Fuelstar International Limited
Australian office:
Box 282 • Runaway Bay Qld 4216
Australia
Tel ++617 5537 8872 Fax ++617 5529 2314
Mobile ++ 61 408 527 391
Email ian@fuelstar.com
Internet www.fuelstar.com

MEMO TO DISTRIBUTORS

TESTING OF FUELSTAR

The Fuelstar product has been exhaustively tested under actual operating conditions in more than 100,000 installations, spanning a ten-year period, all with excellent results.

Established and generally accepted test protocols for dynamometer testing can produce unsatisfactory or inconclusive results when the Fuelstar is subjected to test. The reasons are because:

(a) Artificial testing fails to replicate conditions encountered in actual use (especially to ensure the adequate release of tin particles) and

(b) The typical test cycle is far too short for the Fuelstar unit to achieve optimum operating condition.

However, highly reliable testing was carried out in the United States in late 2002 by California Environmental Engineering (CEE). This is an independent test laboratory of the highest credentials. The testing was designed in such a way that the conditions of actual use of Fuelstar were properly replicated. Tests were carried out over several hundreds of engine operating hours.

The impressive results speak volumes, confirming the excellent results achieved by Fuelstar in actual use. Fuel consumption was reduced by 27.5% and particulate matter by 24%. These outcomes cannot fail to impress operators of automotive, marine and stationary internal combustion engines.

When correctly installed, Fuelstar operates reliably to improve performance in engines of all makes, models and ages, whether operating on leaded or unleaded gasoline (petrol), racing fuel, aviation spirit, methanol, ethanol, diesel, fuel oil, bunker oil, paraffin or LPG.

The extent of the improvement varies from engine to engine but it normally results in reduced fuel consumption (savings of 10% and frequently higher) reduced tailpipe emissions and emissions of black smoke (by 30% or more). Also, the more complete combustion achieved by Fuelstar reduces exhaust gas temperatures and thus the incidence of valve seat recession. It prolongs engine life and the working life of engine oil.

We believe that it is totally unnecessary for our product to be tested further. Our products have had overwhelming success in a decade of practical operation. This success is now confirmed by an extremely positive result from a comprehensive and totally independent laboratory test program

Laboratory testing of this type is repeatable, of course, but the duration required to test Fuelstar adequately and properly renders such testing extremely expensive.

We consider that further testing is unnecessary. However, it is a customer's prerogative and should a potential client insist on conducting testing, then so be it. However, the reputation of our product is at stake and we are very concerned to ensure that any testing be accurate and reliable. Previous experience with tests carried out by inexpert people have caused extensive problems. As a consequence, we would very much like to have some input.

With any testing, it is critical to observe the following important points.

Testing in actual use

To test the product properly in actual use, it is important to ensure that

1. Baseline data has been developed over a period of not less than 3 nor more than 6 months prior to the test

2. This baseline data should be examined prior to installing any units for test; first to ensure that reliable data exists and secondly to ensure that it is consistent over time. If the figures vary by more than 5% from month to month, then the engine should be ignored from the test program.

3. The vehicle should be doing the same work after installation as before. For example, testing on buses which are subjected to different routes, different drivers and different loads is not representative. The only true testing that can be done is

   (a) in an engine where the operator is the person paying for the fuel and where he and he alone knows the operation of the engine and the true amount of fuel it consumes, and

   (b) a truck or coach running line-haul operations covering the same routes day in and day out, month in and month out, with the same loads and drivers, or

   (c) an industrial engine such as a generator set where the loads and rates of use are much the same all the time.

4. It is important that there are no critical climatic factors which could affect fuel consumption

5. It is highly desirable that trials be carried out on several units in the same fleet, so that representative figures are obtained and meaningful conclusions reached. Trialling on fewer than five vehicles, representing the majority of the fleet, is less than conclusive.

6. The units must be correctly installed. In particular, it is imperative that the tin particles are released and that they reach the combustion chamber. To achieve this, the installation instructions must be followed exactly. Also, sometimes engines are detuned for some reason, for example if the fuel quality is poor. In these circumstances, it is necessary to reset the ignition timing, fuel rack settings, turbo boost and air to fuel ratios to manufacturer's specifications.

