

EMD Test Data Documents

Note: The following documents represent examples of numerous QMI product performance tests accumulated worldwide since 1986.

All QMI product performance claims are based on "real world" tests (no bench tests) from the most reputable testing laboratories and industrial applications.

Page Benefits Documented

- 3 8. Wear reduction and safety Sequence III-E test by Southwest Research Institute utilizing a V-6 Buick engine; 88% wear reduction after applying QMI Engine Treatment, safe in all categories, see coverletter.
 - 9. Wear reduction Marine ship engine (7500 hp), wear metals reduced 79% after applying QMI Engine Treatment, reported by oil analysis.
 - 10. **Wear reduction** Marine ship engine; wear metals reduced after applying QMI Engine Treatment, reported by oil analysis.
 - 11. **Wear reduction** Marine ship engines; wear metals reduced on four auxiliary engines after applying QMI Engine Treatment, reported by oil analysis.
 - 12. **Wear reduction** Marine ship engine, wear metals reduced after applying QMI Engine Treatment, reported by oil analysis; demonstrates wear reduction at retreat interval 12 months after initial treatment.
 - 13. Friction reduction Norwegian newspaper article; Norwegian language ship engine lost oil pressure and stopped, ship blown toward breakers, engine restarted with no oil, QMI "... saved the engine ... and we were able to save the ship."
 - 14. **Friction reduction** Norwegian newspaper article (previous page); English language translation.
 - 15. Wear reduction Caterpillar 777B mining truck engine (938 hp); wear metals reduced 56% after applying QMI Engine Treatment, reported by oil analysis; compiled results from nine oil samplings representing 2078 hours of operation.
 - 16. Wear reduction Singapore Technical Marine Institute; Fuji Power Brush Air Tool used for ship building and repair; QMI Air Tool treatment reduced vane wear 82%. Lubricating twice daily with "normal oil," 4 days average wear; 0.66. Applying QMI Air Tool treatment once with no further lubrication, 4 days average wear; 0.12.

QMI Test Data Documents

— continued from page 1

Page Benefits Documented

- 17. **Horsepower increase, CCA (Cold Cranking Amps) decrease** Cummins diesel engine; semi tractor on dyno, 260 hp before, 280 hp after applying QMI to engine, transmission, differentials. Also CCA (Cold Cranking Amps, amperage needed to crank cold engine) reduced from 400 amps before, to 325 amps after applying QMI to engine.
- 18. **Horsepower increase** UPS delivery vehicle on dyno; 102 hp before, 107 hp after applying QMI to engine, transmission, differential.
- 19. Restored compression Ford 302 Industrial air compressor engine; average cylinder compression 70 psi. before, 99 psi. after applying QMI Engine Treatment and Fuel Treatment. This phenomenon occurs frequently in engines with reduced compression due to piston ring sticking, as the QMI PTFE treatment process frees stuck piston rings.
- 20. **Improved fuel economy** diesel powered school busses, 6.8% improvement in fuel economy after applying QMI Engine Treatment, QMI Gear Treatment and QMI Fuel Treatment.
- 21 22. **Reduced energy usage report** China electric power plant fan bearings and coal grinding machine gear; Testing Result 1 and 2; English language translation, bearing and gear treatment reduced energy usage producing 4 to 15 times return on investment; see bold in report, also see tables following.
 - 23. **Reduced energy usage table** China electric power plant industrial fan bearings; English language translation, Test Result 1 (above), 15.58 times return on investment.
 - 24. **Reduced energy usage table** China electric power plant gears; English language translation, Test Result 3 (above), 4.74 times return on investment.
 - 25. **Reduced energy usage report** China electric power plant compressor; English translation, QMI Compressor Treatment application saving 89936 kwh annually.
 - 26. **Reduced energy usage report** plastic molding machine gearboxes; QMI applications payback in 5 weeks, 4 weeks.
 - 27. **Reduced energy usage report** plastic molding machine gearboxes; QMI applications payback in 15 weeks, 2 weeks.
 - 28. **Reduced temperature** Ford farm tractor; engine oil, hydraulic (gear) oil, power steering oil.
 - 29. **Improved performance** Ingersoll-Rand Impact wrench air tool; on sluggish impact wrench QMI Air Tool Treatment increased torque 97%, RPMs 67%.
 - Reduced emissions Daewoo automobile engine; test by National Institute of Environmental Research (S. Korea), after applying QMI Fuel Treatment/Fuel System Cleaner, CO reduces 59.9%, HC reduced 38.1%, NOx reduced 34.4%.



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 Lakeland, FL 33803 USA
 www.qminet.com

"An educated buyer is our best customer"

Coverletter

Sequence IIIE Test

Re: QMI Engine Treatment / Sequence IIIE test shows 88% wear reduction

A QMI Engine Treatment test was performed by Southwest Research Institute. The test is Sequence IIIE, an American Society for Testing and Materials (ASTM) test designed to place demands on engine lubrication similar to "pulling a heavy load across a hot desert at high speed." A V-6 Buick engine is operated under heavy load with oil temperature maintained at a high 300°F (149°C). Before and after the test, camshaft lobes and valve lifters are measured for wear, and a full set of lubrication conditions are evaluated.

QMI Engine Treatment produced an 88% reduction in wear rates. The QMI test is registered with the Chemical Manufacturer's Association (CMA), and meets their standards. The CMA number for this test is: QM-ETSR692101-A-1-IIIE-1-SR-76.

