

The SAE J1321
***“Joint TMC/SAE
Fuel Consumption
Test Procedure – Type II”***



I. INTRODUCTION

The purpose of this test was to generate irrefutable test data to evaluate the fuel economy benefit of adding SMT² (Synthetic Metal Treatment) to the engine oil using a test procedure, SAE J1321, accepted by the trucking industry.

The SAE J1321 *“Joint TMC/SAE Fuel Consumption Test Procedure – Type II”* was developed to specifically meet the needs of the trucking industry.



II. TEST PLAN

1. The test methodology involves using a test stand mounted Cummins N14 engine and standard transmission so that all operating conditions could be precisely duplicated on each test.
2. The Cummins N14 engine, treated with 12 gallons of Delo 400 oil, had 406 hours operation prior to conducting the base line test.
3. The tests were conducted with the engine running at 1500 rpm and the transmission in 7th gear.



III. VEHICLE PREPARATION AND TESTING

The following preparations were carried out before baseline tests were conducted:

- 1. A gravimetric fuel measurement system has been connected to the fuel system to permit operation from a gravimetric fuel source.**
- 2. All segments of the test were conducted using a precisely measured, commercially available #2 diesel fuel.**
- 3. A digital timer was connected to the engine to record the precise running time, and the engine was run until the fuel was depleted during each test.**
- 4. A single, complete Type II fuel economy test consists of a baseline segment and a test segment.**
- 5. Each Type II segment consists of five test runs having a spread in test/control fuel consumption ratios not greater than two percent of the highest test/control fuel consumption ratio (T/C ratio).**
- 6. The engine oil used in the test was 12 gallons of Delo 400.**
- 7. After the baseline segment has been completed, 3 quarts of SMT² was added into the engine oil, and five additional runs were performed.**



IV. TEST PROCEDURE ACCURACY

The J1321 Recommended Practice states in section 6.1 that the procedure, based on experience, has an overall accuracy of $\pm 1\%$. This accuracy is achieved by sorting the T/C ratio values within a 2% band as described in J1321 Appendix I, Sample Calculations.



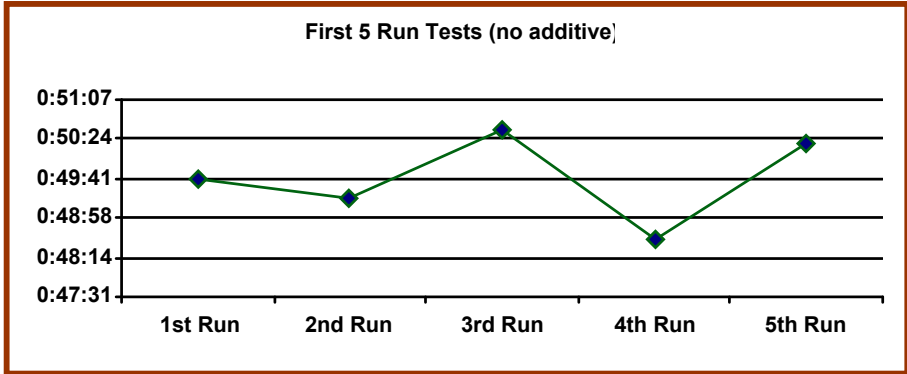
V. TEST PROGRAM REPORTING

The percentage improvements of the tests with these data points over the baseline tests were recorded and are shown in this document.



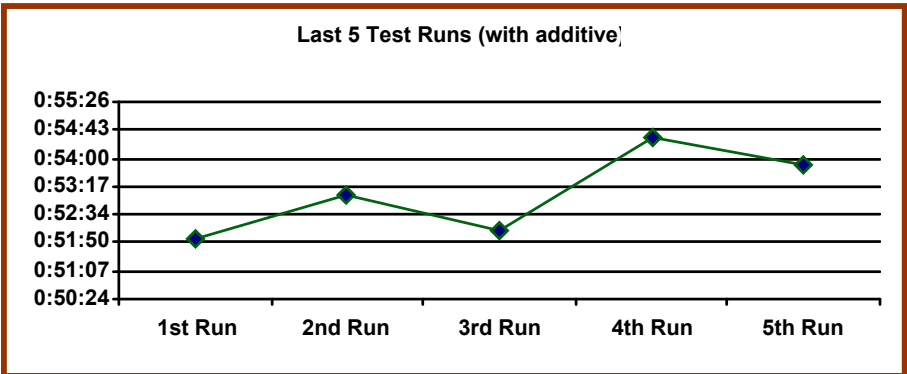
Results: Using "no additive" BASELINE TEST