7. Experience has shown that Fuelstar must be involved in the conduct of tests and be able to observe the trialling.

8. The operator must pay for the units. Experience shows that if the customer has no financial interest in the system, then there will be no or insufficient interest in the outcome of the exercise or in obtaining a meaningful and conclusive result.

9. There must be an understanding that the successful trialling will result in a purchase for the entire fleet or a major part of it. Otherwise, the whole exercise is pointless and a waste of time and resources.

Results from actual use show a trend towards an immediate improvement in fuel consumption of 6 to 9% over the first 200 engine hours, then a further gradual improvement of an additional 6 to 9% over the next 3 – 4 months of operation. Therefore simple short-term tests are worthless – in fact worse that useless.

The Fuelstar website provides details of persons involved first hand with the installation of thousands of Fuelstar Units. It is suggested that those persons be contacted for verification of results rather than relying solely upon further trialling.

Laboratory testing

Laboratory testing has been carried out on Fuelstar units, but AS STATED ABOVE, there are problems with this type of test. While laboratory testing would eliminate variables such as climate variations, differing loads, different drivers and different routes, inaccuracy of fuel measurement etc., there are factors which mitigate against reliable laboratory testing of Fuelstar units.

1. Established and accepted test protocols involve the use of a chassis or an engine dynamometer. The proper operation of the Fuelstar requires movement and vibration to release the metallic particles from the alloy cones within the canister. The movement and vibration encountered in actual use in on-road conditions is not adequately replicated in the laboratory. As a consequence, the likelihood of the tin particles reaching the combustion chambers in colloidal form and in sufficient quantities, is extremely remote. It has been well established that if the metallic particles do not reach the combustion chambers in adequate quantities, there will be no improvement in engine performance.

2. The test protocols are normally of too short duration. Baseline testing is normally measured in minutes or hours, certainly not greater than one day. Testing after the installation of Fuelstar is normally identical. Experience shows that there is a primary and secondary improvement in engine performance following the installation of the Fuelstar.

3. The primary improvement alone may take up to 200 hours of engine running to manifest itself fully. The secondary improvement occurs as the Fuelstar gradually purges deposits of carbon and other “sticky” substances from the internal engine operating surfaces. This may take as long as 1,000 hours of engine running.

4. Obviously, testing for this duration of time in a test laboratory is extremely expensive. Testing carried out in late 2002 in the test laboratory of CEE involved many hundreds of hours of engine running. Anything less than that is simply not a proper test of the Fuelstar product, having regard to its unique manner of functioning and its operation.

For the above reasons, you will see that ‘scientific’ laboratory tests to carry out an adequate test of the Fuelstar product are extremely difficult to design and very expensive to perform. We strongly recommend that your customers rely upon the CEE test report. The laboratory is highly credentialed and is totally independent.

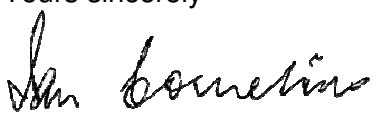
Should your customer insist upon further testing, then please consult me as to the proposed methodology.

Please remember that the effectiveness of the Fuelstar is well established. If a laboratory test fails to confirm the results in actual use, then it is the test or test methodology which is at fault, rather than the more obvious conclusion that the product doesn’t work to its expectation.

Generally, on-road testing is quite reliable although the control of variables is sometimes extremely difficult, as referred to above. For further information on testing in actual use, refer to Memorandum of Understanding – Fleet Trialling.

Finally, our list of formal reports is attached. Should you need copies of any of them, please contact me. Also, please do not hesitate to contact me should you have any queries.

Yours sincerely



Ian Cornelius (AffSAEA) (AffIAME)
CEO
10 March 2003

List of Reports

1. Letter dated 16 August 1993 from The International Tin Research Institute with accompanying report "Tin Based Fuel Additives" *This report lists numerous patents and papers covering the uses and interactions of tin and tin alloys with fuels and oils, lending credibility to the use of metallic tin and antimony in improving combustion*.