Test information

Sequence IIIE is part of the program to determine API's SG Service Classification and several Military Specification qualifications. Reference oils are used to correlate the performance seen in the Sequence IIIE test to the performance of lubricants in vehicles used in severe field conditions. The ASTM maintains statistics on the performance level of each reference oil, establishing 95% confidence bands and industry average performances.

The test engine is a 1986 231 C.I.D. Buick V-6 gasoline engine especially equipped for test monitoring. The reference oil blended with QMI for this test is Reference Oil 402, chosen because it is the reference oil required by the US Army's "Automotive Engine Oil Additive Test Requirements" for Oxidation and Wear Tests. Test oil blend ratio was 20% QMI Engine Treatment with 80% Reference Oil 402.

Wear Results:

Our primary interest is wear results, using two sheets from the test report; "Current Statistics, Reference Oil 402" and "Valve Lifter and Camshaft Wear Data" (See CMA number for QMI test in upper right corner.) All measurements are in microns.



The sheet "Current Statistics, Reference Oil 402" indicates that the average camshaft and lifter wear ("AVG CAMSHAFT +LIFTER WEAR") for Reference Oil 402 is 33.9 microns. To calculate QMI Engine Treatment's wear reduction, refer to the sheet "Valve Lifter and Camshaft Wear Data."

- 1. The first column records the camshaft lobe and valve lifter numbers.
- 2. The second column records camshaft lobe wear figures. Notice that all camshaft lobes except 4 and 10 showed no wear.
- 3. The third column records valve lifter wear figures. Notice that valve lifters 2, 3, 10 and 12 showed no wear.
- 4. The fourth column records combined camshaft lobe and valve lifter wear. Notice that 2, 3, and 12 showed no wear for either camshaft lobes or valve lifters.

The average wear with QMI Engine Treatment is the figure at the extreme lower right, the average "Combined Lifter & Cam Lobe Wear," or 4.0 microns.

To calculate wear reduction, compare 4.0 microns with the average ("MEAN") wear for Reference Oil 402 (test sheet "Current Statistics, Reference Oil 402"), or 33.9 microns. Comparing 33.9 microns with 4.0 microns, QMI produced an 88% reduction in wear rates.

Safety Test Results:

QMI test results fell well within the normal performance range for Reference Oil 402, demonstrating QMI safety under demanding conditions. See test sheet "SEQUENCE IIIE CANDIDATE TEST RESULTS." QMI Engine Treatment proved safe in all categories, including viscosity increase, sludge, varnish, oil ring land deposits, cam and lifter wear, rod bearing weight loss, scuffed and worn parts, oil consumption, rings plugged, stuck or sluggish, and stuck lifters.

Sincerely,

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Owen Heatwole Vice President, Technical Services

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Report on

SEQUENCE IIIE

Conducted for

QM-ETSR692101-A-1-IIIE-1-SR-76 QUANTUM MARKETING INC.

SOUTHWEST RESEARCH INSTITUTE

SAN ANTONIO DETROIT HOUSTON WASHINGTON, DC

CURRENT STATISTICS REFERENCE OIL 402

	PARAMETER	MEAN	STANDARD DEVIATION	ACCEPTANCE BANDS
	AVERAGE PISTON VARNISH	8.90	0.220	8.51-9.29
	AVERAGE ENGINE SLUDGE	9.39		9.18-9.55
	MAX CAMSHAFT + LIFTER WEAR	90		12-**
33	HOURS TO 375% VISCOSITY	61.2	7.19	48.6-73.7
7	AVG CAMSHAFT +LIFTER WEAR	33.9		7.8-147.8
	OIL RING LAND DEPOSIT	6.71	1.050	4.87-8.56

SEQUENCE IIIE

VALVE LIFTER AND CAMSHAFT WEAR DATA

(All Measurements, micrometers)

Client Oil Code: OM-ETSR692101-A-1

3

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Test No.: IIIE-76-4-970

SwRI Code: LO-56456

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Number	Camshaft Lobe	Valve Lifter	Combined Lifter & Cam Lobe Wear
1	0	5	5
2	0	0	0
3	0	0	0
4	8	3	11
5	0	5	5
6	0	3	3
7	0	3	3
8	0	5	5
9	0	3	3
10	5	0	5
11	0	8	8
12	0	0	0
Maximum	8	8	11
Minimum	0	0	0
Average	1.1	2.9	(4.0) #