	Total Hrs/Mins/Sec.	Start Time	End Time
➔ 1st Run	0:49:40	12:52:30	13:42:10
➔ 2nd Run	0:49:20	13:51:20	14:40:40
➔ 3rd Run	0:50:35	14:59:50	15:50:25
➔ 4th Run	0:48:35	9:26:45	10:15:20
➔ 5th Run	0:50:20	10:57:35	11:47:55
Average		0:49:42	



Results using SMT 2 Oil Additive

	Total Hrs/Mins/Sec.	Start Time	End Time
➔ 1st Run	0:51:55	11:18:35	12:10:30
➔ 2nd Run	0:53:05	13:05:45	13:58:50
➔ 3rd Run	0:52:10	8:38:20	9:30:30
➔ 4th Run	0:54:33	10:23:00	11:17:33
➔ 5th Run	0:53:50	13:35:45	14:29:35
Average		0:53:07	



% Increase 6.86%



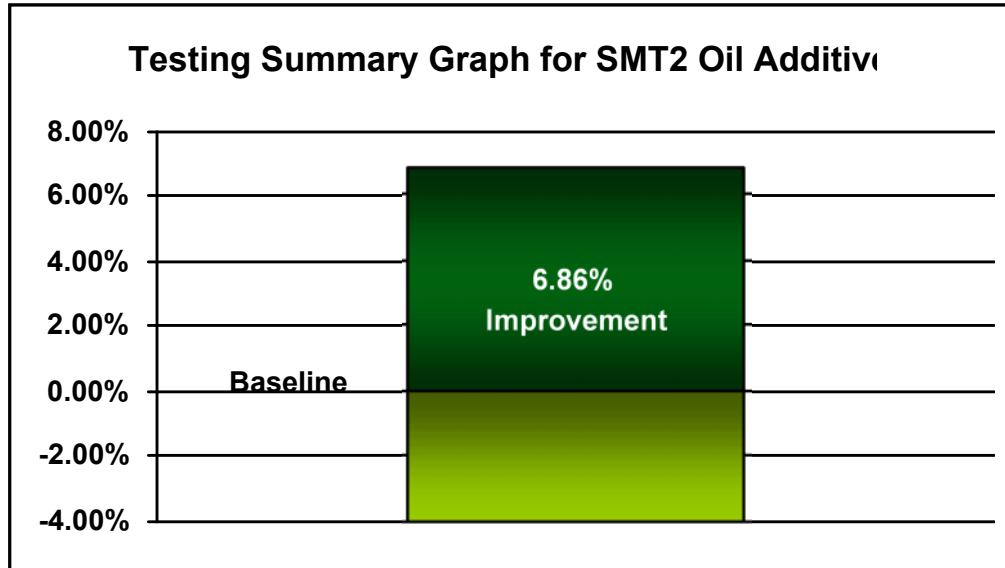


SUMMARY OF TEST RESULTS



9673 South 700 East
Sandy, Utah 84070
Phone: 801.501.7746
Fax: 801.501.7659

Testing Summary Graph for SMT2 Oil Additive



The J1321 Recommended Practice states in section 6.1 that the procedure, based on experience, has an overall accuracy of $\pm 1\%$. This accuracy is achieved by sorting the T/C ratio values within a 2% band as described in J1321 Appendix1, Sample Calculations





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Sandy, Utah 84070
866-582-3872
www.lubetrak.com

Date 12/2/02

To:
Miles Jackson
Hi-Gear Products, Inc.
14 Brent Drive
Hudson, MA 01749

From:
Brett Winberg
LubeTrak
Sandy Utah Office

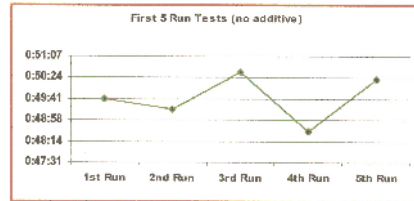
SAE J1321 Testing for SMT 2 Oil Additive

"Joint TMC/SAE Fuel Consumption Test Procedure - Type II" was developed to specifically meet the needs of the trucking industry.

Dear Mr. Jackson,

I wanted to commend you on your product and the final results after testing the SMT2 Oil Additive.

We took great care in running the TMC/SAE J1321 test showing that the SMT2 Oil Additive reduces fuel consumption and made the engine run at a cooler operating temperature. After running 5 base line samples, and recording the data output of the test vehicle, we treated the test vehicle with the SMT2 Oil Additive and let the engine run for 3 hours. Then we took 5 more test procedures using the same exact process as on the base line and recorded the data. Below you will see the results.



