

BENEFICENT ENVIRONMENTAL AND LUBRICATING PROTECTION OF MARINE DIESELS BY THE SCRUBBERS

(Part A)

DISTILLED FUELS?

THE IMPOSITION OF DISTILLED FUELS ON THE OCCASION OF MARPOL VI, WOULD BE ERRONEOUS AND DESTRUCTIVE FOR THE ENVIRONMENT AND THE PROPULSIVE MARINE DIESEL ENGINES.

IT WOULD MEAN ENORMOUS FEEDING OF CO₂ FROM REFINERIES TO GREENHOUSE WITH EFFECTIVE LIFE TIME TENS OF THOUSANDS OF YEARS WITH GLOBAL WARMING EFFECTS OVER ALL TIME PERIODS.

IT WOULD MEAN MORE THAN DOUBLE COST OF FUELS, ADDITIONAL 3 TO 4 STOPAGES FOR 30 TO 40 OFF-HIRE DAYS OF SHIPS PER YEAR FOR EMERGENCY HONING MAINTENANCES OF CYLINDER LINERS, LIMITATION OF THEIR LIFE TIME TO 2/3, AND SIMILAR WEAR AND REPAIR EFFECTS TO THE BEARINGS AND CRANKSHAFT JOURNALS.

It would mean unexpected wearing effects and repairs to thousands of big DIESEL engines in operation, to their fuel pumps and fuel valves, pistons and cylinder liners, bearings and crankshaft journals, which would oblige shipowners to stop their ships 3 or 4 times a year in order to make emergency HONING to the cylinder liners and similar maintenance works to the bearings and crankshaft journals, in order to prevent their total destruction from poor lubrication in absence of light porosity emanated by controlled sulphuric acid reaction of residual fuels.

The whole repairing schedule would burden ships operational time with additional delays in port between 30-40 days off-hire per year, subject that the HONING is done timely by trained workshops, as it will be impossible to be performed so frequently by ship's engineers. HONING is creating a light "X" pattern on the surface of cylinder liner, so as to hold the necessary quantity of lubricating oil during piston reciprocations. (see photo)



Fuel pump plunger sticking by use of Low Sulphur Fuel.
(Source MAN Diesel "Operation on Low-Sulphur Fuels Two-Stroke Engines")



Cylinder liner after HONING
(Source: CHRIS-MARINE)

The sensible Shipowners and Managers should be most cautious against any kind of misleading concerns that try to impose a generalization of distilled fuels on the occasion of MARPOL VI. Ships burning today's residual fuels and using the Abatement Technology will have a competitive advantage, as is proved by a quick balancing of anticipated costs from additional delays and repairs of diesel engines due to lack of adequate sulphur in the distilled fuels on top of the extra cost for distilled fuels.

The truth is that with the SCRUBBERS the owner pays only once while he complies exactly to MARPOL VI without variations or misuse of equipment for the whole life of ship. Let us trust that the spirit of virtue will eventually prevail in IMO's ratification of MARPOL VI as always.

BENEFICENT LUBRICATING CAPABILITIES OF SULPHUR

With different chemical combinations the sulphur in the fuels has an important lubricating effect. The sulphur in the high sulphur fuels is presented in two forms, Sulphur Dioxide (SO₂) and Sulphur Trioxide (SO₃), in proportion 15 to 1.

The use of distilled fuels with nearly zero content in sulphur and a simultaneous low

viscosity, it may cause wear in the fuel pumps and valves and sticking of their plungers (see photo in the previous page).

In case of use of low sulphur fuels in high temperature environments, it usually necessitates a previous cooling so as to reach the required viscosity before they arrive to the engine, so as to avoid above additional problems.

RELATION BETWEEN LOW SULPHUR FUELS, THE BASIC NUMBER (BN) OF LUBRICANTS AND THEIR FEEDING RATE.

Extended use of low sulphur fuels in combination with a high BN 70 lubricant it does not only risk to disturb the controlled light oxidation needed for proper lubrication but it also creates deposits in way of piston rings and piston crowns. Hard deposits on piston crowns increase the wear and scuffing of cylinder liners, and hinder the free movement of rings.

Although a reduced feeding rate of cylinder oil BN 70 to 2stroke engines is heard like an intermediate compromise, this is not safe in all cases due to other occurring factors.

The experience of engine makers with reduced feeding rates of high BN lubricants in combination with low sulphur fuels is mainly based from tests on stationery diesel engines. Whether the same results are applying also to marine diesel engines it depends on the operation conditions, the size of engines and their general condition. Therefore this should be tested on case by case.

For the areas of low sulphur control (SECA), the lubricants makers propose changing do lubricants of lower basic number BN 40 to 50. However, the change over of lubricants is not easy during the operation of the engines, it presents challenges to engines and lubricants makers, whereas the damages are paid by the Shipowners and Managers.

ABATEMENT TECHNOLOGY IS THE CORRECT SOLUTION FOR THE CLEANING OF EXHAUST GASES TO MARPOL VI REQUIREMENTS.

The Canadian MARINE EXHAUST SOLU-



George S. Kaminis

TIONS made and patented the first system of Abatement Technology, which ensures the continuation of engines operation with the up-to-date used fuels and lubricants, without filters or chemicals, and it is evaluated by the virtuous environmentalists, technologists, economists and politicians as "apo michanis theos" for the protection of the Environment, as well as the most economical solution for

the ship as its cost is amortized in a short period.

It has the capability to reduce sulphur emissions (SOx) to near zero and significantly particulate matter. It delivers the same or better result of the distilled fuels, against a tremendous cost of any additional Refinery installations would be necessary for the de-sulphurisation of fuels, which as it is known would overflow the environment with Carbon Dioxide (CO₂) and burden more dangerously the Greenhouse effects on Earth.

It is a new type of engine exhaust made from Super Austenitic Stainless Steel, which incorporates a scrubber of washing the exhaust gases by sea water, based on the same basic principle of operation with the Inert Gas Systems, which operate successfully from 1976 on all Tankers. ECOSILENCER consumes only the 1% of engine power.

In addition "ECOSILENCER" cleans centrifugally the sea water before returning to sea with a unique system, so as to remove any remainder combustion elements such as smoke, total hydrocarbons, unburned fuel and oils. These are collected in small quantities, of about 100 to 600 kgs weekly depending on size of engines, and they are delivered with the other waste oil residuals of ship to port receivers.

NOTE

About how sulphur emissions problem was erroneously diverted to the back of Shipowners and Managers, and how sulphur contributes to the correct lubrication of diesels, we will revert in Part B' of our article, in another issue.