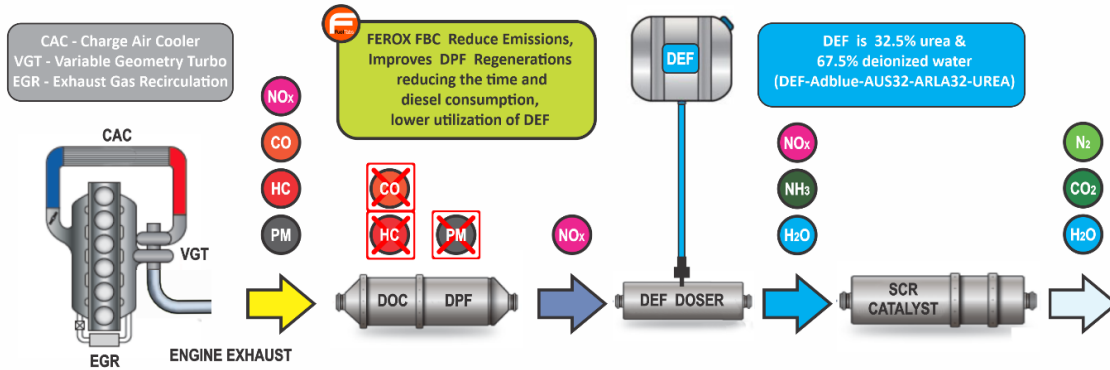


Ferox ECM Adaptive Technologies

Original Engine Manufacturers are constantly innovating new technologies to lower emissions in order to meet the increasingly stringent emission regulations:

- **Diesel Oxidation Catalysts (DOC),**
- **Diesel Particulate Filters (DPF),**
- **Selective Catalytic Reduction (SCR),**
- **Diesel Exhaust Fluid (DEF),**
- **Exhaust Gas Recirculation (EGR),** and
- **High Pressure Common Rail fuel systems (Tier 4/Euro V)** are all advancements along with the **Electronic Control Module (ECM)** that monitors and manages the systems to meet compliance under the emission regulations.

DIESEL EMISSIONS TECHNOLOGY



ENGINE WITH EGR PRE - 2007

PARTICULATE REDUCTION
EPA 2007/Euro 4 - EGR + Diesel Oxidation Catalyst (DOC) and Diesel Particulate Filter (DPF)

NOx REDUCTION
EPA 2010/EURO 5/EURO 6 - Reduced EGR + DOC & DPF + Selective Catalyst Reduction (SCR)



Diesel Oxidation Catalyst (DOC) is designed to convert carbon monoxide (CO) and hydrocarbons (HC) into carbon dioxide (CO₂) and water.
Diesel Particulate Filter (DPF) is designed to remove 98% or greater of the Particulate Matter (PM) or soot where it is trapped. This must eventually be removed to keep the filter from clogging.
The process of burning the soot in the filter is called **REGENERATION**

Selective Catalyst Reduction is based in Hydrolysis, the chemical breakdown of a compound due to reaction with water.
The DEF sets off a chemical reaction that converts nitrogen oxides (NO_x) into nitrogen, water and tiny amounts of carbon dioxide (CO₂), natural components of the air we breathe, reducing nitrogen oxides (NO_x) to **NEAR ZERO LEVELS**

Ferox ECM Adaptive Technology Fuel Catalyst works to improve all these systems functionality leading to lower emissions, higher efficiency and improved long term maintenance.

Consumers, corporations, and end users of fuel are focusing on lowering carbon footprint. To measure carbon footprint, Carbon Intensity, is the standard used most often and has a direct relationship with fuel consumption. Lower fuel consumption equals lower CO2 emissions.

Ferox ECM Adaptive Technology: recently tested by Mesilla Valley Transportation Solutions, the leader in evaluating new products that improve efficiencies for the Transportation Industry. MVTS is teamed up with the OEM's and largest transportation companies in this endeavor.



Below are results from an 1,100-mile test and illustrates through exact measurements how Ferox improved all necessary inputs for better efficiency and improved long term maintenance. Additionally, we have included testing from OEM MAN Engines showing a vastly enhanced K-Value which shows a much better spray pattern from the injectors. Ferox does not change fuel specifications and therefore is OEM compliant and can be used immediately to improve operations.