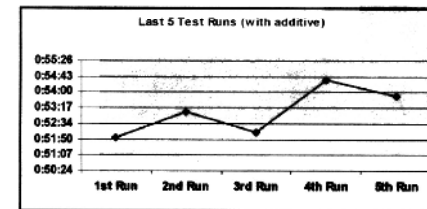
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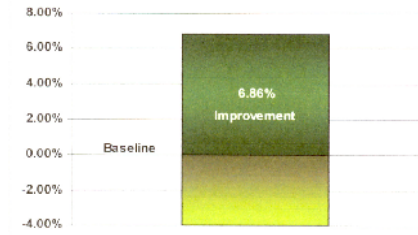
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Testing Summary Graph for SMT2 Oil Additive



As you can clearly see, the test results showed a 6.86 % better result in fuel consumption when running the SMT2 Oil additive.

Test performed by LubeTrak:

Brett Winberg

President/CEO

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The SAE J1321 "Joint TMC/SAE Fuel Consumption Test Procedure – Type II"



SMT2 OIL ADDITIVE J1321 TEST – PAGE 1 of 2

TO:

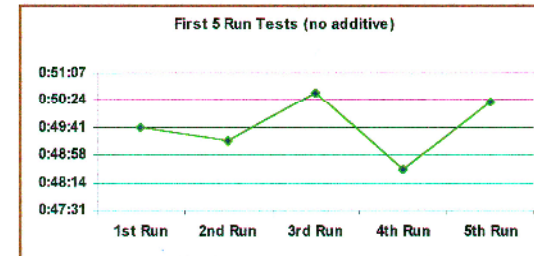


LubeTrak™
9673 South 700 East
Sandy, Utah 84070
Phone: 801.501.7746
Fax: 801.501.7659

RE: SAE J1321 "Joint TMC/SAE Fuel Consumption Test Procedure - Type II"

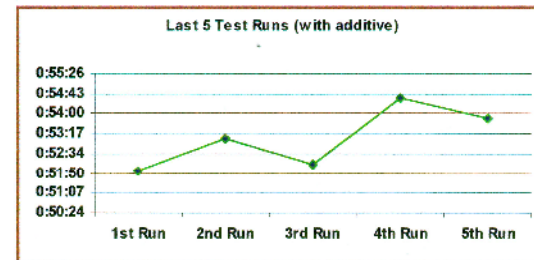
Results: Using "no additive" BASELINE TEST

Table with 4 columns: Run, Total Hrs/Mins/Sec., Start Time, End Time. Rows include 1st-5th runs and an average of 0:49:42.



Results using SMT 2 Oil Additive

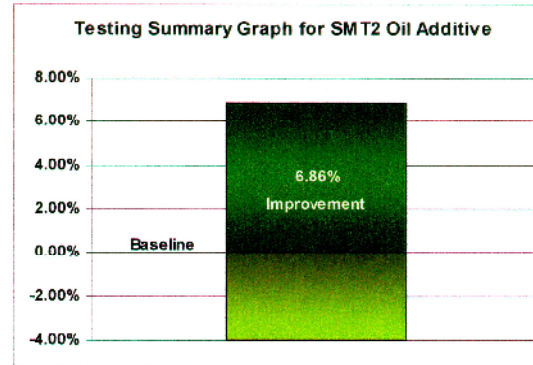
Table with 4 columns: Run, Total Hrs/Mins/Sec., Start Time, End Time. Rows include 1st-5th runs, an average of 0:53:07, and a 6.86% increase.





SMT 2 OIL ADDITIVE J1321 TEST – PAGE 2 of 2

SUMMARY OF TEST RESULTS



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 Sandy, Utah 84070
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 Fax: 801.501.7659

The J1321 Recommended Practice states in section 6.1 that the procedure, based on experience, has an overall accuracy of ± 1%. This accuracy is achieved by sorting the T/C ratio values within a 2% band as described in J1321 Appendix1, Sample Calculations

SAE J1321 "Joint TMC/SAE Fuel Consumption Test Procedure - Type II"

Tested By: Lary McQueen
 Signature: *Lary McQueen* Date: 12-02-02

Observed / Witnessed By: Brett Winberg - STLE Registered OMA I
 Signature: *Brett Winberg* Date: 12-02-02

Engine: Cummins N14
 Method: See: SAE J1321

