Implementation of new technologies for LNG Carriers (X-DF with MRS-F®)

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The LNG carrier segment is perceived as very innovative and safe. New technologies are being developed to address operational issues such as low boil off gas (BOG) rate, BOG handling, propulsion efficiency, etc. One of these novel developments is the two stroke dual fuel (DF) engine that is seen as a reliable and efficient solution for LNG carriers with twin skeg. Considering the low fuel gas consumption of these DF engines, different solutions have been proposed to handle the BOG during navigation. Flexible designs based on partial (50% NBOG) or full (100% NBOG) reliquefaction are proposed. DSME have developed novel arrangements and components to offer competitive designs increasing safety and reducing operational risks.

To offer the most reliable and efficient design, novel technologies have been implemented in a new LNG carrier DSME design of 180,000 cubic meters in four tanks. Two 5X72DF main engines and full reliquefaction system based on compact printed channel heat exchangers (PCHE), J-T valve(s) and methane refrigerant process with expander-compressor were considered. Active BOR is 0.03 %V/day with full re-liquefaction system (MRS-F®) using NBOG. Bureau Veritas has been selected to class the ship in order to grant the required safety level.

The systems of PRS® and MRS-F® have been tested successfully during the Gas Trials and the result of the capacity of the reliquefaction system was higher than expected. The Vessel was well delivered to the Owner and Charterer.