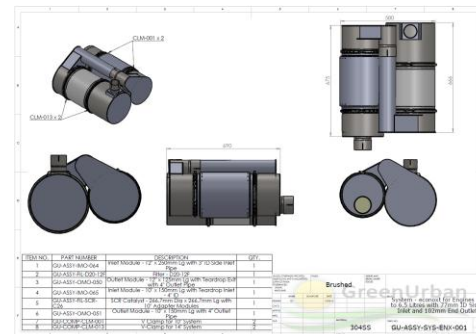
Modular PM
reduction system



Modular NOx SCR
reduction system

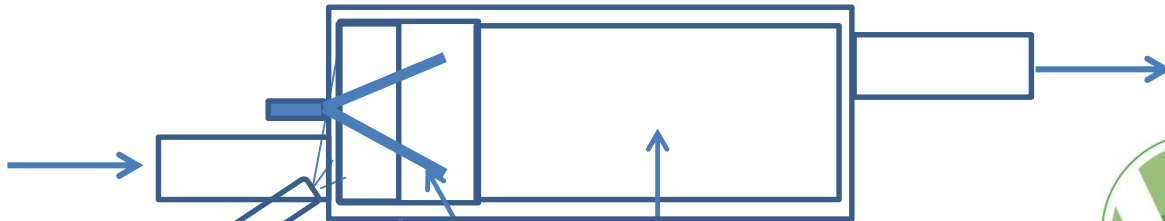
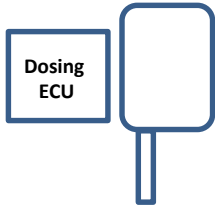


Low capex
Fleet Fuel Saving
Interventions





3. Fuel Borne Catalyst (fbc)
(assisted regeneration for lower temperatures / higher sulphur fuel)



1.Coated silicon carbide DPF
(normal use passive regeneration)

