Market Update Note

Fuel Oil Optimisation of Small Bore GenSets

MAN Diesel & Turbo is continuously adapting our engine programme to the changing market conditions.

At the request of various shipowners, we have developed and introduced a new IMO Tier II/III compliant tuning method for GenSets which mostly operate below the normal 75% MCR.

Tuning method – part load optimisation

The new tuning method is referred to as part load optimisation (PLO), and it is recommended for GenSets which mostly run below 75% MCR.

Traditionally, GenSets are fuel oil optimised at 85% MCR, but with PLO tuning, the engine performance is optimised at approx. 60-65% MCR, which ensures optimisation in the low- and part-load areas.

The most obvious benefit of applying PLO is the fuel oil saving of, typically, up to 5 g/kWh, depending on engine type/model and load point.

Furthermore, thanks to the improved combustion proces resulting from the optimised nozzle ring in the turbocharger, valuable engine components, such as pistons, fuel equipment, valves and T/C nozzle ring, will be operating under optimal conditions at the given load.

The GenSets are fully compliant with IMO Tier II, even though the fuel oil consumption is reduced in the low and part load area, as a fuel oil penalty is imposed in the high load range.

However, a fuel oil penalty will rarely occur, since it is unusual that GenSets operate beyond 75% load, because the power management system will engage an additional GenSet when more power is needed.
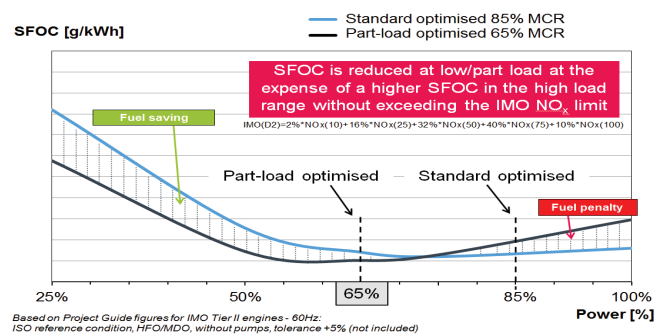

Fig. 1: SFOC-curves from first delivery of PLO

PLO will give the same relative advantage when applied in combination with SCR-systems for IMO Tier III compliance.

Design changes:

- New turbocharger arrangement for optimised part-load operation
- Blow-off arrangement on charge air receiver to prevent "over-boosting" of engine at MCR operation
- New valve cam for optimised valve overlap for SFOC optimisation
- Change of timing for delayed injection optimisation of SFOC vs. NO_x emissions

For further details about our marine GenSets click here: http://marine.man.eu/gensets/marine-gensets