	H-ETSR692101-	A-1 TEST NUMBE	B ATTTE-76-4-970	TEST LENGTH.	64
SAF UTSCOSTTY	CRADE: SAF	TEST STAN	NO : 58	FOT DATE:	06-28-92
FUEL BATCH:	CHR-995-	48 ENGINE NUM	(BER: 92-014-03	FOT TIME:	00-20-92
SWRI OIL CODE:	LO-564	56	106R1 92-014-02		00107
VISCOSITY INCR	EASE DATA (CS	t @ 40*C)	* WEAR:	R (um) TRAN	SEODNED UNTE
HOURS VISCO	SITY CHAN	GE PERCENT	MAXIMUM	11	or or or other other
NEW OIL 7	8.84		HINIMUM	0	
INITIAL ^B 7	4.43		AVERAGE	4	1,386
8 8	0.15 5	.72	8 S.A.	0	0.000
16 8	2.08 7	.65	ADJ. AVG.	4	1,386
24 8	3.08 8	. 65	12	100 100	
32 8	1.27 6	.84	9 FROD BRG. WT.	LOSS (mg)	
40 11	1.92 37	.49	50	ANAL LINGA	
48 16	3.40 88	.97 1	20 ROD NUMBER 3	6.3	3
56 25	9.22 184	.79 2	48 ROD NUMBER 5	8.3	2
64 45	3.30 378	.87 5	9		
HOURS TO 375%	VISCOSITY INC	REASE 59	9 AVERAGE	7.3	2
		S.A4.	68		
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10000101			Concert of the second s	NU	MBER
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ROCKER COVER	(RC) RIGHT	9.27 UNITS	LIFTERS	0	
ROCKER COVER	(RC) LEFT	9.27	VALVE STEN TI	PS 0	6 0
R C BAFFLE	RIGHT	9.25	BOCKER ARM PA	DS 0	0 0
R C BAFFLE	LEFT	9.25			
A	ERAGE	9.31 0.37			
S.	λ.	0 0	* OIL CONSUMPTI	ON: (L) 2.15	AT 64 h
ADJ. AVERAGE		9.31 0.37	(F		
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	a with some state of the				
VARNISHI PISTO	ON SKIRTS		OIL RING PL	UGGING, %	0
h.			NUMBER OF S	TUCK RINGS	0
THRUST		9.03	NUMBER OF S	LUCGISH RINGS	0
ANTI-TH	ARUST	9.27			
1	AVERAGE	9.15	* NUMBER OF STU	JCK LIFTERS:	0
1	S.A.	0	10	Contraction of the second second	
ADJ.	AVERAGE	9.15			
OIL RING LAND	DEPOSITS:				
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QMI Treatment of the auxiliary engine on "M/F GULEN" Volvo TMD 102

	14.05.93	10.02.94	01.05.94	19.05.94	28.04.95	Average	QMI treatment	06.10.95
							29.04.95	
Fe	19	61	61	32	43	43.2		12
Cu	12	7	7	3	20	7.8		2
Cr	2	2	2	2	6	2,8		1
Al	7	6	6	5	9	6,6		1
Pb	10	10	10	7	11	9,6		0
Si	11	8	8	8	8	8,6		4
Na	14	17	17	12	10	10		2





Takker tilsetningstoff for berging av båt

Det var tegn til dramatikk når det plutselig oppsto full maskinstans i lastebåten "Nyvang" når den for noen uker siden var under veis fra Bergen til Rådal i Ryfylke. Båten var tom for last og sto høyt i sjøen. Det var kraftig vind i området og kort avstand til land. Vindretningen var ugunstig og båten drev raskt mot brenningene. Maskinen var uten oljetrykk, men mannskapet hadde ikke noe valg. De måtte starte opp igjen uten olje på motoren, hvis de skulle berge båten. Det gjorde de. Sammtidig prøvde de å pumpe olje inn på motoren og lyktes delvis med det.

Femten minutter senere var båten brakt i sikkerhet. Reder Kurt Einarsen takker det at det gikk så bra og motoren ikke ble ødelagt, det faktum at den var behandlet med et stoff som kalles OMI PTFE. Dette stoffet blir tilsatt smøreoljen i motoren for å forhindre friksjon mellom maskinoverflatene. "Jeg er er sikker på at dette reddet motoren. Egentlig skulle vi ikke engang klart å starte opp maskinen uten oljetrykk men takket være dette stoffet så gikk det og vi fikk berget fartøyet, sier han.

Av Magnus Thor Hafsteinsson



Det holdt på å gå ille forleden når hovedmotoren til lastefartøyet "Nyvang" stoppet plutselig når båten var på seiling i sterk vind sør for Bergen. Mannskapet måtte starte opp uten oljetrykk på motoren for å berge fartøyet fra å drive på land. ARKIVFOTO



QMI Prevents Shipwreck

English translation, see page 2

Article provided by Mr. Thor Johansen, QMI Scandavania 11. mai 1998

Takker tilsetningstoff for berging av båt

Det var tegn til dramatikk når det plutselig oppsto full maskinstans i lastebåten "Nyvang" når den for noen uker siden var under veis fra Bergen til Rådal i Ryfylke. Båten var tom for last og sto høyt i sjøen. Det var kraftig vind i området og kort avstand til land. Vindretningen var ugunstig og båten drev raskt mot brenningene. Maskinen var uten oljetrykk, men mannskapet hadde ikke noe valg. De måtte starte opp igjen uten olje på motoren, hvis de skulle berge båten. Det gjorde de. Sammtidig prøvde de å pumpe olje inn på motoren og lyktes delvis med det.

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Kystens næringsavis

Av Magnus Thor Hafsteinsson



Det holdt på å gå ille forleden når hovedmotoren til lastefartøyet "Nyvang" stoppet plutselig når båten var på seiling i sterk vind sør for Bergen. Mannskapet måtte starte opp uten oljetrykk på motoren for å berge fartøyet fra å drive på land. ARKIVFOTO



QMI **Prevents** Shipwreck

Original Norwegian article, see page 1

Article provided by Mr. Thor Johansen, **QMI Scandavania**

May 11, 1998

Credits additive for rescuing of ship

There were signs of drama when a complete engine stop suddenly took place on the cargoship "Nyvang" some weeks ago, when it was on its way from Bergen to Radal in Ryfylke. The ship had no cargo and sat high in the water. There were heavy winds in the area and the land was close. The wind direction was unfavorable and the ship was moving towards the breakers. The engine had no oil pressure and the crew had no choice. They had to start the engine up again without oil, if they were to save the boat. So they did. At the same time, they tried to pump oil into the engine and they were partially successful. Fifteen minutes later, the ship was in safe harbor. Kurt Einarsen,

the ship's owner, claims that the credit for everything turning out so well and that the engine was not destroyed, was due to the fact that it had been treated with a material called QMI PTFE (QMI Engine Treatment with PTFE). This material is added to the lubricating oil in the engine in order to prevent friction between the engine surfaces. "I am sure this is what saved the engine. Actually, we should not even have been able to start the engine without oil pressure, but because of this material, we were successful and we were able to save the ship," he says.

