

Market Update Note



17 August 2018

Fuel cost reductions with turbocharger cut-out systems

Updated sales and application strategy for potential FiTS2 projects

For decades, turbocharger (T/C) cut-out systems and sequential turbocharging have been known as very simple but effective methods for securing optimal specific fuel oil consumption (SFOC) during part-load and low-load operation, not only for large two-stroke engines but for turbocharged engines in general.

MAN Energy Solutions (MAN ES) has extensive experience with T/C cut-out systems and has installed such systems on many engines, especially as retrofit solutions on engines in service but also on new engines.

Furthermore, MAN ES has made T/C cut-out the operational standard for Tier III engines with exhaust gas recirculation and a cylinder bore larger than or equal to 80 cm.

Lately, ABB has started promoting FiTS2 systems quite intensively. Technically, FiTS2 does exactly the same as existing T/C cut-out systems specified by MAN ES. Both systems will ensure the same engine performance (SFOC, exhaust gas amount and temperatures).

In addition to the traditional T/C cut-out function, the FiTS2 system offers dynamic T/C cut-out. In other words, the FiTS2 system can change automatically from one to two T/C-operation or vice versa at approx. 50-70% engine load, whereas the T/C cut-out system only offers manual change between one and two T/C-operation (or between two and three T/C-operation, etc.) at low load.

MAN ES has been reluctant to introduce dynamic T/C cut-out systems on large bore two-stroke engines due to safety considerations. It is our evaluation that a dynamic T/C cut-out system increases the risk of T/C overspeed,

especially at high load but also if the T/C cut-out valves are not operating as expected due to malfunction.

MAN ES can install FiTS2 systems, and we will benefit from this system in the same way as other two-stroke engine makers. However, MAN ES installations of FiTS2 systems must be based on fully validated safety evaluations.

According to the latest information, ABB offers the following in connection with FiTS2 systems.

- ABB delivers T/C casings without cut-out valves directly mounted on the casing.
- ABB promotes FiTS2 (or T/C cut-out) as a charging system for improved part-load operation on two-stroke engines with two or more turbochargers. ABB supports and consults owners with an interest in such systems. Commercially, ABB does not offer nor deliver cut-out valves for engine projects.
- ABB advises on T/C selection, T/C specifications and features required for a FiTS2 system to achieve optimum results. The T/Cs are delivered by ABB or ABB's licensees to the engine builders.

A FiTS2 solution is not limited to T/C integrated valves (mounted directly on the T/C flanges). T/C integrated valves will be available from Samson Leusch once they have been approved by the engine designer. It is the responsibility of the engine builder, engine designer and Samson Leusch that this procedure is followed.

FiTS2 has to be controlled by the engine control system. Since the T/C switching point has to be defined and the fuel

Market Update Note



consumption must be confirmed, FiTS2 projects can only be realised in close cooperation with the engine designer and ABB.

As previously, and as an alternative to Samson Leusch, the engine builders can select valves from known and approved suppliers.

MAN ES believes that the above information from ABB leaves the complete assessment of FiTS2 systems with the engine maker. Upon request MAN ES can evaluate if the development of a FiTS2 system will be more cost effective for the shipowner than our fully validated T/C cut-out system.

For more details:

MAN Energy Solutions
Tegholmegade 41
2450 Copenhagen SV, Denmark
Phone +45 33 85 11 00
Fax +45 33 85 10 30
lsp@man-es.com
www.marine.man-es.com/