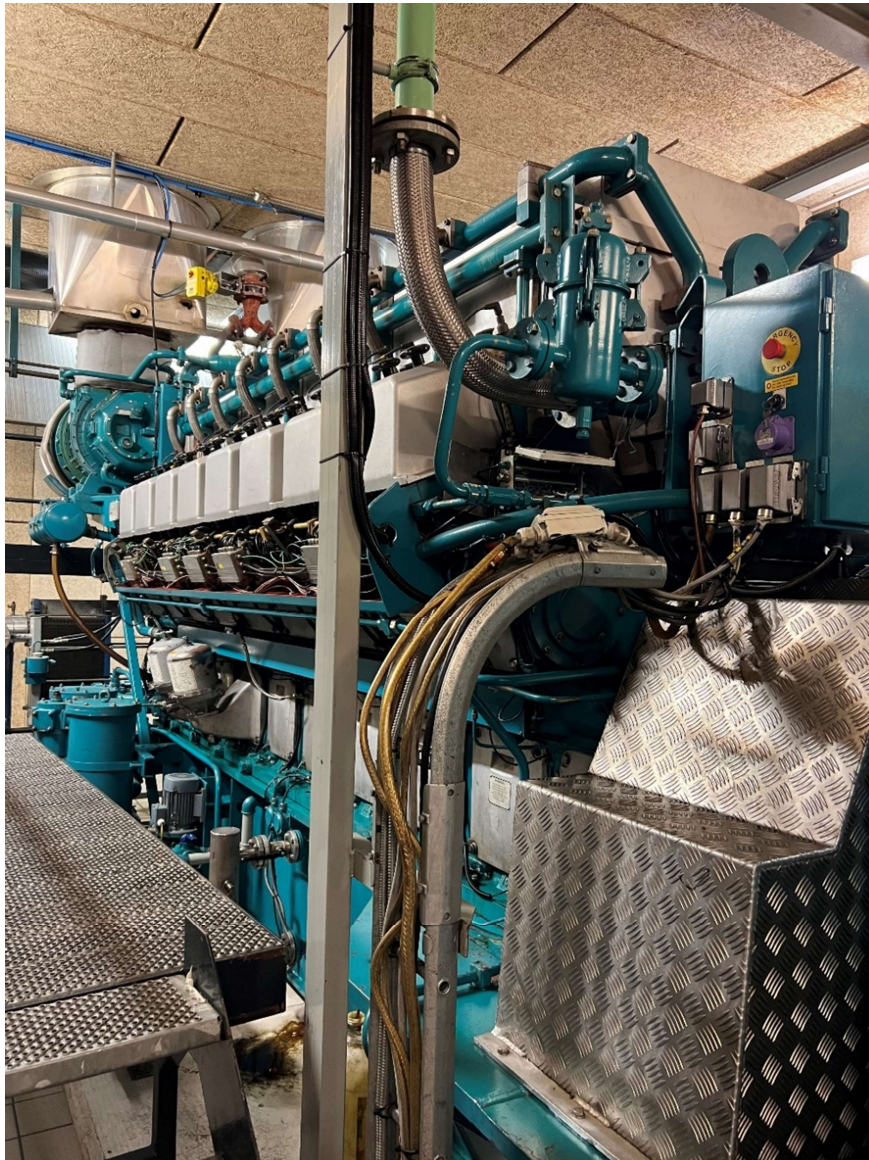


Inspection Report



Give Energianlåg A/S

Reported by:	Glenn Andersson
Date reported:	2022-02-16
Inspection performed by:	Glenn Andersson
Place of visit:	Energivej 8, Give.
Country of visit:	Denmark



ENGINE SERVICE | PART OF MMAB

Work order no:	WO-791
Date started:	2022-02-15
Date finished:	2022-02-15
Customer ref no:	N/A
Engine type:	Wärtsilä 16V25SG
Generator no:	#1
Engine no:	4008
Engine speed:	1000 Rpm.
Rated power:	3079 kW.
Fuel type:	Gas
Running hours:	61 000 Hrs.