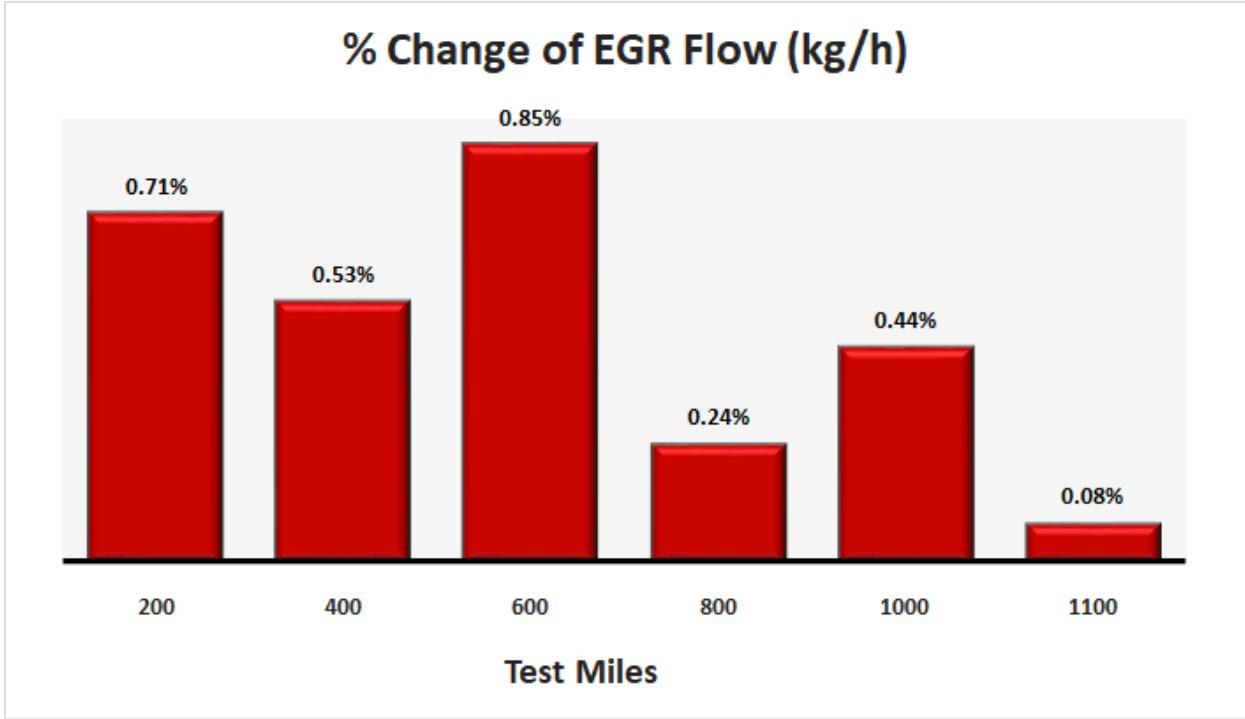
Note on the results below: The Electronic Control Module (ECM) manages the operation of the engine through different sensors monitoring all the components.

The ECM adapts to changes detected by these sensors through combustion management.