By Magnus Thor Hafsteinsson



Things were on the verge of going totally wrong when the main engine of the cargo ship "Nyvang" stopped suddenly as it was sailing during heavy winds south of Bergen. The crew had to start the engine with no oil pressure in order to save the ship from drifting ashore.



P.O. BOX 30169 - TAMPA, FLORIDA 33630-3169

Scheduled Oil Sampling

FLA CRUSHED STONE-BIRIS \$1738 ATTN: BILL BARRETT PO BOX 668 BROOKSVILLE, FL 34685-8668



SHOP JOB NUMBER: SEGMENT NUMBER: CUSTOMER EQUIPMENT NUMBER: 3-23 JOB SITE: CAT MANUFACTURER: 777B MODEL 41/08/731 SERIAL NUMBER: COMPARTMENT NAME: SAMPLE OIL BRAND/WEIGHT: **OIL CHANGED AT SAMPLE TIME?** CUSTOMER P.O. NUMBER: SAMPLE LABEL NUMBER: MARKET STATUS: LAB CONTROL NUMBER: OVERALL EVALUATION:

ENGINE-DIESEL Yes

PREPAID

96014707

P - POSINE N - NEGATIVE

QMI note: 56% wear reduction-Caterpillar 777B diesel engine with QMI Engine Treatment

The oil analysis reports below represent oil analysis samples taken from a Caterpillar 777B diesel engine at oil change intervals during 2,078 hours of operation. Dates begin at the bottom (month/day/year), and have been combined on one sheet for convenience.

QMI Engine Treatment was applied to the oil analysed on 12/07/95. Reduction of wear metals following QMI application:

• CU (copper); 61% • FE (iron); 41% • PB (lead); 79% • AL (aluminum); 42%

Average wear reduction; 56%

WEAR	ELEM	ENT	5:	00	NCEN	TRAT	IONS	IN PPM:	OL	CON	OTTIO	I/CON	TAMP	ANT	5		Sample date
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3	16	8		3	2	79	4		N	N	N	98	47	43	31	38	03/08/96
8	35	8	2	5	3	76	7	- 10 A	N	N	N	90	47	62	36	48	02/16/96
4	21	6	1	5	3	69	5	and the second sec	H	H	N	55	43	8	43	38	01/19/96
3	28	8	1	3	4	70	18	1.00	N	N	N	56	37	8	31	48	12/28/95
1	16	8	1_	2	4	66	7	QMI application	N	N	N	51	35	8	27	38	12/07/95
.10	48	1	5	6	14	62	7		N	N	N	82	45	0	48	48	11/20/95
17	16	8	2	2	2	2	17		N	p	N	39	11	14	6		08/19/45
4	43	0	5	4	7	2	18	1. A	N	N	N	86	86	24	37	48	06/09/95

CU = COPPEN	AL = ALUMENTINA	W + WATER OR - ORDATION	
FE = BION	SI = SENCON	F = FUEL NIT = NITRATION	
CR - CHIROME	MO - MOLYBOENUM	A - ANTIFREEZE SUL - SULPHUR P	INCOUCTS
PB - LEND	NA - SODIUM	ST = SOOT VIS = VISCOSITY	

NOTICE: THIS ANALYSIS IS INTENDED AS AN AID IN PREDICTING MECHANICAL WEAR NO GUARANTEE, EXPRESS OR IMPLIED, IS MADE AGAINST FAILURE OF THIS PIECE OF EQUIPMENT OR A COMPONENT PART THEREOF.

Item SN0. A A Mer Total Before After DDDDDDDD	Calibration on 4 vanes (A, B, C, D) shows the wear of the tools. Item End Atter Total Before After Total B		ť	ghout the tes	DAILY NCE throug	cated twice l lubricated O	ls are lubric ls are only	NOTE: Too NOTE: Too	0.660 0.120			wear WITH wear WITH	l average l average	Tota Tota												
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	Calibration on 4 vanes (A,B,C,D) shows the wear of the tools.		Before	Total	After	Before	Total	After	Before	Total	After	Before		ltem												
tom No. 11 to 00 and troated TWICE DAILY with permalail and experted with load during entire test	-		ist.	ng entire te	load durir	ated with	and oper	reatment	AIT I OOI I	with QMI	ed ONCE	J are treate	No. 1 to 10	tem												

Test conducted by:

16

Comparison Between Normal Oil & QMI Air Tool Treatment Wear & Tear of Power Brushes' 4 Air Vanes

Test Period 12th November 2002 to 16th December 2002

Test Procedures:

) C

Mr Philip Chan, Tool Room

ST Marine

CUMMINS ATLANTIC, INC.