Table of contents:

1. Introduction
2. Conditions
3. Recommendations
4. Comments

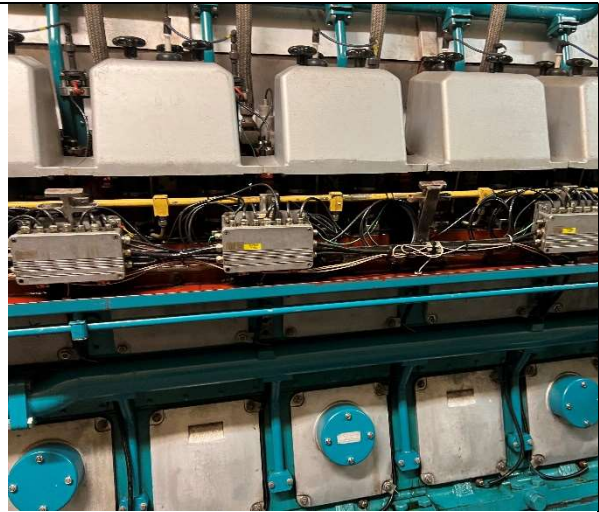
1: Introduction

We were requested by our customer Starkos GmbH in Germany to inspect condition on a Wärtsilä 16V25SG on site in Give, Dk.

2: Conditions

2.1 Overall condition

Engine has been in operation for approx. 61 000 hrs and condition for what you can see by a visual inspection is in general very good, when looking on overall condition it seems to be well maintained. It was not possible to make a test run as several connections were disconnected. Engine was overhauled at 50 000 hrs, acc. to report from Wärtsilä DK. At 61 000 Hrs. the MCU processor card was renewed acc. to report and invoice from customer.



2.2 Engine block and crankcase

Engine block and crankcase were visually inspected without disassembly. All visible surfaces are in good condition and no water leakages in crankcase or around cylinders were noted.

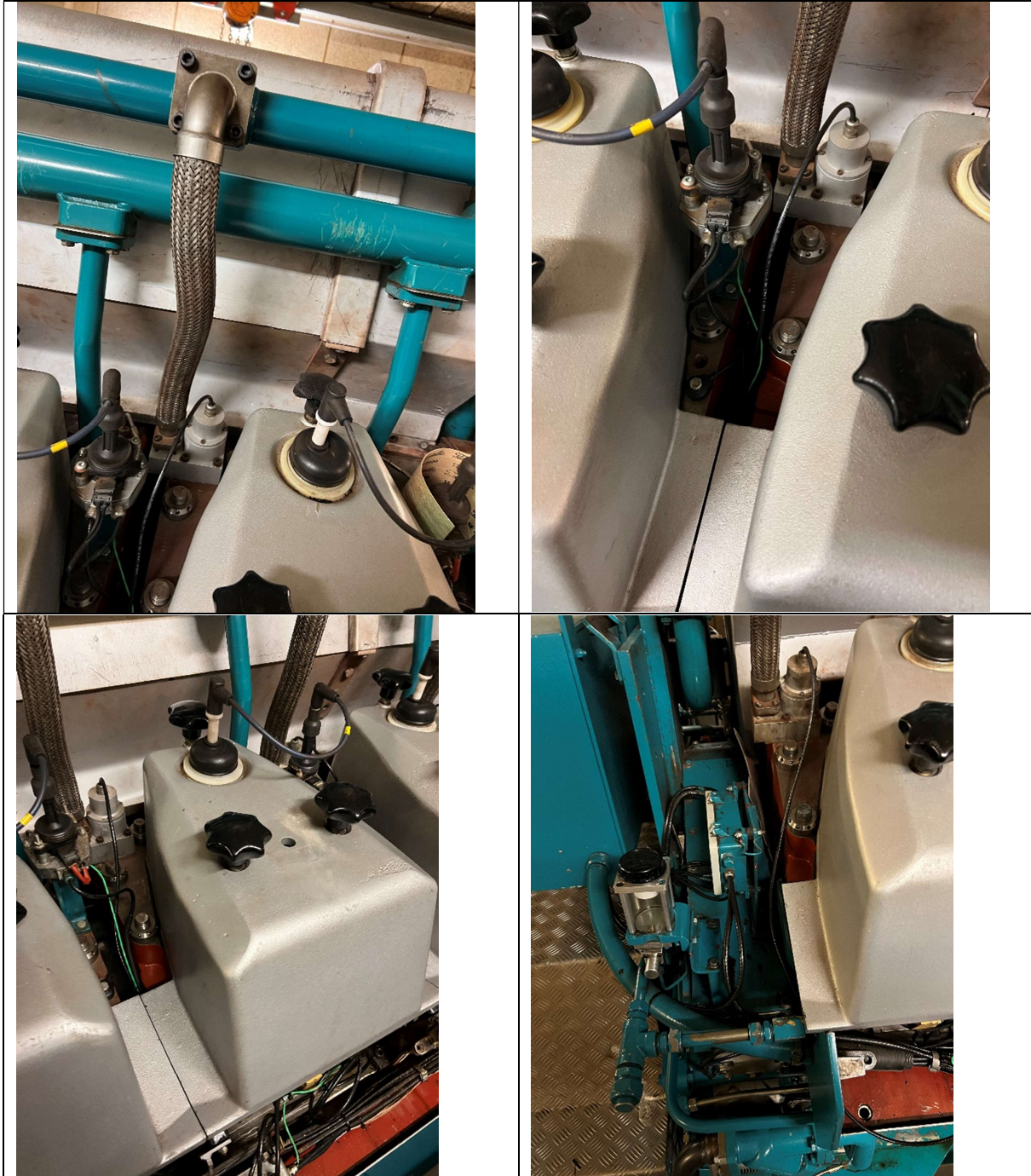
Crankcase was very clean and honing pattern inside cylinder liners looked intact for as far as visible. Acc. to report from 50 000 Hrs. service engine block has been machined on landing surfaces for cylinder liners, distance has been compensated with shim rings between 1 and 2mm underneath cylinder liner. (This is a very common repair method on Wärtsilä Nohab engines.)



