



COMTEC COMBUSTION TECHNOLOGIES INC.

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Rod Malcolm
STENPRO

re. MV KENT VOYAGEUR.

I am still waiting for the actual fuel consumption numbers for the COMTEC trial but based on the numbers I have it seems that as long as the consumption stayed at about 20 metric tons per day we have a power increase / fuel saving of about 6%.


I used for my calculations the sea trial data from when the ship was first put into service.

Further calculations will be carried out over the next few days but the mechanical changes made does make quantifying the actual savings / changes brought about by the COMTEC unit difficult.

What we can be sure of is that due to the improved combustion process emissions were reduced as follows,

EGT	O2	CO	NO	SO2	CO2	
678.5	19.4	17.3	540	53.5	1.2	before
675.6	19.65	1	0	0	0.5	after

An ECOM AC exhaust gas analyser was used for the trial. The analyser is owned by The Technical University of Nova Scotia who rechecked the analyser / sensors with calibration gases for correct operation on completion of the trial.


David Butt
Director of Research & Technical Services
5th May 1998



COMBUSTION
TECHNOLOGIES
INCORPORATED

Unit 314, 85 Chipstone Close, Halifax, Nova Scotia, Canada, B3M 4H7

The COMTEC unit is installed into the fuel line of the 7,000 bhp. main engine on the MV Kent Voyager. The main objective of fitting the COMTEC device was to test our claim that by fitting the unit there would be a reduction in the emissions from the vessel, there would be an improvement in engine performance and reduce maintenance costs.

Using monitoring equipment hired from the Technical University of Nova Scotia we recorded the emissions from the engine, whilst sailing around Nova Scotia, for three days prior to installation and for three days, one month after installation. The indications are that emissions of Sulfur Dioxide and Nitrogen Dioxide have been reduced significantly.

Inspections carried out by the Chief Engineer and the Marine Superintendent, of the exhaust ports and turbine blades showed that there was a noticeable reduction in soot and carbon in these areas. This would lead to a reduction in cleaning and maintenance costs whilst improving the performance of the turbine. The cleanliness confirms that soot emissions have been reduced.

An inspection of the heat exchanger also indicates that there is less soot being produced as these were much cleaner than one would normally expect over the period since last cleaned. This has saved fuel, as the boiler has not been fired up to compensate for the heat losses due to carbon and soot build up.

There has been an elimination of soot particles on the aft decks; this is another indication that the combustion process has improved since the installation of the COMTEC device.

Engine performance has improved as shown by the sailing times between ports. The ships log records indicate that the ship could reduce its sailing time to Europe by one to one and a half days. Fuel consumption has remained constant despite the increased speed. Where sailing times have not changed fuel savings are approximately 1 ton or 5% per day.

COMTEC Combustion Technologies Inc. supplied Kent Lines Ltd. with letters and reports from other users and laboratories that have tested the COMTEC unit, including results of a dynamometer test conducted by STENPRO. Since installing the COMTEC device in February 1998 the results of the trial and inspections are similar to these other user reports and confirm those claims as presented to Kent Lines Ltd.

Based on the information supplied to Kent Lines Ltd. and their own trial Mr. Alan Ross, Marine Superintendent recommended that COMTEC units be fitted to other vessels within the Irving group. Mr. Alan Ross can be reached by telephone at 1 506 636 1991.

* ECOM AC *

Measure no. 0

Date Time
23.04.98 13:12

Combustible :
Number 4 Oil
T.Room 81 °F
T.Gas 681 °F
O2 20,3 %
CO 1 PPM
NO 0 PPM
SO2 0 PPM
CO2 0,5 %
Eff. 20,4 %
Losses 79,6 %
Lambda 30,00
Pressure ---- in.w.g

TECHNICAL UNIVERSITY
OF NOVA SCOTIA

* ECOM AC *

Measure no. 0

Date Time
23.04.98 13:31

Combustible :
Number 4 Oil
T.Room 80 °F
T.Gas 684 °F
O2 20,3 %
CO 0 PPM
NO 0 PPM
SO2 0 PPM
CO2 0,5 %
Eff. 17,6 %
Losses 82,4 %
Lambda 30,00
Pressure ---- in.w.g

TECHNICAL UNIVERSITY
OF NOVA SCOTIA

* ECOM AC *

Measure no. 0

Date Time
23.04.98 13:43

Combustible :
Number 4 Oil
T.Room 80 °F
T.Gas 681 °F
O2 20,3 %
CO 1 PPM
NO 0 PPM
SO2 0 PPM
CO2 0,5 %
Eff. 19,5 %
Losses 80,5 %
Lambda 30,00
Pressure ---- in.w.g

TECHNICAL UNIVERSITY
OF NOVA SCOTIA

* ECOM AC *

Measure no. 0

Date Time
23.04.98 13:57

Combustible :
Number 4 Oil
T.Room 81 °F
T.Gas 682 °F
O2 20,3 %
CO 1 PPM
NO 0 PPM
SO2 0 PPM
CO2 0,5 %
Eff. 19,5 %
Losses 80,5 %
Lambda 30,00
Pressure ---- in.w.g

TECHNICAL UNIVERSITY
OF NOVA SCOTIA

* ECOM AC *

Measure no. 0

Date Time
23.04.98 14:22

Combustible :
Number 4 Oil
T.Room 82 °F
T.Gas 683 °F
O2 20,3 %
CO 1 PPM
NO 0 PPM
SO2 0 PPM
CO2 0,5 %
Eff. 19,5 %
Losses 80,5 %
Lambda 30,00
Pressure ---- in.w.g

TECHNICAL UNIVERSITY
OF NOVA SCOTIA

* ECOM AC *

Measure no. 0

Date Time
23.04.98 14:37

Combustible :
Number 4 Oil
T.Room 81 °F
T.Gas 682 °F
O2 20,3 %
CO 1 PPM
NO 0 PPM
SO2 0 PPM
CO2 0,5 %
Eff. 17,6 %
Losses 82,4 %
Lambda 30,00
Pressure ---- in.w.g

TECHNICAL UNIVERSITY
OF NOVA SCOTIA



1. A COMTEC unit was fitted to the main engine of the Kent Voyager. Our trials and inspections have confirmed the claims of COMTEC relating to improved engine performance and reduced carbon and soot formations, which can lead to reduced maintenance. The reductions in emissions were also confirmed using equipment supplied by the Technical University of Nova Scotia.
Superintendent Engineer, Kent Lines Ltd. N.B. Canada (after 6 months in use)
2. A COMTEC unit was fitted to the main engine (7,000 PS) of the mv Kent Voyager. Following approx. 8000 service hours our trials and inspections have confirmed the claims of COMTEC relating to improved engine performance and a reduction in carbon and soot deposits within the exhaust system leading to a reduction in maintenance, in particular the exhaust gas boiler. The reductions in emissions were also confirmed using equipment supplied by the Technical University of Nova Scotia. Installing the COMTEC device has not had any adverse effect on engine operation or condition.
Superintendent Engineer, Kent Lines Ltd. N.B. Canada. (after 18 months in use)