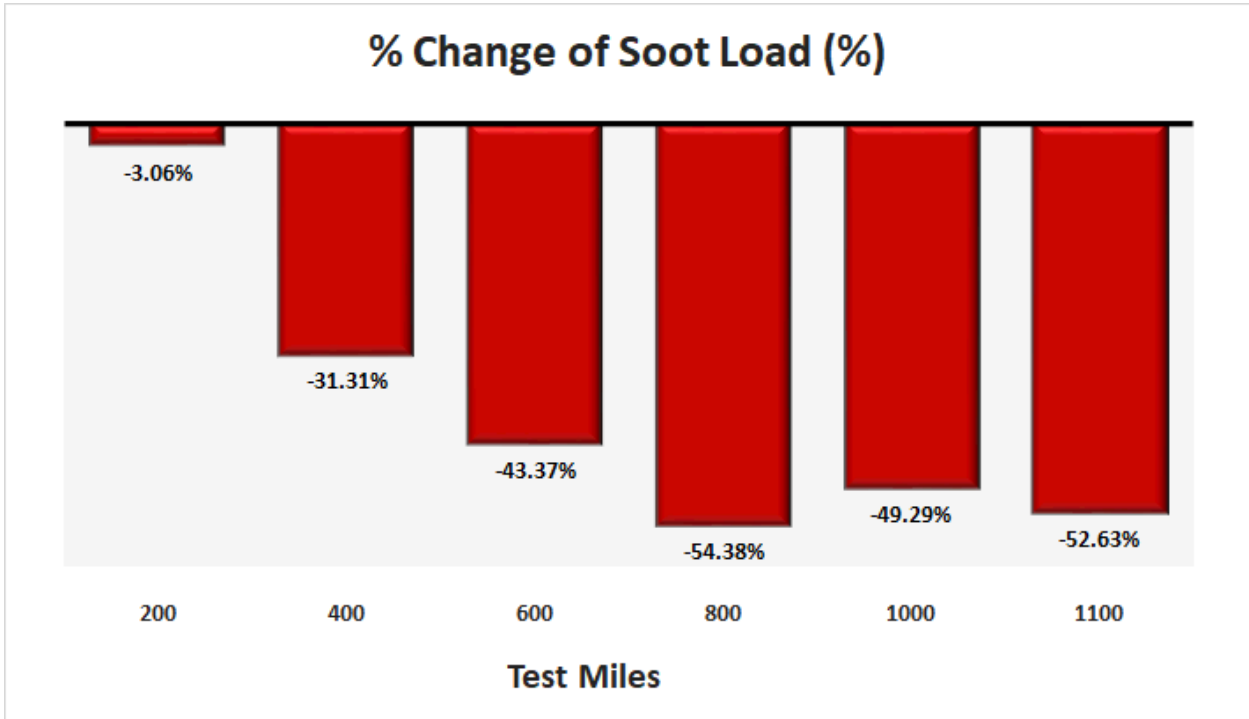
It takes the ECM time to adapt and make changes with new data. The following measurements show large improvements after 500 miles. Testing was conducted at 65 mph, at the highest operational efficiency without any duty cycle changes or measurements. This mode makes any changes difficult to achieve due to ECM programming showing the efficiency of Ferox. These results show the effectiveness of Ferox even under these parameters.

Ferox clearly improves the conditions to allow for the ECM to manage engine operation for better efficiency. To see these improvements in your own operation you must have well collected efficiency/emissions data as a starting point and then be able to compare after 30 days of operation with Ferox.

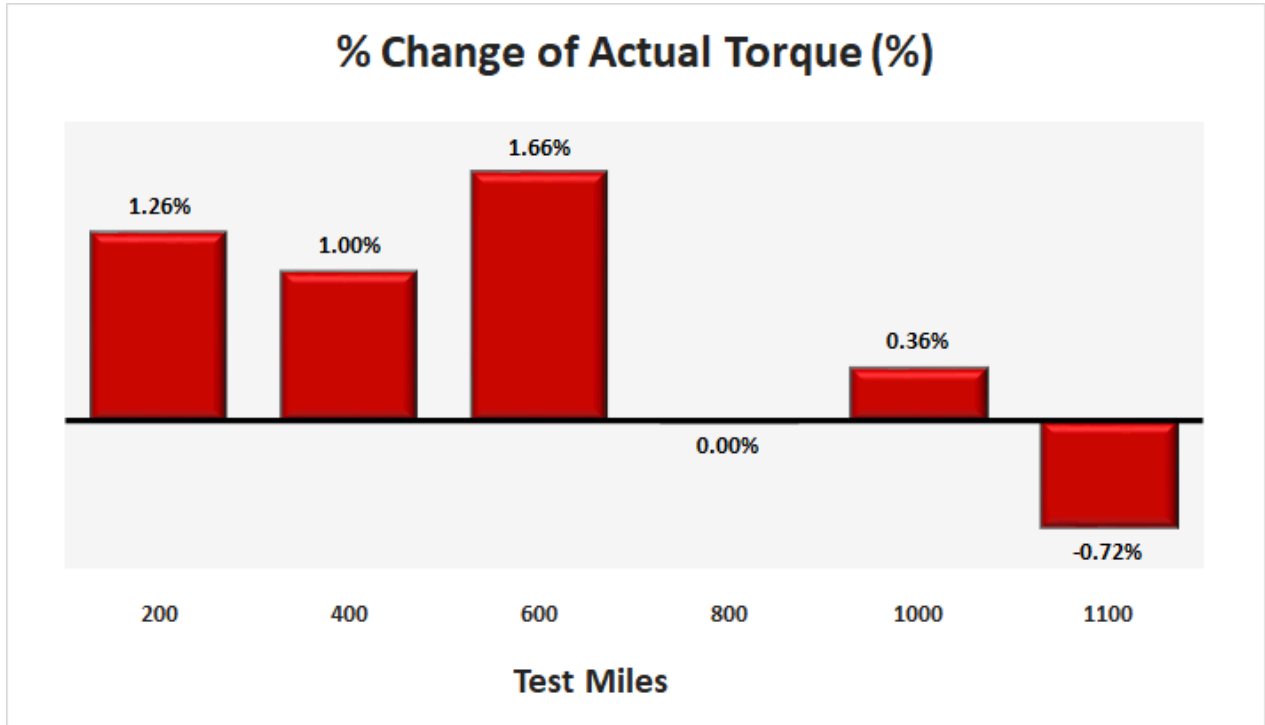
Lower EGR flow correlates to improved fuel economy