CHASSIS/ENGINE	/A			DATE: 8.3	30-91
ENGINE MODEL:	TA -10	ENGI	NE SIN: 3483	5/224 RO	# 3635
TRUCK UNIT #:	00	CPL #: _/	394	FIP CODE: X2	24
SPECIFICATIONS (PER	FUEL PUMP CO	DE):			
Rated Horsepower:	300	@ _ 190	RPM		
Engine Fuel Pressure	166-184		Engine Fuel Rate:	95-99	PPH
Intake Mfld Pressure:	20 - 29	AF	C No Air Pressure:		RPM
*RPM - Dash	1900		1900		
RPM - Panel/Engine	1.1-2				
Total Wheel HP	#260		+280		
MPH Truck	60		60	CCA Be	Force 400
MPH Dyno	65		65	CCA AFT	EC 325
*Fuel Pressure	170		175		
*In. Mfld. Press.	20		22		
*Fuel Rate (PPH)	100		100	_	
Water Temperature	190		185		
Oil Pressure	45		40		
Oil Temp. (Opt.)				+	
Crankcase Press.					
No Air Rail PSI	- With	AFC line dis	connected		
··· Re Intake Rest.:	CORD FOLLOWIN	IG AT RATED	HORSEPOWER AND Fuel Rest. In	D RPM (Optional): n: Out	
Mechanic: 421	2	Jes	lacy	Clock #:	_
Branch: <u>CoL</u>	ningful power che	V ick (readings i	at Rated Speed)	Oil temp. Trans temp. Rennewd TEM	189 155 p. 140

JL.07

RIDGE VO-TECH CENTER 7700 STATE ROAD 544 WINTER HAVEN, FL 33881 PHONE #(813)299-2512

Test Conducted by: Ridge-Vo-Tech Automotive Lab Technician - Reginald Flowers

> Company: United Parcel Service Truck #505902 License Plate #H34665 FL Vin #1GDB4T1TXHV502225 Milage 95,286

Lubricant: QMI PTFE Engine Treatment and Gear Treatment

Test #1 Dyno - Horse power Test Before Treatment

4/17/91 3rd gear - 30 mph - 102 hp

Test ,#2 Dyno - Horsepower Test After Treatment

4/18/91 3rd gear - 30 mph - 107 hp

Ridge Vo-Tech Automotive Lab O. Alower Lab Technician: Regiziald Flowers



2401 N. 8th ST. P.O. BOX 7369

PADUCAH, KY 42002-7369

(502)443-8243

19

TO WHON IT MAY CONCERN:

On March 28, 1990, we treated the following Air Compressor with QMI Engine and Fuel Treatment:

Mfg: Grimmer Schmidt Model: 125 CFM - Gasoline Engine: 8 Cyl. Ford 302 Industrial 4 Cyl. Compressor 4 Cyl. Engine Hours: 2542.9

COMPRESSION TEST ON THE 4 ENGINE CYLINDERS

Cyl.	3/28/90 Before Treatment	3/28/90 30 Min. Running	4/2/90 2 Hrs. Running
5	75	85	95
6	80	90	98
*7	55	73	95
8	70	85	105
	280	343	396
Total	% Change	+19%	+41%

Respectfully, KIT-MO RENTAL & Supply Co.

sion 20

G.W. Edwards President

* No. 7 Plug was damp with oil and gas before treatment, after treatment and 30 minutes of running, the plug was dry.





Bus Fuel Mileage – Before and After QMI Applications

June 2, 2002

Bus Fuel MPG

Test conducted by: Paul & Mark Landry PM & Associates, Inc. Baton Rouge, LA USA

The following represent fuel MPG (miles per gallon) figures recorded on four diesel powered school busses, before and after QMI applications:

- 1. Engine QMI Engine Treatment
- 2. Transmission QMI Gear Treatment
- 3. Differential QMI Gear Treatment
- 4. Diesel fuel QMI Fuel Treatment

Bus	Before QMI	After QMI
Ι	8.00	8.80
2	6.00	6.46
3	6.50	6.30
4	7.00	7.85



Average Fuel MPG (all busses)

Before QMI	6.88
After QMI	7.35

Fuel MPG Increase: 6.8%



THE TESTING RESULT OF QMI TREATMENT FOR THE THERMAL POWER PLANT OF LIAOYANG PETROCHEMICAL FIBER CORP.

The Thermal Power Plant is owned by Liaoyang Petrochemical Fiber Corporation for its own power supply. The plant is with the capacity of 270,000kw/hour.(since the plant is built mainly for supplying the heat for the Corp., it supplies 60% heat and 40% thermal power. Therefore, the plant has the actual capacity of 500,000kw/hour). The first time when QMI treatment was employed on a few subordinated equipment in this plant was in November, 1996. QMI treatment proved to be very successful in reducing the friction and the machinery wear after being tested for one month and by using QMI, the Corp. will gain incredible profit. Because of the initial encouragement, the plant began to apply QMI on its 30% subordinated equipment in late December, 1996. The plant engineers made the detailed reports for the QMI results. According to the first quarter power consumption report of 1997, the power consumption of the whole plant is reduced by 5% comparing to the same period of 1996. With only 30% of the subordinated equipment using QMI, the plant gained such impressive power saving result, so what if the rest 70% with its major equipment use QMI?

