MAN Diesel & Turbo
ME-LGI Service experience
Lars Bay – Operation department
ME-LGI
A few components necessary

- FBIV-M
- Hyd pipe for FBIV-M
- Seal & purge pipe
- Control, LGI & purge block
- Sleeve
- Cyl cover
- Supply & purge system

Overview of main LGI Components on engine
ME-LGI
The Mechanical stuff on Engine
ME-LGI
In real life
ME-LGI
extensive troubleshooting
ME-LGI – G50 and S50 methanol engines
Service Experience

Service status:
- 4 vessels from HHI in service
- 3 vessel from MES in service
- Currently approx. 20000 service hours on methanol obtained
- First start up of MeOH operation after seatrial was carried out by the crew alone
- Extensive follow-up is still ongoing

Challenges:
- Broken springs in diesel fuel valves:
- Unstable HC sensors:
- Leakage detection difficult with Nitrogen:
- N2 Leaking MeOH accumulators resulting in damage of membrane
- Damage of sealing rings in FBIV suction valves:
- Broken cut-off shafts in FBIV:
- Micro cracks observed in FBIV atomizers:
Suction valve is the inlet of Methanol to FBIV and seals towards Injection pressure of 600- 700 bars. It can be forced open by a hydraulic signal to empty out remaining Methanol trapped in the FBIV.

The Spindle enters the nozzle and acts as a Cutoff shaft towards the combustion chamber after methanol injection is finished.
New Suction Valve
reduction of seal oil amount

New suction valves installed in existing FBIV
No sealing oil in suction valve.
Seal oil consumption reduced with 75%
Several pipes removed -> simpler maintenance

Pipes removed- after update

new and old type suction valves
ME-LGI
Original FBIV - corrosion and cracked nozzles

Cracked nozzle holes (outside)

Corroded nozzle holes (inside)
Investigation of test nozzle X90CrMoV (stainless steel)

6Aft: no cracks outside
6Aft: inside cracks on drilled hole
6Aft: No corrosion inside- no cracks
6Fwd: No Corrosion- small cracks

New Service test

All Holes to be machined with round edges inside.
Better stainless steel to be tested
ME-LGI
Spindle- acceptable condition

Original problem was most likely due to corrosion in nozzle causing sticking and breakage.
ME-LGI – G50 and S50 methanol engines
Service Experience- sum up

Challenges:

- Broken springs in fuel diesel fuel valves:
- Broken cut-off shafts I FBIV:
- Micro cracks observed in FBIV atomizers:
- Damage of sealing rings in FBIV suction valves:
- Unstable HC sensors:
- Leakage detection is easy:
- N2 Leaking MeOH accumulators resulting in damage of membrane

- 2 + 2 new vessels on order
ME-LGI Next generation
"Simplified" piping on engine
ME-LGI Next generation
Using cylinder cover as guideway

By using the cylinder cover actively the external amount of pipes can be reduced and the overhaul of cylinder units easier.

Preliminary design of LGI cylinder cover

Cylinder cover - cut away
Thank You for Your Attention!

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