

# TWX LPG CATALYST

Reducing CO, HC & NO<sub>x</sub> by up to 95%



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 **PYROBAN**<sup>®</sup>  
Envirosafe



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# TWX LPG CATALYSTS

3-Way Catalytic Converter

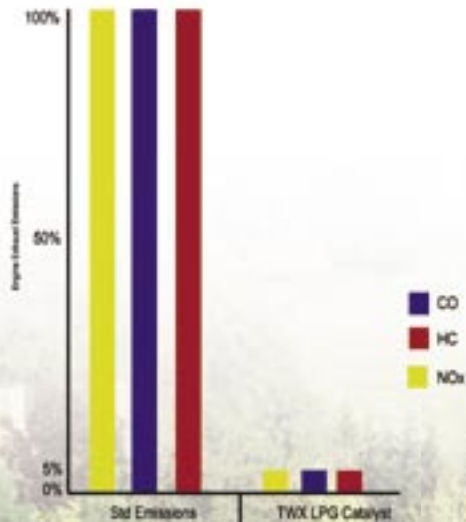
## LPG

The major harmful emissions from LPG engines are similar to those from other internal combustion engines

- Carbon Monoxide (CO)
- Hydrocarbons (HC)
- Nitrogen Oxides (NO<sub>x</sub>)

Unlike diesel engines, there are virtually no particulate emissions from LPG engines but there are high levels of NO<sub>x</sub>, which pose serious health concerns in the work place.

## EMISSION REDUCTIONS



\* 95% reduction in NO<sub>x</sub> when used with controller



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## HOW DOES IT WORK?

The Pyroban Envirosafe TWX LPG Catalyst is a three-way oxidation catalyst, converting dangerous gases  $\text{NO}_x$ , CO and HC into harmless gases  $\text{N}_2$ ,  $\text{CO}_2$  and  $\text{H}_2\text{O}$ ; ensuring safe exhaust emissions in the working environment.

For the catalyst to operate at peak efficiency (85-95% reduction), the air/fuel ratio needs to be maintained within a specific balance.

- This balance can be achieved either through the truck's engine management system or by the use of a 'closed loop' air/fuel ratio control system.
- The closed loop system interprets a signal from an oxygen sensor mounted in the exhaust and varies the A/F mixture by activating a Fuel Control Valve (FCV). The FCV varies the vacuum with the regulator to control the amount of fuel entering the engine assuring that the A/F ratio is maintained for the lowest possible emission levels.



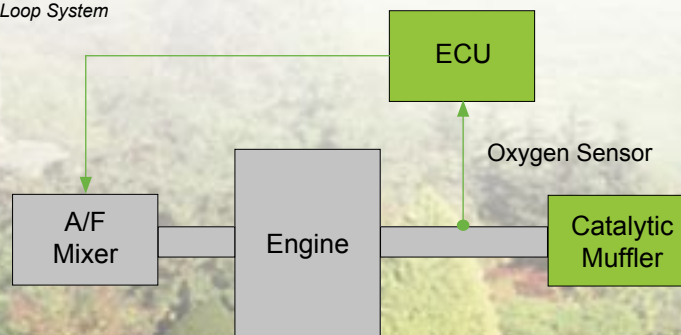
## TECHNOLOGY

Fig 1 shows a diagram of the Pyroban Envirosafe TWX closed loop system, together with a zirconium oxygen sensor and the catalytic muffler.

In operation, the closed loop system receives a feedback signal from the oxygen sensor and maintains the engine's A/F ratio at the stoichiometric point, ensuring optimal catalyst performance.

The TWX LPG Catalyst is Envirosafe's most efficient conversion to achieve Carbon Monoxide, Hydrocarbon and Nitrogen Oxide reduction.

Fig. 1 TWX LPG Catalyst: Closed Loop System



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## PERFORMANCE

Below are typical graphs showing performance and typical emissions from a 1.8 LTR LPG engine fitted with the Pyroban EnviroSAFE TWX Catalyst.

### CARBON MONOXIDE (ppm)

LOAD CONDITION	IDLE	FULL REVS	FULL/LOAD
RPM LEVEL	1230	2600	2550
RAW EMISSIONS	700	2750	4750
TWX CATALYST & CONTROL	290	34	300
TWX CATALYST ONLY	455	1183	1663

### HYDROCARBONS (ppm)

LOAD CONDITION	IDLE	FULL REVS	FULL/LOAD
RPM LEVEL	1230	2600	2550
RAW EMISSIONS	170	100	600
TWX CATALYST & CONTROL	120	35	60
TWX CATALYST ONLY	111	43	210

### OXIDES OF NITROGEN (ppm)

LOAD CONDITION	IDLE	FULL REVS	FULL/LOAD
RPM LEVEL	1230	2600	2550
RAW EMISSIONS	120	390	2800
TWX CATALYST & CONTROL	45	25	20
TWX CATALYST ONLY	78	168	980

Protecting people, their investment and our environment

 *Printed on Recycled Paper*

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