The plant began to use QMI products on all its subordinated equipment from April, 1997 and the planning to apply QMI is underway for the 6 major equipment. The following are the testing results of the equipment with QMI products:

Testing Result 1

Test equipment: 780kw Industrial Fan Bearings

The data sheet shows that before QMI is applied, the current average is 47.8 amp. After QMI treatment is applied, the current is consecutively reducing for 5 days until it stops at 45.6 amp during the last 2 days. (This reflects the gradual film forming process on the friction surface of QMI treatment. The process proves the theory that the film will completely be in form after the equipment runs continuously for about 100 hours and until the film is formed, the metal surface friction ratio is reduced to the lowest point). Therefore, from 47.8Amp to 45.6Amp, the current is reduced by 2.2 amp:

2.2 A x 1.732 x Power Factor 0.8 x Voltage 6000 = 18.2899Therefore, the saved power for this equipment is 18.29kwh.

(Continued next page)

Liaoyang Thermal Power Plant is also the network plant of Xiaofeng Plant of North Eastern China. The power cost of Liaoyang plant is 0.25RMB/kwh. When in over demand, the power is sold to Xiaofeng at 0.35RMB/kwh, when in need, the plant buys power from Xiaofeng at 0.55RMB/kwh. If Liaoyang can largely reduce its power consumption, it means the plant can sell more power to Xiaofeng. Therefore:

The above-mentioned fan can save power annually: 160,220.40kwh Then saving cost: 56,077.14 RMB QMI products cost: 3,600.00RMB

As calculated, only on the power saving, using QMI can gain the efficiency at 1:15.58, not mentioning the doubled time for equipment maintenance and the equipment operation life.

Test Result 2

Testing Equipment: 800 kw Coal Grinding Machine Gears

The current reads 50.80AMP for 3 days before the QMI is applied. After 46.5 hours with QMI, the current reads 48.90AMP. After 159 hours, the current reads 48AMP, with the difference of 2.8AMP: 2.8A x 1.732 x PF 0.8 x 6000v=23.28kwh Machine power annual saving: 203,932.80kwh Saving Cost: 76,376.48RMB QMI Cost: 15,060.00RMB Investment/Production Ratio (power saving): 1:4.74

(Remarks: All data is supplied by the Equipment Division, Technology Division, Energy Saving Office of Liaoyang Thermal Power Plant)

QMI Industrial Application Office Beijing QMI General Technology Co., Ltd. QMI Sole Distributor In China Date: May 18, 1997

EAD FROM OPERATING	R METER (FLUKE RRENT(AVG) IS R VARIATION, THE	HE POWER FACTO THE FAN. THE CU URRENT METER V	ENING, TH WIRE OF T BY THE C	HE PROPER OP TON CURRENT EN, MULTIPLY	JUSTED TO T N THE OPERAT S IN GEAR TH	AG PANEL IS AI TO CLAMP ON UT(A) SWITCH I ACHIEVED.	URE: THE RETAININ NALYZER) IS USED LAY WHEN CURREN LUE OF THE FAN IS .	TEST PROCED HARMONICE / RECORD DISP CURRENT VA
	21	30.116		20.677			45.6(1.52)	05/21 9:20AM
	20	29.696		20.256			45.6(1.52)	05/20 9:25AM
	20	29.883		20.326			46.5(1.55)	05/19 9:20AM
	22	30.397		20.771			47.4(1.58)	05/17 4:00PM
	21	30.490		20.630			46.2(1.54)	05/16 5:00PM
	21	29.626		20.467			48.6(1.62)	05/14 6:10PM
	22	29.275		19.953			48.0(1.60)	05/13 4:15PM
	25	30.256		20.163			46.8(1.56)	05/13 6:15PM
	ENVIRONT.	REAR BERG. B. 16% OPENING		FRT. BRING. BOTTOM 16% OPENING	RETAINING PANEL POSITION	RETAINING PANEL POSITION	R.PANEL P. BOTT. OPENING 16%	TIME/DATE
	°C	NG TEMPRETURE	TESTIN		AENTX30)	(A)(MEASUREN	CURRENT VALUE	PROJECT
OU	NT: 257000CBM/H	30KW AIR AMOU	POWER: 78	JRRENT: 91A	FAGE: 6KV CI	WORKING VOT	NO.: G4-73-NO22F	EQUIP SERIAL
00P	ADDED TIME: 4:(1T.: 2.838LIT.(3Q)	S QMI AM	ION: BEARINGS	1 LUB. POSIT	EQUIP NO.: 16#	INDUSTRIAL FAN	EQUIP NAME:
	UCTS	DN QMI PRODU	DATA O	LANT TEST	HERMAL P	IAOYANG T	L	