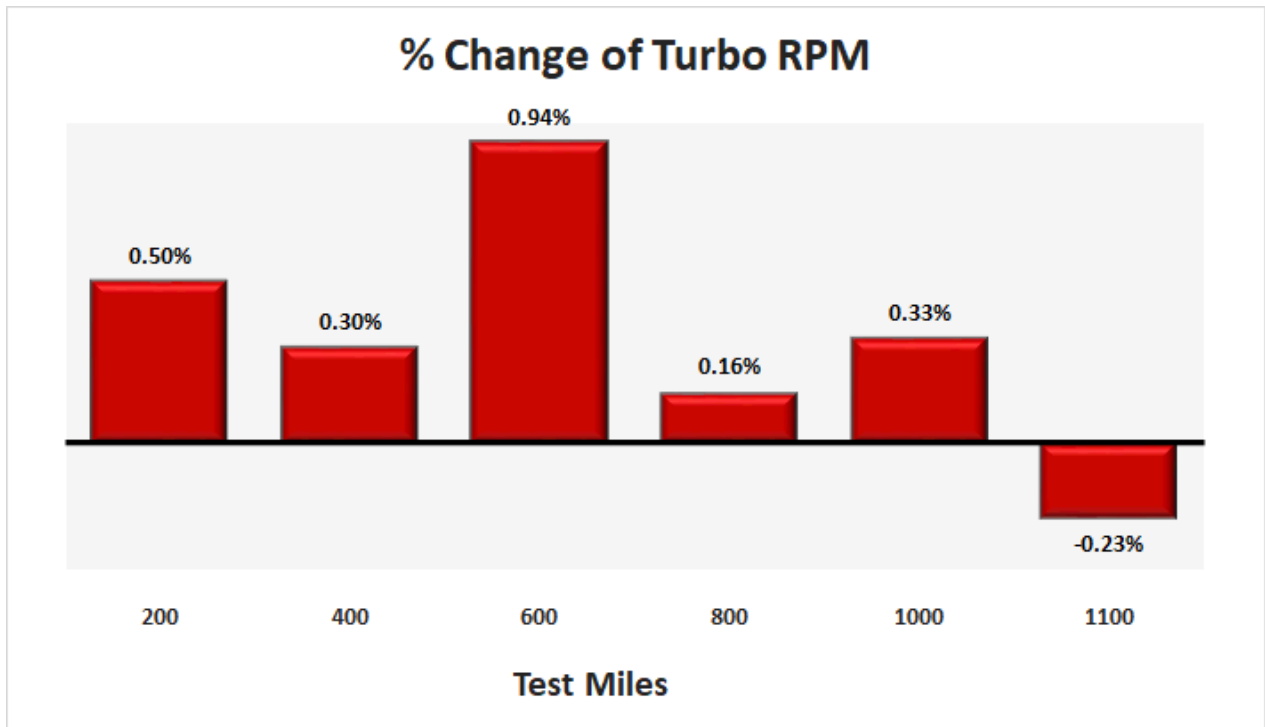
Less Soot Being Produced By The Engine During Combustion



