Cooling water inlet temperature at scavenge air cooler

As described in a service letter from May 2014, see Encl. 1, and in our to-whom-it-may-concern letter issued in September 2014, see Encl. 2, the performance of MAN B&W two-stroke engines is improved when operating with a reduced inlet temperature at the scavenge air cooler.

It has always been our recommendation to use 10°C as the set point for the cooling water. This recommendation was highlighted in our service letter from May 2014 and, as described in our subsequent to-whom-it-may-concern letter, we even changed the recommendation to a requirement because of the cost benefits experienced from testing in service.

Benefits of lowering the inlet temperature

Basically, the lower temperature results in two operational cost benefits.

- The specific fuel oil consumption is reduced, as illustrated in Fig. 1.

- The wear on the cylinder liner and the piston rings will be reduced as illustrated in Fig. 2, alternatively the wear can be maintained by reducing the cylinder oil dosage.

Drawbacks from the new lower temperature

The cooling system used for the main engine is often also applied for cooling of other components. These components are not always able to operate with a 10°C inlet temperature. This means that some adaptation of these components or the cooling water system is needed. The tank capacity for drain water may also need adaptation.

The potential for saving pumping energy is reduced if flow control of seawater pumps is applied, for example by means of frequency converters.

Furthermore, the lower SFOC will cause a slight reduction in the steam production, thus resulting in occasional increased boiler oil consumption.

![Fig. 1: Reduction in specific fuel oil consumption](image-url)
Fig. 2: Correlation between central cooling water set point temperature and iron in the drain oil (S80ME-C9 engine at 50% load)

Service tests have confirmed a significant increase in iron content at conditions corresponding to 36°C central cooler set point.

Outlook

We expect that the above drawbacks may be encountered during a transition period until a new system standard accommodating the new 10°C requirement has been gradually implemented, after which only the benefits will exist.

Nonetheless, on yard request, we can dispense with our requirement for a 10°C temperature set point.

Enclosures

[1] SL2014-589/MTS – Cooling water inlet temperature at scavenge air cooler

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