

Two-stroke

Copenhagen, October 2025

Action code: AT FIRST OPPORTUNITY

Change-over between fuel oil and gas operation

for operation on ULSFO, VLSFO, biofuel, HSFO, methanol, and methane

Concerns

Owners and operators of Everllence B&W two-stroke marine combustion engines.

Types: G80, G90, G95ME-GI, and LGIM engines

General guidance

Mark 10.5 dual-fuel of the above-mentioned engine types.

This procedure may also benefit LGIP engines and smaller bore dual-fuel engines down to 50 cm bore.

Summary

To reduce the risk of scuffing in dual-fuel engines, we recommend following a revised procedure when switching between fuel types during operation. Fuel transitions involve significant changes in combustion characteristics, engine performance parameters, and thermal loading of the combustion chamber components. At high engine loads, fuel changes can also create rapid and simultaneous cylinder pressure changes. Combined, these factors place considerable stress on the piston ring–liner tribological system, increasing the risk of scuffing during the change-over process.

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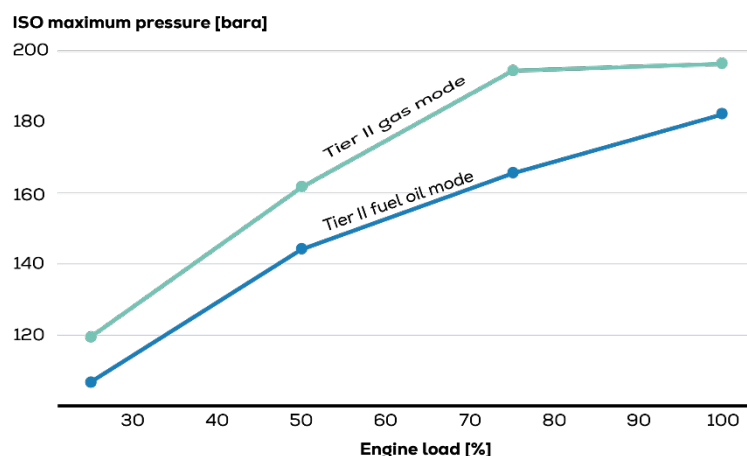


Fig. 1: Pmax curves of the two different running modes

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Change-over between fuel and gas operation

Due to rapid cylinder pressure changes when shifting from one fuel type to another at loads above 50 %, we introduce the procedures below for change-over until a permanent solution is ready.

There are three main reasons for introducing this procedure:

1. To reduce the absolute jump in Pmax due to the difference in the ECS parameter table for the specific running mode, as shown in Fig. 1.
2. To separate the load-up, which leads to changes in the thermal balance and, in itself, is a scuffing "risk" factor from the change-over process. Thus the 30 min. steady load.
3. To give the engine more time to "adapt" to these changes in Pmax, combustion characteristics, thermal load, etc., coming from the fuel change (by subsequently adding 30 min. steady load).

Fuel oil to gas operation:

1. Reduce the engine load to low-load, i.e. below 50% load, when changing running mode.
2. When the desired load has been reached, the engine should be kept at a steady load for 30 minutes before commencing the fuel oil to gas change-over.
3. When the mode change has been completed, the load should be kept steady for another 30 min before increasing the load to the desired service load.

In case of a gas shutdown at loads above 50%:

1. Troubleshoot the gas shutdown, when ready to continue on gas operation, go to pos 2
2. Reduce the load to low load no greater than 50%
3. Operate the engine at a steady load for 30 min.
4. Change back to gas
5. Operate the engine at a steady load for 30 min.
6. Increase the load.

This procedure reduces the risk of experiencing rapid cylinder pressure changes, causing stress on the piston rings during change-over. It is up to the engine builder to decide if the procedure should be applied during sea trial, but we strongly recommend it.

The graph in Fig. 1 shows the two different Pmax curves when changing running mode. We recommend that you avoid changing running mode when the engine load is above 50 % load, as it may result in rapid cylinder pressure changes.

This guideline is temporary and will become obsolete when a permanent solution has been implemented.

Yours sincerely
Everllence



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