OWER FACTOR INDING LTIPLY BY THE	10 MINUTES, THE F IT WIRE OF THE GR IN GEAR THEN, MU IEVED.	EED, WAITING FOR DPERATION CURREN DENT(A) SWITCH IS I	O THE PROPER SP CLAMP ON THE C LAY WHEN CURR 3 OF THE GRINDIN	IS ADJUSTED T ER) IS USED TO E RECORD DISF URRENT VALUE	MACHINE RMP DNICE ANALYZ READ FROM TH OPERATING CI	RE: THE GRINDING 41B POWER HARM(CURRENT(AVG) IS I ER VARIATION, THE	TEST PROCEDU METER (FLUKE MACHINE. THE CURRENT METI
W/QMI	21	24.845	24.587			48.0(1.60)	05/21 9:20AM
W/QMI	20	23.376	23.015			48.9(1.63)	05/20 10:30AM
W/QMI	20	25.257	24.767			49.5(1.65)	05/19 9:30AM
W/QMI	22	25.695	25.798			51.6(1.72)	05/17 4:10PM
W/QMI	21	25.489	24.974			48.9(1.63)	05/16 5:00PM
W/NO QMI	21	26.185	25.438			49.2(1.64)	05/14 6:25PM
W/NO QMI	22	26.056	25.154			50.7(1.69)	05/13 4:10PM
W/NO QMI	25	26.850	25.798			52.5(1.75)	05/12 6:00PM
REMAKRKS	ENVIRONMT.	REAR BEARINGS I RMP: 500	F. BEARING I IP: 500	FR		MATHY RMP: 500	TIME/DATE
	°C	TING TEMPRETURE	TES	ENTX30)	(A)(MEASUREM	CURRENT VALUE	PROJECT
MT.:	DAL PROCESSING A	FAL BALL AMT.: CO	WER: 800KW ME	RRENT: 91A PC	FAGE: 6KV CU	NO.:DTM320/570 VOT	EQUIP SERIAL 1
	TION GEARS	NGS/SPEED REDUCT	POSITION: BEARI	NO.: 16#2 LUB. 5/14/97	CHINE EQUIP TIME: 7:40PM 0	OAL GRINDING MA LTR.(20Q) ADDED	EQUIP NAME: C QMI AMT.: 18.92
	OUCTS	A ON QMI PROD	NT TEST DAT.	ERMAL PLA	AOYANG TH	LL	

TEST DATA OF QMI PRODUCTS ON THE DUST-WIPING WORKSHOP EQUIPMENT OF GAOJING POWER PLANT

Gaojing Power Plant is a 600,000kw mid-sized coal power plant, whose equipment is with the problem of high energy consumption and high maintenance. During April and May, 1997, the plant, together with QMI's Distributor in China made the test use of QMI treatment on its 230kw Grade 2 Piston Compressor in the Dust-Wiping Workshop in the Dust-Wiping Workshop. This compressor was in the smooth working condition since it was just in between the overhaul maintenance period. Before QMI Compressor Treatment was added, the compressor was tested for 3 days for the original data: w/o Load current AVG is 39.57A, w/full load current AVG is 45.57. After running for 72 hours with QMI, the compressor reduced its w/load current by 1.17A and the w/o load current by 1.07A. Up to 94 hours, the wo/o current by 1.37A and the w/load by 1.87A; up to 120 hours, the w/o load by 1.87A and the w/load by 3.07A(these figures remained stable for the later-on tests). The average reduction of the current is 2.47A:

2.47 x 1.732 x PF 0.8 x 3000V = 10.2676kwh

The test result shows clearly that with QMI, this compressor saves the power for 10.267kwh per hour, 246.4kwh per day and 89936kwh per year. The temperature change is not as obvious as in other cases in the data since the temperature originates from the air compressing of the compressing cabinet, where there is not much friction.

This test is carried out by Gaojing Plant and QMI Rep. in China in May 1997.

QMI COMPRESSOR TREATMENT TESTING DATA

EQUIP. NAME: GRADE 2 PISTON STYLE COMPRESSOR EQUIP. NO:. 7# SHAFT POWER: 210KW AIR QTY: 40CBM/M RPM 600/M OUTPUT PRESSURE: 8KG/SQUARE METER MOTOR NO .: JS148-10 230KW 3000V 59A 500/M PF 0.82 ADD TIME: 11:30AM 04/30/97 OMI AMT.: 3.5 LTR. L Н Н intake L enviro lub. lub. w/o ld. presr. presr. presr. air presr. temp. oil oil current water water open temp. openg temp presr temp. temp. g.tem . . temp р



Come Play Products Co. (Missouri Division) Toy Manufacturing

Kermit D. Barr Plant Manager

P.O. Box L Marshfield, MO. 65706

(417) 468-6841 Fax (417) 468-6845

December 03, 1996

Eight weeks ago QMI Gear Treatment was applied to the gearbox units of four plastics molding machines and performance improvements were carefully measured. The results were as follows:

Machine: UNILOY Blowmolder model 5835, 4 head Power: 480V 3 phase AC variable-speed 75hp extruder Product: toy bowling pins Motor RPM and Volts: 78.4% (1331 rpm) at 254 volts Power Consumption: reduced 4.5 amps from 43.6 to 39.1 Amount of Gear Treatment: 1 gallon Electric Savings: 3.4kw = \$13.20/120hr weekly Payback (just in electricity): 5 weeks

Machine: PRODUCTO Blowmolder 2 head Power: 480V 3 phase AC variable-speed 75hp extruder Product: toy bowling balls, toy cauldrons Motor RPM and Volts: 1440 rpm at 371 volts Power Consumption: reduced 4.6 amps from 44.9 to 40.3 Amount of Gear Treatment: 5 quarts Electric Savings: 5.1kw = \$23.20/120hr weekly Payback (just in electricity): less than 4 weeks



Come Play Products Co. (Missouri Division) Toy Manufacturing

Kermit D. Barr Plant Manager

P.O. Box L Marshfield, MO. 65706 27

(417) 468-6841 Fax (417) 468-6845

Machine: HARTIG Blowmolder 2 head 81b accumulator Power: 480V 3 phase AC variable-speed 75hp extruder Product: toy piggy banks Motor RPM and Volts: 730 rpm at 194 volts Power Consumption: reduced 5.4 amps from 51.1 to 45.7 Amount of Gear Treatment: 1 gallon Electric Savings: 1.04kw = \$4.73/120hr weekly Payback (just in electricity): less than 15 weeks