2.3. Cylinder heads

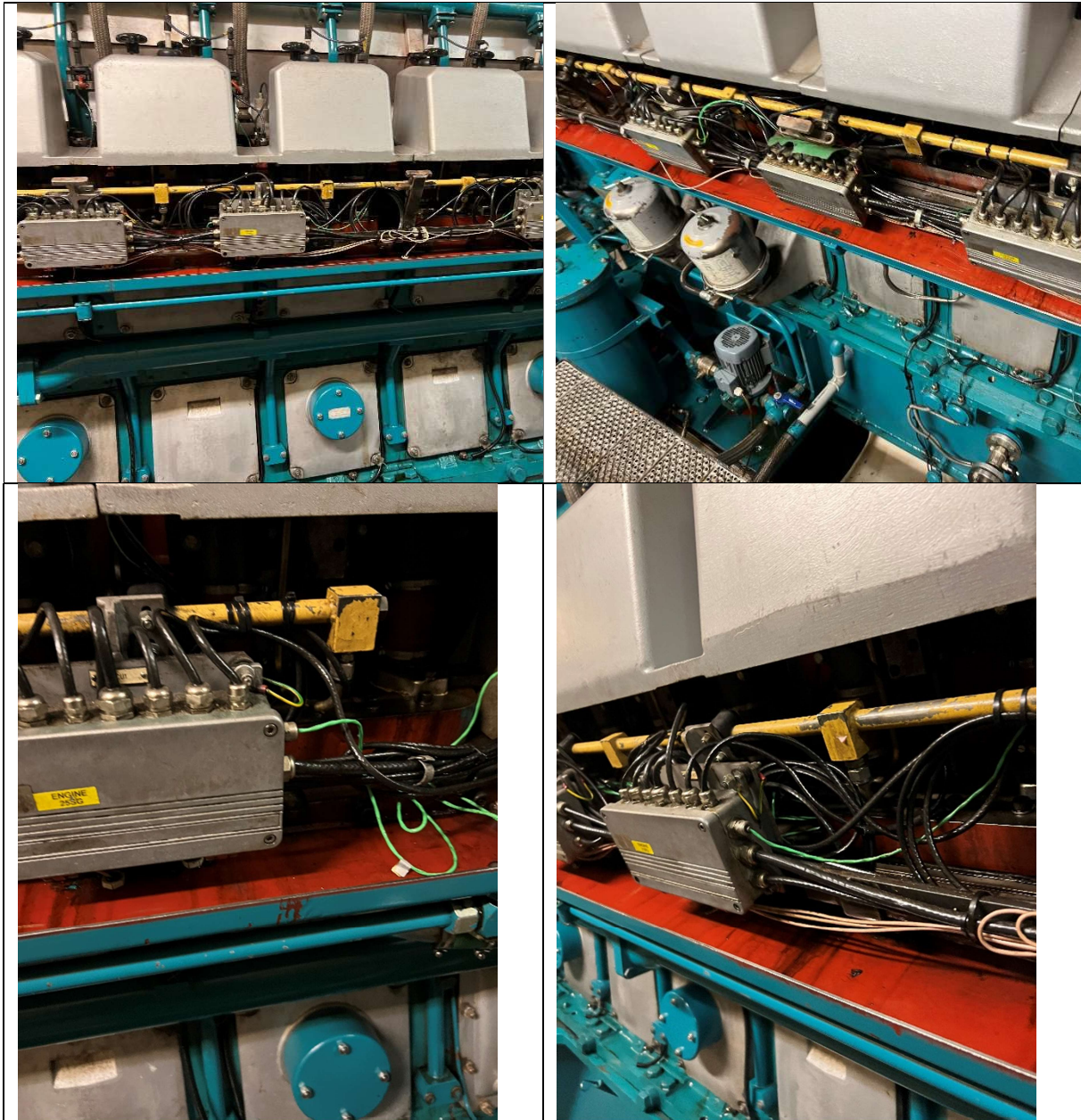
All visible surfaces on cylinder heads were in good condition, no indication of leaks from water, fuel, inlet or exhaust connection.