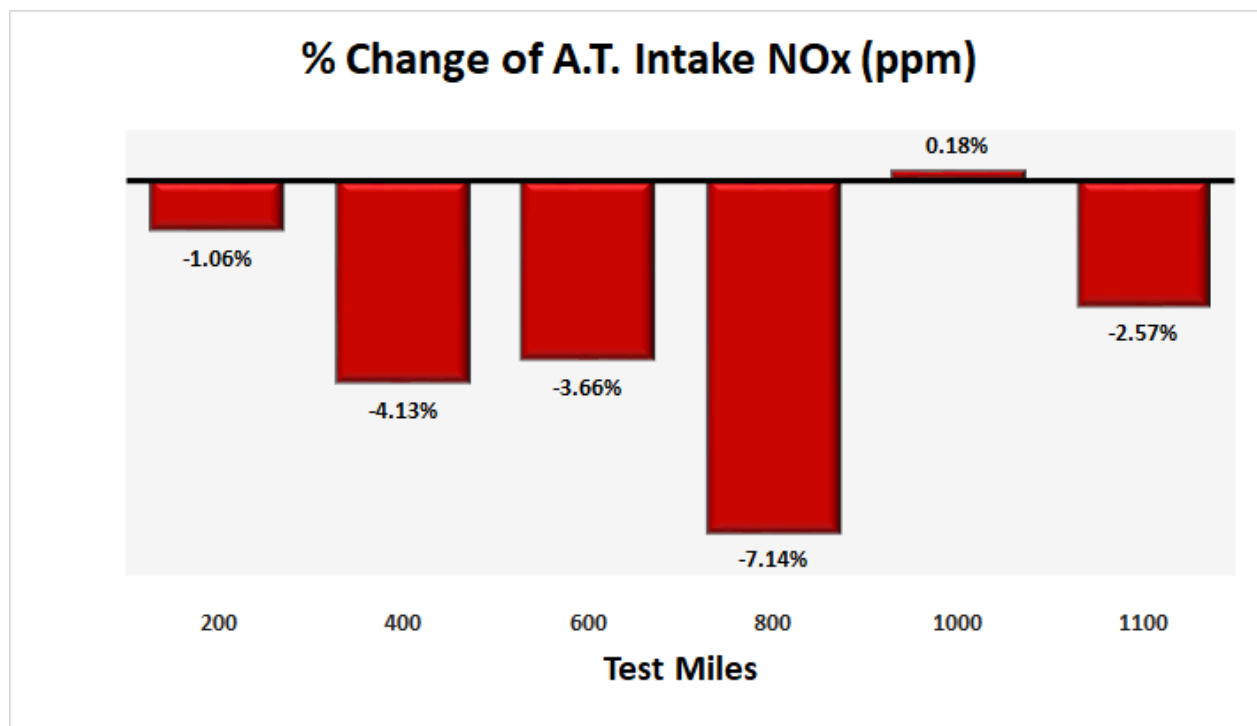
Less Actual Torque Needed is related with a Better Efficiency and Fuel Combustion



