





## **MAN Diesel & Turbo**

ME-LGI Service experience Lars Bay – Operation department

## ME-LGI A few components necessary



FBIV-M







Cyl cover



Hyd pipe for FBIV-M



Overview of main LGI Components on engine • Supply & purge system

Seal & purge pipe



• Control, LGI & purge block





#### **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 I FBIV:
- Micro cracks observed in FBIV atomizers:









## ME-LGI FBIV (Fuel Booster Injection Valve)



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













6Aft: no cracks outside



6Aft: inside cracks on drilled hole



6Fwd: No Corrosion- small cracks

#### New Service test

All Holes to be machined with round edges inside.

Better stainless steel to be tested



6Aft: No corrosion inside- no cracks

#### **ME-LGI** Spindle- acceptable condition





## ME-LGI – G50 and S50 methanol engines

Service Experience- sum up





## ME-LGI Next generation "Simplified" piping on engine







### **ME-LGI** Next generation Using cylinder cover as guideway





Preliminary design of LGI cylinder cover

By using the cylinder cover actively the external amount of pipes can be reduced



Cylinder cover -cut away

#### **Thank You for Your Attention!**



Image: Contract of the second seco