TECHNICAL BULLETIN

No. &nbs111-98p; **111-98**

FTC POWER STATION EVALUATION
PROVES IMPROVED FUEL EFFICIENCY

ABSTRACT

A controlled evaluation of FTC's performance was conducted during the period 4th August 1997 to 13th October 1997 at Central Electricity Board, Mauritius, St Louis Power Station. Measurements of fuel efficiency were made on Unit No. 6, a Pielstick 18 PC3 diesel alternator set, employing the Specific Fuel Consumption (SFC) method.

Improved fuel efficiency following introduction of the FTC Catalyst was **5.45%**.

TEST METHOD

The SFC test procedure employed in this efficiency study measures the absolute mass of fuel consumed against power generated by the engine over time at a constant load. From this data the engine's efficiency can be calculated.

The evaluation of FTC involved a series of back to back untreated (*baseline*) and treated fuel tests conducted approximately two months apart.

MEASUREMENT OF FUEL CONSUMED

A pair of calibrated MacNaught M40 flow transducers were used to measure fuel supplied to the engine and also fuel returning from the engine from which the net volume of fuel consumed over a given timespan at ten minutes intervals can be assessed.

The flow meters were fitted with thermocouple probes which enable measurement of fuel temperature at each transducer.

From the fuel temperature the density at that temperature is calculated. A sample of the fuel oil (180 cSt grade) was taken for laboratory analysis and the density at 15°C determined.

Volumetric fuel flows are corrected for density and temperatures and reported in mass (kg) of fuel.

MEASUREMENT OF WORK DONE

A Microvip MKII energy analyser was used to measure the alternator's electrical output parameters, namely:-

KWatt	kVArh	Hz	LmA
Ampere	kWh	PF Med	MVAr
Volt	Hours		

TEST PROCEDURE

Once the meters were installed into the fuel lines and the Microvip energy analyser connected to the control panel a pair of stopwatches were synchronised and data extracted at ten (10) minute intervals and recorded.

TEST RESULTS

A summary of the Mean Results achieved in this test program are shown in Table 1 below:

TABLE 1

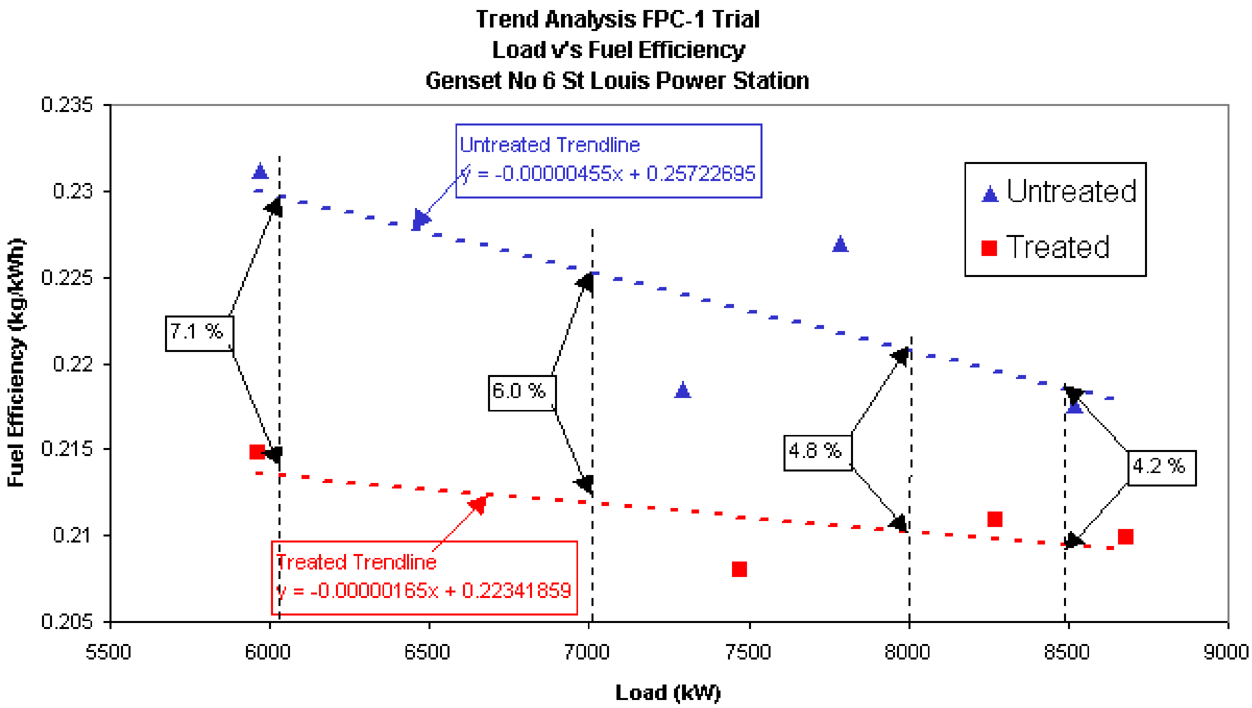
	Mean Results									
Nominal Load (kw)	**6000**		**7000**		**8000**		**8500**		**Overall Average**	
	Load	kg/kWh	Load	kg/kWh	Load	kg/kWh	Load	kg/kWh	Load	kg/kWh
Untreated	5971	0.2313	7290	0.2185	7785	0.2270	8522	0.2176	7392	0.2236
Treated	5963	0.2148	7474	0.2080	8271	0.2110	8681	0.2099	7597	0.2109
% Change	**-0.1%**	**-7.1%**	**2.5%**	**-4.8%**	**6.2%**	**-7.1%**	**1.9%**	**-3.6%**	**2.8%**	**-5.7%**

A linear trend analysis has also been made as shown in Table 2 below and showed graphically in Graph No. 1

TABLE 2

Nominal Load(kW)	**6000**	**7000**	**8000**	**8500**	**Overall Average**
Fuel Efficiency (kg/kWh)					
Untreated	0.2299	0.2254	0.2208	0.2186	0.2237
Treated	0.2135	0.2119	0.2102	0.2094	0.2113
% Change	**-7.1%**	**-6.0%**	**-4.8%**	**-4.2%**	**-5.5%**

GRAPH NO. 1



Photograph No.1 – KEP rate meter and Fluke digital thermometer at the fuel measurement Recording station

Photograph No. 2 – Microvip Energy Analyser connected to the rear of the switchboard

CONCLUSION

The reduced fuel consumption measured by this engineering standard procedure confirms the potential for the FTC catalyst to reduce operating costs. Additional benefits provided by the catalyst are less engine carbon deposits and reduced greenhouse gas emission.

Fuel Technology Pty. Ltd. ACN 100 293 490
2 Tipping Road, Kewdale, Western Australia, 6105
Telephone (08) 9353; 1016 Facsimile (08) 9353 1013; Email fueltech@iinet.net.au
60 Formation Street, Wacol, Queensland, 4076. Telephone (07) 3271 4138 Facsimile (07) 3271 5739