Cylinder heads were overhauled at 50 000 Hrs service acc. to report. No measurement reports included in report so difficult to determine what was done.



2.4 Hotbox

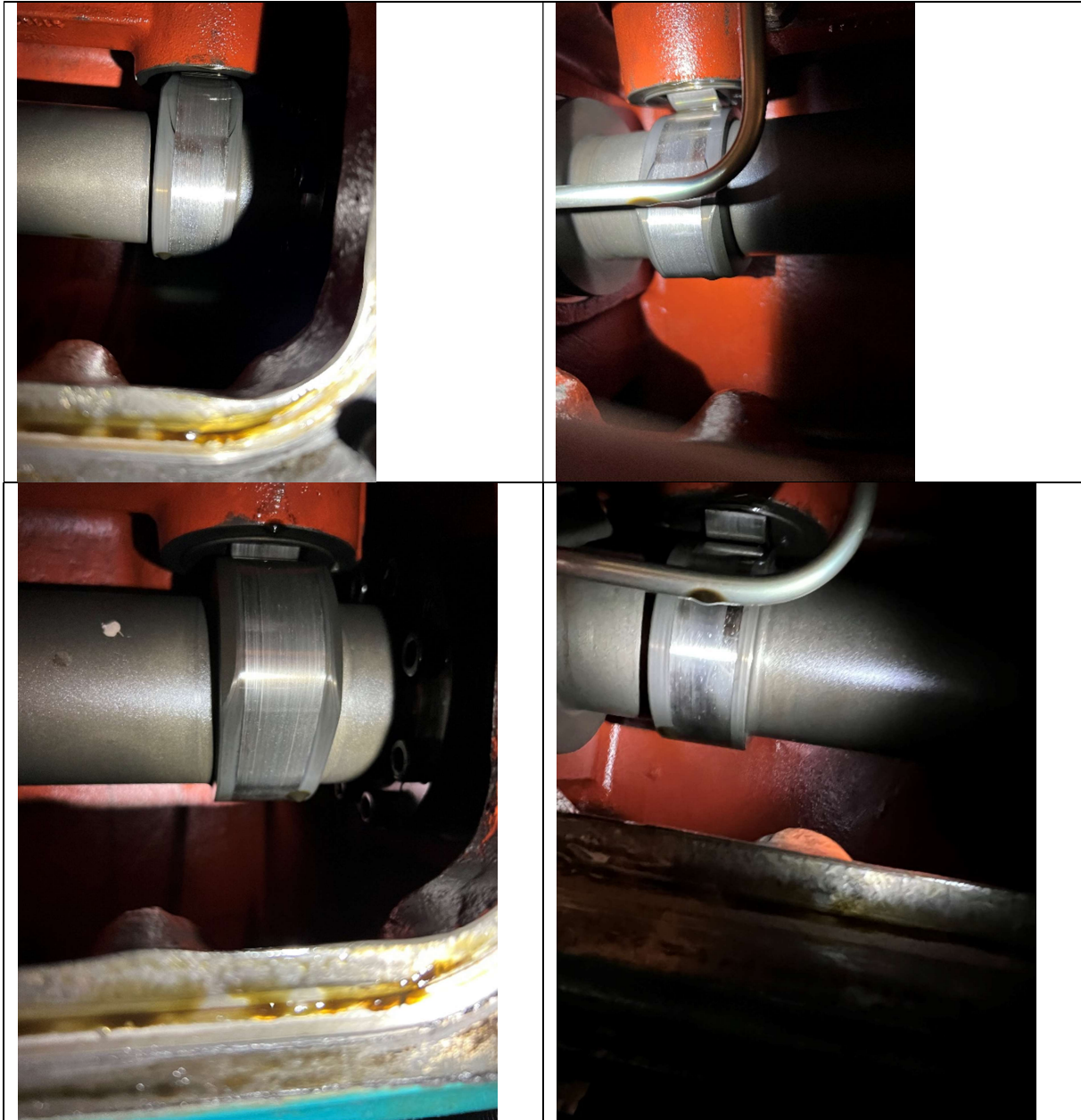
Hot box on both A and B- bank were inspected. Condition of pipings and visable parts was found in good condition. Minor oil leakages located on and next to valve lifter brackets.



