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EMISSION
ASSESSMENTS

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Via Email: ronmyers@agtpl.com.au

Our Reference: 2021-058

Nuvitron Technologies Pty Ltd
Mr Ron Myers
Australia

Nuvitron Technologies Emission Reduction Technology (ERT) - Vehicle Testing

Vehicle Testing Program Details

Emission Assessments Pty Ltd (EAPL) were requested to measure vehicle emissions from a licensed roadworthy vehicle before and after the use of Nuvitron Technologies Emission Reduction Technology (ERT).

Nuvitron Technologies fitted the ERT to a 1998 Turbo Diesel, Land Rover Discovery, Western Australian Registration Number S621. The ERT was applied to the fuel inlet line and air inlet line.

The baseline testing (ERT-Inactive) was completed on the 5 November, 2020. The vehicle received a full service, including new oil and oil filter, air filter and replacement battery supplied. The exhaust system was also cleaned to remove any accumulated carbon. Nuvitron Technologies collected the vehicle on the 5 November, 2020 after the completion of the baseline testing.

The vehicle was driven for approximately 300 kilometers with the ERT-active and returned to EAPL on the 10 November, 2020. The vehicle received a full service, including new oil and oil filter, air filter and replacement, battery supplied. The exhaust system was also cleaned to remove any accumulated carbon. Emission testing with the ERT-Active was completed on the 13 November, 2020.

Vehicle Emission Testing Methodology

Vehicle emission testing was conducted using the Department of Transport (WA) DoT; 5 Gas Analyser Test procedure. The DoT will accept the 5-gas analyser test procedure provided the equipment meets laboratory standards.

Auto Test Gas Testing System Specifications

Gas		UOM	Range
Oxygen	O_2	%	0 – 25 %
Carbon Monoxide	CO	%	0 – 15.5 %
Carbon Dioxide	CO_2	%	0 – 21.0 %
Hydrocarbons	HC	ppm	0 – 2000 ppm
Particulate (Smoke)	Smoke	%	0 – 100%

Test Procedure

The Vehicle was tested as supplied by Nuvitron Technologies.

Vehicle Testing was performed at three operating conditions / test points:

1. 750 RPM Idle – Cold Start
2. 750 RPM Idle – Normal Operating Temperature
3. 3000 RPM – Normal Operating Temperature

ERT Inactive Test Results

ERT Inactive Testing – 750 RPM Idle Cold Start

Gas		UOM	Result
Oxygen	O_2	%	16.99
Carbon Monoxide	CO	%	0.026
Carbon Dioxide	CO_2	%	2.80
Hydrocarbons	HC	ppm	0
Particulate (Smoke)	Smoke	%	0.5

ERT Inactive Testing – 750 RPM Idle Normal Operating Temperature

Gas		UOM	Result
Oxygen	O_2	%	17.42
Carbon Monoxide	CO	%	0.019
Carbon Dioxide	CO_2	%	2.5
Hydrocarbons	HC	ppm	0
Particulate (Smoke)	Smoke	%	8.5

ERT Inactive - 3000 RPM Normal Operating Temperature

Gas		UOM	Result
Oxygen	O_2	%	17.33
Carbon Monoxide	CO	%	0.078
Carbon Dioxide	CO_2	%	2.3
Hydrocarbons	HC	ppm	0
Particulate (Smoke)	Smoke	%	8.5

ERT Active Test Results

ERT Active Testing – 750 RPM Idle Cold Start

Gas		UOM	Result
Oxygen	O_2	%	16.67
Carbon Monoxide	CO	%	0.032
Carbon Dioxide	CO_2	%	2.60
Hydrocarbons	HC	ppm	0
Particulate (Smoke)	Smoke	%	0

ERT Active Testing – 750 RPM Idle Normal Operating Temperature

Gas		UOM	Result
Oxygen	O_2	%	18.72
Carbon Monoxide	CO	%	0.015
Carbon Dioxide	CO_2	%	1.90
Hydrocarbons	HC	ppm	0
Particulate (Smoke)	Smoke	%	0

ERT Active - 3000 RPM Normal Operating Temperature

Gas		UOM	Result
Oxygen	O_2	%	17.47
Carbon Monoxide	CO	%	0.033
Carbon Dioxide	CO_2	%	2.8
Hydrocarbons	HC	ppm	0
Particulate (Smoke)	Smoke	%	0

ERT Based Emission Reduction

750 RPM Idle Cold

Gas		UOM	ERT Inactive Result	ERT Active Result	**Change %**
Oxygen	O_2	%	16.99	16.67	-1.88
Carbon Monoxide	CO	%	0.026	0.032	+23.1
Carbon Dioxide	CO_2	%	2.8	2.6	**-7.1**
Hydrocarbons	HC	ppm	0	0	0
Particulate (Smoke)	Smoke	%	0.5	0	**-100**

750 RPM Idle Normal Operating Temperature

Gas		UOM	ERT Inactive Result	ERT Active Result	**Change %**
Oxygen	O_2	%	17.42	18.72	+7.5
Carbon Monoxide	CO	%	0.019	0.015	**-21.0**
Carbon Dioxide	CO_2	%	2.5	1.9	**-24.0**
Hydrocarbons	HC	ppm	0	0	0
Particulate (Smoke)	Smoke	%	8.5	0	**-100**

3000 RPM Normal Operating Temperature

Gas		UOM	ERT Inactive Result	ERT Active Result	**Change %**
Oxygen	O_2	%	17.33	17.47	+0.81
Carbon Monoxide	CO	%	0.078	0.033	**-57.7**
Carbon Dioxide	CO_2	%	2.3	2.8	**-21.7**
Hydrocarbons	HC	ppm	0	0	0
Particulate (Smoke)	Smoke	%	8.5	0	**-100**

Vehicle Testing Program Outcomes

The Vehicle Emission Testing conducted on the 1998 Turbo Diesel, Land Rover Discovery, Western Australian Registration Number S621 has indicated the following:

1. Carbon Monoxide concentrations reduced at Warm Idle and at 3000 RPM;
2. Carbon Dioxide concentrations reduced across all testing parameters;
3. Smoke concentration reduced across all testing parameters;
4. Oxygen concentrations increased at Warm Idle and 3000 RPM; and
5. Hydrocarbons were not detected across any test points.

This vehicle testing program was completed based on all vehicle preparation being completed by Nuvitron Technologies Pty Ltd and the Emission Reduction Technology (ERT) being supplied and fitted by Nuvitron Technologies Pty Ltd.

Emission Assessments Pty Ltd (EAPL) is an independent emission testing consultancy located in Bibra Lake, Western Australia. This testing was conducted using the EAPL Auto Test Five Gas Analyser and Opacity Meter.

All information contained within this report is the property of Nuvitron Technologies Pty Ltd and may not be relied upon by any third party.

Please do not hesitate to contact Emission Assessments for further information.

Yours faithfully
For Emission Assessments Pty Ltd

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