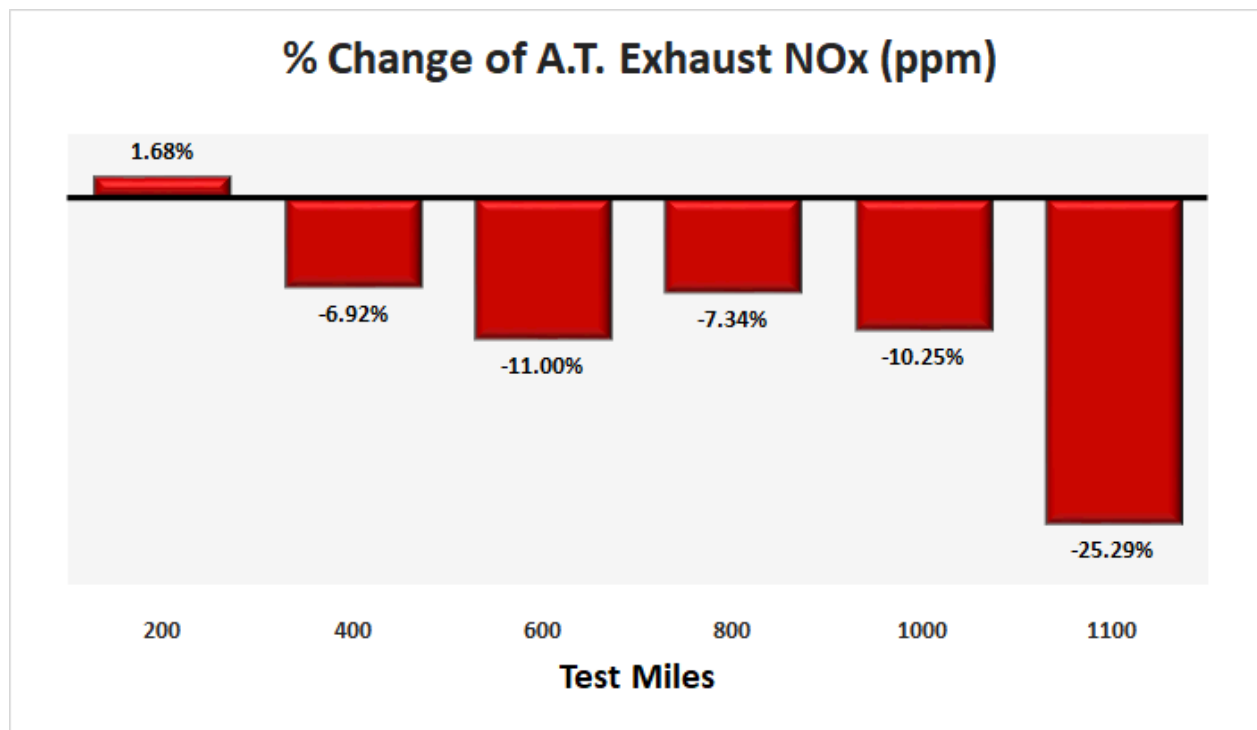
Less Turbo Demand Equals Better Fuel Economy



After Treatment Intake NOx Exits The Engine After Combustion And Enters Exhaust System



After treatment Exhaust NOx Is the Tail Pipe Emissions





AUSTRIA November 2022

Certified MAN testing facility Schlager, Mandling Austria

Company: Schwazebacher Transport

Engine: 2012 Euro-5 MAN engine

Pilot Test Period: 28 Days 2,676 Km distance (1,662 Miles)

RESULTS:

10% reduction in fuel consumption. (From 47L/100km to 42L/100km)

67% Reduction in solid emissions (Soot/Particulate)

K-Value without Ferox

Initial emission test without Ferox on **October 27, 2022**

K-value (turbidity number): 0.46 k(/m)

The truck mentioned then drove over a period of 28 calendar days in the test period while the Ferox products was constantly being added

K-Value with Ferox

Final emission test using Ferox on **November 24, 2022**

K-value (turbidity number): 0.15 k(/m)



BENEFITS FROM IMPROVED COMBUSTION/OPERATION

- 1) Newer Engines need better fuel (ULSD) so the ECM can operate more efficiently
- 2) Reduced Fuel usage equals to lower CO2 and emissions
- 3) Reduced CO2 leads to lower Carbon Intensity
- 4) Reduced Carbon Intensity can provide for cost savings/additional revenues in carbon pricing policies
- 5) Significantly reduced CO emissions is a key indicator of improved combustion efficiency
- 6) Less Soot & Particulate Matter improved DPF regen cycles and opacity emission test (Lower K-Value)
- 7) Lower NOx better operation of SCR system and less DEF usage (cost savings)
- 8) Removes carbon deposits and prevent future build-ups provides less engine wear and better spray pattern from injectors less fuel used
- 9) Improved long term maintenance lowers costs

