



Dear Operator

In the CIMAC Heavy Fuel Working Group, we are developing recommendations and tools for the industry on how to select the right fuel quality and how to handle the fuel on board or in power stations to give the optimum diesel engine reliability and availability.

As a working group, we are specialists represented from all parts of the marine and fuel industry, and at the moment we are collecting information about situations experienced where the Ignition and Combustion properties of the fuel are suspected of having influenced negatively on the engine performance. Feedback from operators is vital for us to make accurate recommendations according to actual situations on board vessels and in Power Stations.

We therefore ask you kindly to inform us of any such incidents experienced by you and your colleagues. Please fill in the attached questionnaire and return it to the following e-mail address: CIMACSURVEY@DNVPS.COM

Furthermore, we ask you to please keep the questionnaire at hand for future fuel performance issues of possible interest to us, as the CIMAC WG Fuels will continue to collect and evaluate reported experience.

Data received will be treated confidentially, however, generated trends and conclusions will be published as knowledge and tools for the industry.

Please see our latest recommendation regarding ignition and combustion of fuel oil, available free of charge from the CIMAC website;
http://www.cimac.com/cimac_cms/uploads/explorer/Working%20groups/CIMAC_Fuel_Quality_Guide_Ignition_and_Combustion.pdf

Thanking you in anticipation.

Best regards

Kjeld Aabo
Chairman of the CIMAC Working Group Fuels



Questionnaire

Survey for development of CIMAC fuel quality recommendations

Engine Data

Engine Make:	Model:	<input type="checkbox"/> 2-st	<input type="checkbox"/> 4-st
Bore			mm
Stroke			mm
Nominal engine speed (100% MCR)			rpm
Nominal max firing pressure			bar
Effective Compression ratio			- -
Operating Load Profile ⁽²⁾			% MCR
Injection system	<input type="checkbox"/> Mechanical	<input type="checkbox"/> Electronic	
Application	<input type="checkbox"/> Marine	<input type="checkbox"/> Power Plant	
Operating curve	<input type="checkbox"/> Const RPM	<input type="checkbox"/> Vari P	<input type="checkbox"/> Fixed P

Engine Condition

Cumulated Running Hours		hours
Oldness Percentage ⁽³⁾		%
Oldness Percentage of injector nozzles ⁽³⁾		%

Notes

- (1) If a parameter is not known, please indicate NA meaning Not Available
- (2) Operating profile to be filled in with :
L : Low meaning most of the time operating at 0 - 60%MCR
M : Medium meaning most of the time operating at 60 - 80%MCR
H : High meaning most of the time operating at 80 - 100%MCR

- (3) Oldness Percentage means (running hours when damage occurred - running hours at last main overhaul) / (normal periodicity between two main overhauls)



Engine problems
Symptoms

Starting difficulties / failures	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Heavy knocking	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Dark smoke (under normal operating conditions)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Increased deposits in combustion chamber	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Turbocharger surging	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Sticking exhaust valves	<input type="checkbox"/> Yes	<input type="checkbox"/> No
P_{max} increase	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Burned piston crowns	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Other symptoms (please comment)	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Damages

Increased piston grooves fouling	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Sticking / broken piston rings	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Liner lacquering - in combination with sudden increase in lub oil consumption	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Bore polishing / scuffing / blow-by	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Increased wear rate of liners or piston rings	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Exhaust valve burning	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Turbocharger vibration	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Thermal cracks / erosion-cavitation on cylinder head deck or liner	<input type="checkbox"/> Yes	<input type="checkbox"/> No



Fuel Parameters

	As bunkered	After on-board treatment	
Density at 15°C			kg/m ³
Viscosity at 50°C			cSt
Sulfur content			%m/m
% MCR (Carbon Residue)			%m/m
% Asphaltenes (when available)			%m/m

Fuel Bias Parameters

Ash content			%m/m
Vanadium (V) content			mg/kg
Sodium (Na) content			mg/kg
Aluminium+Silicon (Al+Si) content			mg/kg
Nitrogen (N) (when available)			%m/m

FIA-100 Test Results

ECN (Estimated Cetane Number)		- -
ID (Ignition Delay)		ms
MCD (Main Combustion Delay)		ms
EC (End Combustion)		ms
CP (Combustion Period = EC-ID)		ms
ABP (After Burning Period)		ms
max ROHR level		bar/ms
PMR (Position of max ROHR)		ms

Parameters reported according to test method IP541/06 (FIA-100 FCA)

Additional comments