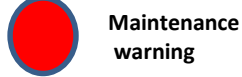


Pressure
Temperature



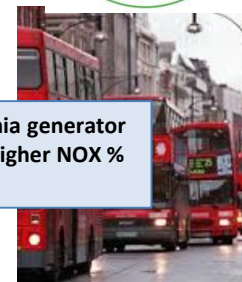
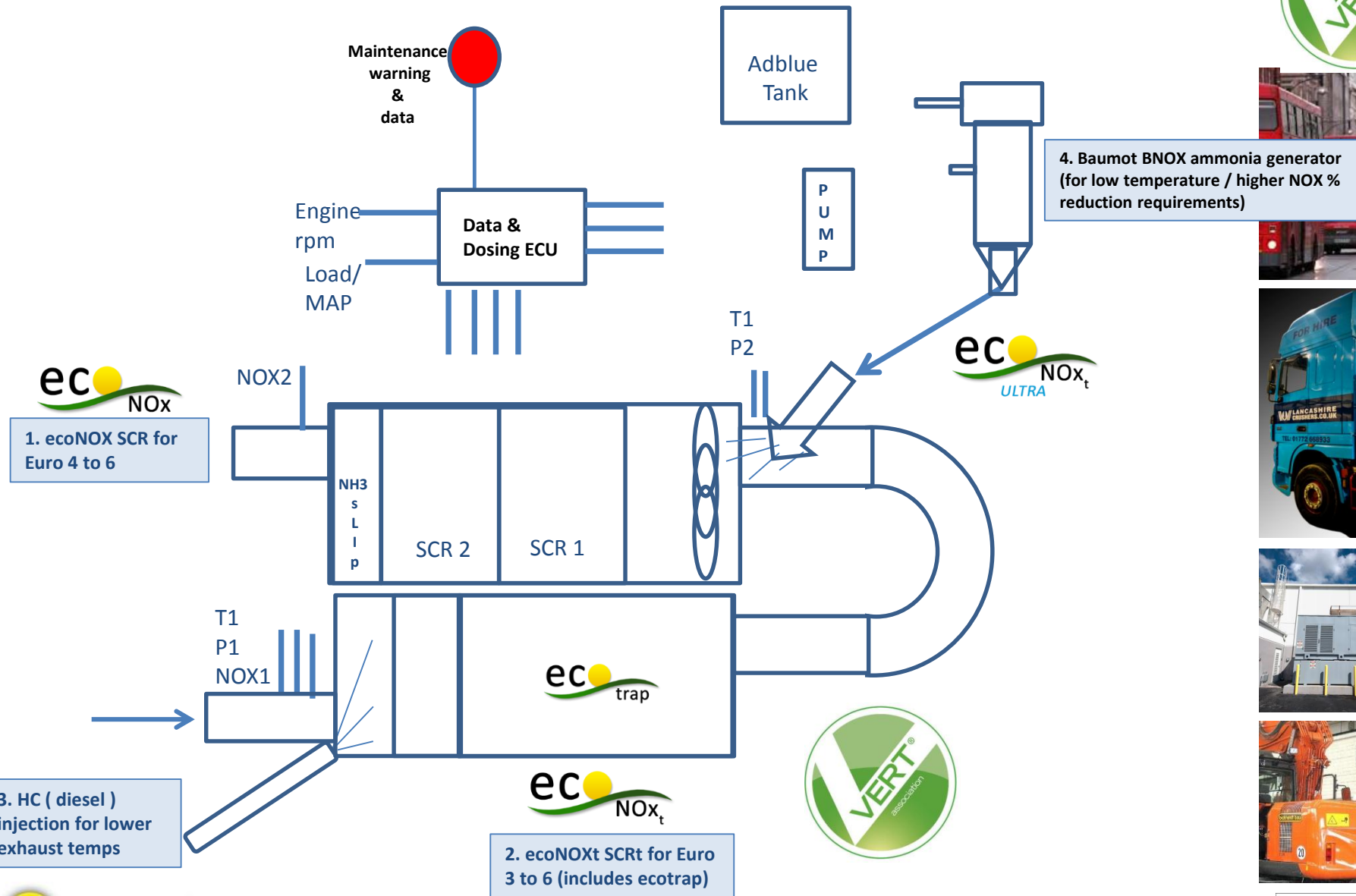
2. Diesel Oxidation Catalyst (DOC)
(lower exhaust temperatures passive regeneration)

4. HC (diesel) or fuel burner injection (active regeneration for lower temperatures / high sulphur fuel)



- 5. Other Available features**
- Metallic, Silicon Carbide or Cordierite Substrates
 - Bespoke catalyst coatings
 - NO2 reduction catalyst post DPF
 - Thermal Lagging / Management
 - Engine / Fuel Subsystem interventions (thermal management)
 - eco nomiser fleet fuel saving interventions





Retrofleet Upgrades – Considerations & Critical Success factors



➤ Existing vehicle / Powerplant - considerations

- Engine Power, Capacity, Manufacturer, Model
- Base engine out emissions levels (eg Euro 1/2/3/4/5 etc)
- State of 'Health' of engine & fuel system (eg engine wear, fuel injection system, turbocharger etc)
- Smoke opacity levels (health check)
- Allowable back pressure
- NOX/PM ratio characteristic, soot 'characteristics' etc

➤ Fleet operating conditions - considerations

- Exhaust temperatures - duty cycle / operating patterns
- Altitude – engine out oxygen
- Fuel quality – eg sulphur ppm
- Fleet maintenance regime
- Maintenance - skills, equipment, training

It is critical and essential to fully understand all these elements and to validate retrofit applications at vehicle, fleet and regional initiative level to ensure a successful retrofit emissions intervention programme !!!

➤ Retrofit Intervention Objectives - considerations

- Target Emissions levels (Euro level, PM, NOX, NO2, CO2 etc)
- Back pressure limits

Finally, some more product innovations!



➤ Diesel Emissions Reduction



➤ Urban Space



Summary



- GreenUrban. Established 2004. UK based.
- Over 100 years collective emissions equipment experience at senior management level
- PM , NOX / NO2 , CO2 fleet fuel savings product strategy
- Leading edge technology innovations via partnerships with world class technology providers.

Thank You

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