Performance Data

Engine/ Application	Engine Age (Hours)	Test Duration	Fuel Usage W/O CVI	Fuel Usage W/ CVI	*% Change*
Caterpillar 988 - Front Loader	10887	111 Hours	16 GPH	13.7 GPH	***14***
Caterpillar D-9 Dozer	8923	124 Hours	22 GPH	18 GPH	***17***
Caterpillar 922 Loader	5375	526 Hours	18 GPH	16 GPH	***12***
Caterpillar 988 Loader	7463	390 Hours	18 GPH	14 GPH	***23***
Caterpillar 773 Haul Truck	8100	242 Hours	23 GPH	12.5 GPH	***46***
Caterpillar V-12 Generator Set	4382	278 Hours	24 GPH	21 GPH	***11***
Cummins ISM 425HP	24293	2570 Miles	7.8 MPG	6.6 MPG	***19***
				Average	***20***
				Median	***17***

Benefits

- Fuel savings alone ≥ 100% ROI
- Cleaner longer-lasting engine oil
- Longer engine life by diminished carbon deposits and harmonic vibration
- Longer burn time results in more complete combustion
- Soot and unburned hydrocarbons now aid combustion
- GHG formation robbed energy, with NCIS energy released saves fuel, reducing: cost, CO_2 and all GHGs

Southern California Asphalt Plant Annual Compliance Test

- 26% less air
- 41% less fuel
- 47% NOx corrected (mass flow lbm/HR)
- 44% reduced CO (mass flow lbm/HR)
- All reductions accomplished while maintaining production levels

Type:	Without Catalyst	With Catalyst
Date:	2/19/2003	2/20/2003
Run:	21	25
Time:	1:00 PM	2/20/2003 12:51
Control Parameters	FGR Man 40ppm	FGR Man 38ppm
FCI Fuel Gas Flow (SCFH):	87,483	51,405
Combustion Air Temp (°F):	305	208
Flue Gas Flow (SCFH):	132,058	96,603
FGR Temp (°F):	305	208
Burner Draft ("Hg):	0.30	0.30
Sand Fraction:	26%	26%
Rock Throughput (ton/hour):	304	296
Moisture content:	1%	1%
FGR/Fuel Flow (SCF/SCF):	1.5095	1.8793
Heat Rate (MMBTU/hr):	80	47
Air Flow (SCFM):	2,169,147	1,599,387
Bulk F/A Eqiv Ratio:	0.388	0.309
Therms	1.528	2.621
RM/CEMS Emissions Data		
RM/CEMS NOx (ppm):	18.2	12.7
RM/CEMS CO (ppm):	108.228	81.729
RM/CEMS O2 (%):	13.36%	14.95%
Method 19 EXHAUST FLOW (DSCFH):	2,216,822	1,651,408
NOx MASS FLOW (lbm/HR):	4.82	2.51
CO MASS FLOW (lbm/HR):	17.5	9.8
RM NOx @3% O2 (ppm):	43.1	38.2