

# REFERENCE STUDY, MARIN

Europafilter® gives you the best possible lubricant quality, ensuring less costly break-downs of your hydraulics

Customer:



Application:

Hydraulic Power Unit,  
Bow Hydraulics

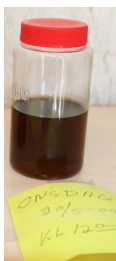


Onboard the ferry, "MF Hardingen" owned by "Tide sjø", one of the Hydraulic power units that operate the bow hydraulic port was overheating and making a lot of noise during operation. There is no oilcooler assembled to the HPU. The solution turned out to be clean lubricants simply by connecting Europafilter to the oilreservoir, giving the lubricant, safe, stable and good operating conditions while in use. A cleaner oilsystem with less wear, friction, energy consumption and oilmist in the machineroom environment is the result. All oil samples are performed from tank drain.

## 20th of May, 2009

### Before treatment NAS 8

The oilreservoir was so hot that it was not possible to hold your hand on the oiltank without burning your hand, 70°C. The oil and surrounding working area has a stinging smell of burned oil. At this high temperature, varnish deposits is building up rapidly within the hydraulic system, creating trouble with valve-manouvers and interfering the hydrostatic balance within oil system. The noise and vibration levels of the hydraulics was high. The noise from the hydraulics could be heard from a 400 m distance. The oil-sample was not possible to see through, even with strong directed light. 48 Fibers each 100ml. from punctured inlinefilters are traced in the oilsample.



## 26th of May, 2009

### After 6 days, NAS 4

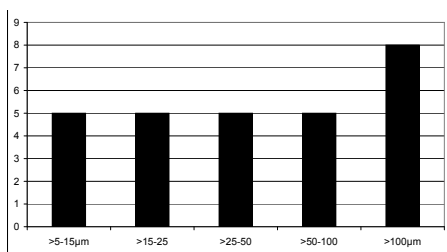
The oilreservoir was cooler, 45°C. Still a little smell of burned oil in the work environment area but less noise and vibrations from the hydraulics. It is now possible to see light through the bottle sample, indicating less micromass in the hydraulicoil. 24 Fibers each 100 milliliters from inlinefilters are traced in the oilsample.



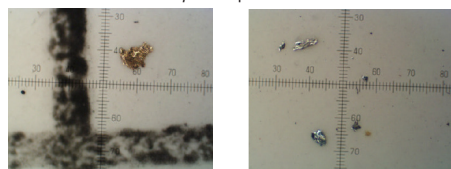
## 7th of August, 2009

### 49 days filtration, NAS 3

The oilreservoir is 40°C. Conditions has improved considerably, making less friction and noise. The cleanliness level of the hydraulics has improved considerably during the period of filtration. No fibers from filters are traced in the oilsample. The hydraulic oil does not smell burned anymore. Due to the reduced operating temperature the viscosity has improved and the lub is now able to "lift" and separate parts from eachother within the hydraulic system. Less wear and noise is the result. The hydraulics is now running very smooth and quietly.

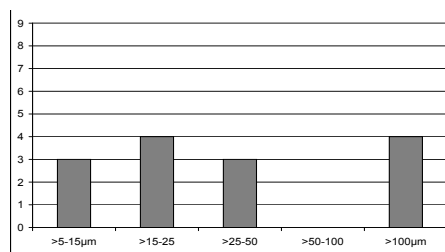


0.45µm milliporefilters

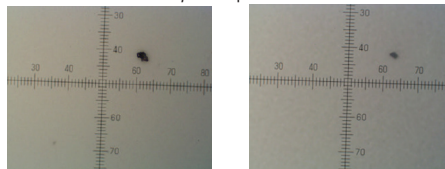


100 x

200 x

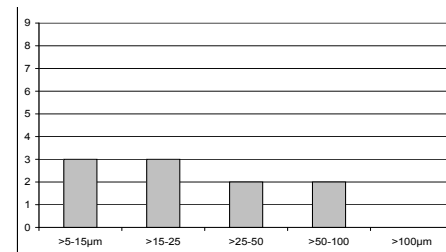


0.45µm milliporefilters

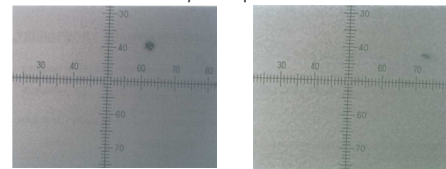


100 x

200 x



0.45µm milliporefilters



100 x

200 x

**Operation temperature: 70 °C**  
**Operation Viscosity: 13 cSt**

**Operation temperature: 45 °C**  
**Operation Viscosity: 28 cSt**

**Operation temperature: 40 °C**  
**Operation Viscosity: 34 cSt**

Conclusion:

A vast amount of contamination is removed from the hydraulic oil system, also micromass not accounted for within a standard oilsample that only counts particles at sizes greater than 5 micron. Varnish deposits are efficiently removed, temperatur reduced, giving stable and safe operating conditions for the hydraulics. We can clearly see less wear from the oilsamples. Still we do recommend also to assemble better tank breathers to the oilreservoir. The goal was to reduce the noise from the HPU unit and this has been successfull. High noise levels from hydraulics often tend to be late stage indicator of errors in the system. The bad operating conditions has been turned around giving also a better environment in the working area for the crew onboard.