2.5 Camshafts

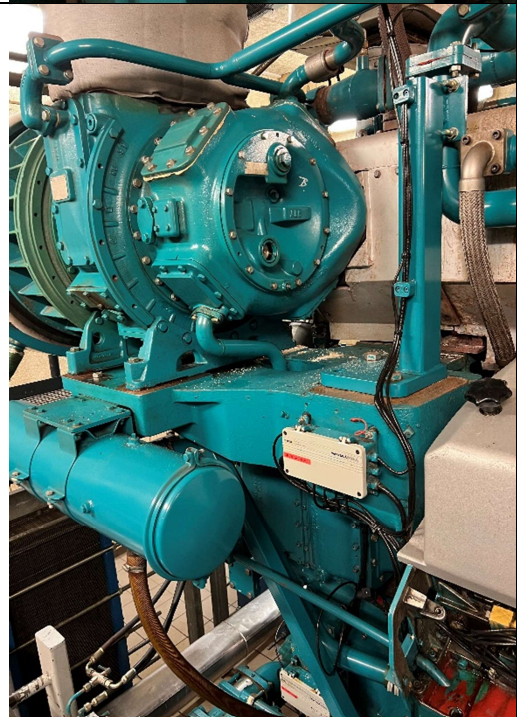
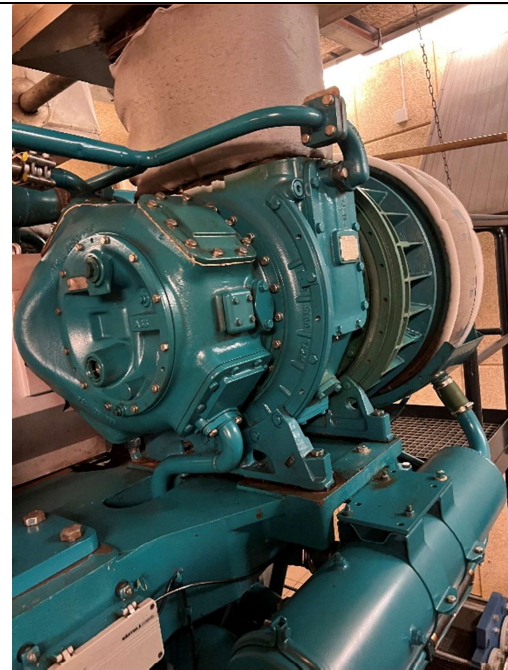
Camshaft sections were inspected and minor wear and pitting were found on both inlet and exhaust cam nocks.

No problem for further operation but recommend inspecting regularly on a 2 500 hrs. basis.



2.6 Turbochargers

Turbochargers were visually inspected from outside and was found intact without damages. Acc. to report from 50 000 service both turbochargers were cleaned, inspected and bearings renewed. Recommend to inspect and clean turbochargers and renew bearings before put back in operation since they reached recommended service hours already.



2.7 Fore end with engine driven pumps and filters etc.

Lubricating oil pumps – No leakages or discrepancies were noted.