2. Report dated May 1993 by SIMTARS (a division of the Queensland, Australia Department of Minerals and Energy) of vehicle exhaust gas metals analysis. *This report confirms that there is no measurable increase in the emission of tin metal from the exhaust after installation of a Fuelstar canister.*

3. Report dated April 1992 of a test carried out by the Victorian (Australia) EPA for fuel consumption and exhaust emissions from a Nissan Pintara. *This report confirms a reduction in HC's, CO and NO^X after installation of a Fuelstar canister.*

4. Report dated July 1992 of a test carried out by the Victorian (Australia) EPA for fuel consumption and exhaust emissions from a Holden Commodore. *This report confirms a reduction in HC's, CO and NO^X after installation of a Fuelstar canister.*

5. Report dated February 1993 of a test carried out by SIMTARS (a division of the Queensland, Australia Department of Minerals and Energy) of exhaust emissions from a Mitsubishi Magna. *This report confirms a reduction in CO and NO^X after installation of a Fuelstar canister.*

6. Report dated December 1992 of a test carried out by Petroject Equipment & Training Centre, Brisbane Australia of exhaust emissions from a Mitsubishi Magna. *This report confirms a reduction in HC and CO after installation of a Fuelstar canister.*

7. Report dated August 1995 from Australian Micro Analytical Laboratories, Melbourne Australia, of exhaust emissions of volatile organic compounds. *This report confirms the reduction in benzene, toluene & xylene and other volatile organic compounds after installation of Fuelstar canister.*

8. Report dated September 1991 by the University of Southampton, confirming presence of tin metal (oxides) from scrapings of metal from exhaust valve seats. *This report confirms that tin metal is oxidised during the combustion process and adheres to internal engine operating surfaces, exhaust valve seats in particular.*

9. Report dated May 1997 from The Cartune Company, Hamilton, New Zealand of exhaust emissions from a 2 stroke motor cycle. *This report confirms the reduction in HC and CO after installation of a Fuelstar in a 2-stroke motorcycle.*

10. Report dated June 1994 from WorkCover Authority NSW (Australia) of exhaust emissions from a diesel engine. *This report shows a significant reduction in fuel consumption and emissions of CO and NO^X at idle and low-speed*

11. Report dated October 1994 from the Icelandic Society of Fishing Ship Owners. *This report shows an improvement in fuel consumption in the order of 5% from a number of ships.*

12. Reports dated 1990 and 1991 of smoke emissions from 4 diesel engines. These reports were Ministry of Transport tests from the UK on Powerplus, the forerunner to Fuelstar. *These reports confirm reductions in black smoke of 40% and more from 4 diesels after installation of a Powerplus (Fuelstar) canister.*

13. Report dated October 1993 from Australian Micro Analytical Laboratories, Melbourne Australia, of diesel exhaust emissions of Polynuclear Aromatic Hydrocarbons (PAH's). *This report shows a substantial reduction in the emission of PAH's (both particulate matter and vapors) after installation of a Fuelstar.*

14. Report dated 29th January 1995 from Gaspower Automotive Services Pty Ltd of Australia of the use of the product in a LPG power engine. *This report confirms that the Fuelstar has no detrimental effect on a vaporiser used in a LPG powered engine.*

15. Report dated 8 May 1999 by Engineering Testing & Research Services (ETRS) Brisbane, Australia, confirming the pressure capability of a Fuelstar canister at 34.5 MPA. *This report confirms that the Fuelstar canister is more than adequate to meet the LPG pressure requirement of 2.6 MPA*

16. Report dated October 2000 from Lindsay Brothers Transport Ltd, of results of fleet trialling. *This report confirms a reduction in fuel consumption by 15% in a Caterpillar C11 engine in a truck traveling line haul with consistent loads, routes and drivers.*

17. Report dated October 2000 from Legendre Logistics France, confirming results of fleet trialling in France. *This report confirms fuel savings of 15% in Mercedes, Renault and Volvo trucks.*

18. Report dated 29 April 2000 from The Pollution Department, Ministry of Science & Technology, Thailand. *This report confirms a reduction in black smoke of 50% from a 2400 bhp Cummins engine in a locomotive*.

19. Report dated January 2003 from California Environmental Engineering (CEE) of Santa Ana, CA, USA. These tests were conducted on a Nissan UD diesel of 1991 manufacture and 6.9 litres engine capacity. *This report confirms substantial reductions in tailpipe emissions, a reduction of 24% in particulate matter and a fuel improvement of 27.5%.*