Machine: IMPCO Injection molder model MA700-125 Power: AC fixed speed 60hp Product: toy shopping carts Motor RPM and Volts: 1150 at 480 volts Current Consumption: reduced 3.5 amps from 87.5 to 84.0 Power Consumption: reduced 5040watts during extruder fill --(one-third of each cycle = 40.320kwh/day = \$1.82 per day) Amount of Gear Treatment: 1 quart Electric Savings: \$9.10/120hr weekly Payback (just in electricity): less than 2 weeks

These figures do not consider the increased life of the gears, motors, and drive components, nor their reduced operating temperatures. We expect to see less frequent service requirements and longer machine life based on increased protection from frictional wear.

Halding Manager

LYKES BROS. RANCH DIVISION

TWS FORD TRACTOR

	Roller Before	10ft. Disc. After	Last Test
Outside Air Temp.=	85*	85*	94°
Hydraulic Oil Temp.=	157°	125*	130" = 27"
Engine Oil Temp.=	178*	171*	152* = 26°
Power Steering Oil Temp.=	166°	157*	123 = 430
Fan Air Temp.=	120°	114°	121" 32 voge
RPM=	800-850	950-1000	950-1000
Fuel Consumption Gal. Per Hour	4.73GPH		3.45GPH

27° Decrease in fuel consumption. \$500 less cost of treatment savings per 1000 hrs. of use at 75¢ Gal. Diesel.

Present:

Chip Lewis	-	Farmco	USA
Terry Marone	-	Lykes	
Dale Willis	-	QMI	
Shane Willis	-	QMI	

FARMCO USA, INC Avon Park, PL 33825 CHIP LEWIS (813) 483- TARH 5276 or 1 (800) 527-2740

Industrial, Electrical, & Electronic Supplies 904 S. 20th St. Box 990 Tampa, FL 33601 (813) 248-6211



April 22, 1998

Air Tool Torque and RPM Test - QMI Air Tool Treatment

- Air tool brought to repair shop by customer, with low torque and RPMs.

Test Results:

	Before QMI Air Tool Treatment	After QMI Air Tool Treatment			
Torque	175 ft./lbs.	345 ft./ibs			
RPMs	2,437 RPMs	4,084 RPMs			

Air Tool: Ingersoll-Rand 1/2 Inch Impact Wrench

Test Equipment:

Torque: Skidmore Wilham Model J Torque Tester RPMs: Herman Stitcht 1891 Digital Tachometer

Air Pressure:

90 PSI (at air tool, as recommended by manufacturer)

Test Procedure:

- 1. Record "Before QMI Air Tool Treatment" torque and RPM readings.
- Apply approximately 3 4 ml QMI Air Tool Treatment through air inlet while operating air tool for approximately 2 - 3 minutes.
- 3. Record "After QMI Air Tool Treatment" torque and RPM readings.

Test conducted by:

miel But

Johnny Banks - Air Tool Technician

	[별지 제7호사	QM "Be Nat Rec	fI / Ever- fore" and ional Inst luced %:	Wear Fue I "after" ex itute of En CO - 59.99	haust em vironmer %, HC - 3	Cleane issions t ntal Rese 8.1%, N	er test by Sout earch (NIEF IOx - 33.49	h Kore: R). 6	a's
	제 호	첨기	제의	유해	물질격	사 /	성적서	Test Fuel	Report for Additive
	업체명	(주)중외산	· 화산업 사용연3		년료	휘 발 유		
	대표자	7	비 한 연		사	업자등	록번호	118	-81-01371
	주 소	서울 금천구	독산본	동 983-	16	전화	번호	02-	830-6600
[제조자	3	1 한 연			제조	국		한 국
	분석 일시	2	001. 4.	11. 4. 진 (서영화)		시협기관 시험담당자		국립4	환경연구원
	시험책임자	황 동	진 (お 开 き (村里	
	적합여부 1. 유해물질 검사결과 : 적합 2. 배출가스 검사결과 : 적합								
	1. 유해불	· 질 검사결	Tox	ic Particles	Fest Result	8	1 - 1		1
	측 정 물	질 Cd	Cu	Cr	NI	Zn	Fe	Min	AI
	첨가후농 (mg/ℓ)	E ND	0.019	ND	0.001	ND	0.094	ND	0.078
	2. 배출가	스 검사결과	Emis	sions Gas Te	st Results]			
	시험항목	CO(g/kr	배 n) H(출가스농 C(g/km)	도(CVS NOx(6-75) [g/km)	Test Metho PM(g/k	m)	<u>매연</u> (%)
Before	첨가전	1.72		0.21	0.	32	-	-	-
After Reduced %	철가후 주·가 %	0.69	6	0.13	0.1	21	-		-
	※ 검사용 자 시험전 누 첨가기준 Volume add	동차 차종 적주행거리 : 7.1ml/l ed per liter 국	: 누비리 : 75,12 Km at "Be 20 官 3) (생산 6km, 시 fore" test 01 년 2001, A 2001, A	년도 : 1 협후 누 4 월 /3 mil 13 연 -	1997년) 적주행 일 7 역	Test vehi 거리 : 75 Km at	cle: Dae 5,548kr "After"	woo, 1997 n test

Service.