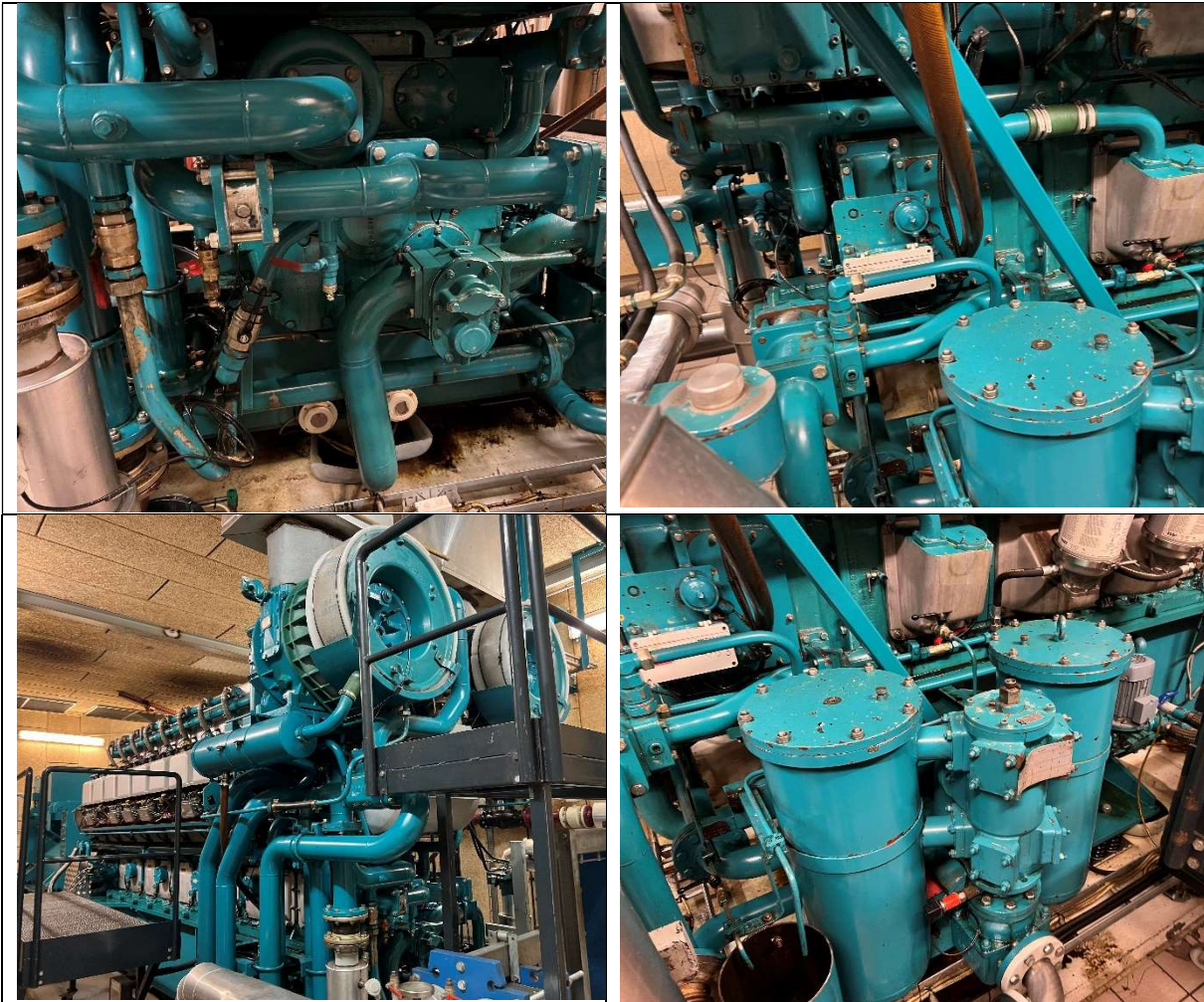
Freshwater pump - No leakages or discrepancies were noted.

Thermostatic valve housing – Good visible condition.

Charge air cooler – Visible outer surfaces was in good condition.

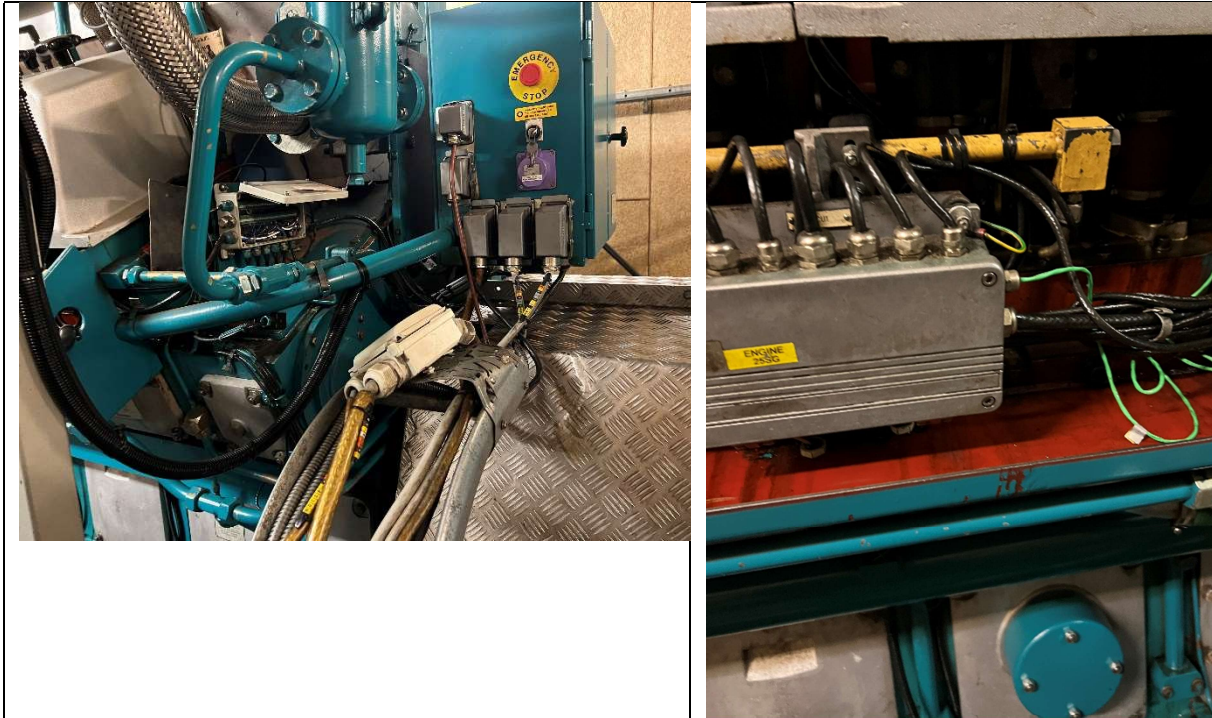
Lube oil filter unit – Good condition.

Pipe connections, fore end – Several leakages in connections noted. Recommend renewing seals.



2.8 Electrical equipment

Electrical equipment was visually intact and was working properly when engine was stopped according to staff on site. MCU Processor card was renewed in 2018 acc. to report and invoice from Wärtsilä DK.



3: Recommendations

3.1 Seal minor leakages where found.

3.2 Carry out 10 000 Hrs service acc. to maintenance guidelines below:

10 000	<ul style="list-style-type: none"> • Inspect all gear wheels in fore-end housing • Check one piston, piston pin and piston ring set • Check all valve mechanisms • Inspect all gear wheels • Check camshaft adjustment • Overhaul turbocharger(s) and replace bearings • Change control valves, PCC gas • Change non-return valve in PCC • Change control valves, MCC gas (exchange system) • Change spark plug extension • Check and clean water circulation pump(s) • Check and clean air starter. Change worn parts 	<p>Cylinder block and crankshaft</p> <p>Piston and connecting rod</p> <p>Cylinder head and valve mechanism</p> <p>Gear case and camshaft</p> <p>Turbocharging system</p> <p>Fuel and ignition systems</p> <p>Cooling system</p> <p>Starting system</p>
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³ According to supplier's instruction

4: Comments

4.1 Only visual inspection has been carried out, to determine internal conditions of engine must be disassembled and critical parts measured and inspected. From what is possible to see on external components and over all condition engine is what to be expected for the accumulated running hours. From information in reports and comments from staff on site the engine has been well maintained and working properly when taken out of service.



ENGINE SERVICE | PART OF MMAB

2022-02-18

X 

Johannes Anvidsson

Service Manager

Signerat av: S-1-12-1-2614920332-1286315706-713667000-2372369488/fda0c570-b432-4583-8d46-03e703221e