THE USING OF BOIL-OFF GAS (BOG) IN 
COMBINED CYCLE PROPULSION 
FOR LNG CARRIER

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Abstract

LNG carriers is the most reliable vehicle for LNG’s transportation in the world. In operation, each LNG carrier would result boil-off gas due to expansion of cargo tank. The average amount of BOG that can be produced is 0.15% from total volume of cargo tank capacity per day. Therefore, there is a big opportunity in the utilization of BOG for fuel in the LNG carrier, resulting in fuel savings. One of the Prime mover’s type that can take advantage from BOG is the Combined Cycle Propulsion Plant (CCPP) of gas turbine and steam turbine, with a gas turbine which has a dual-fuel technology and HRSG as a tools for generate heat energy from the gas turbine exhaust gases. Increased efficiency and able to use the BOG as a fuel will be able to reduce the consumption of Fuel oil.

Studies done by comparing the fuel consumption of the LNG carriers with a conventional steam turbines, compared with the LNG carrier using the CCPP. CCPP eventually be the best option in terms of high utilization of bog, efficiency and fuel use. For 138,000 m3 LNG carrier the same, with MDO fuel, CCPP can save the fuel cost up to U.S. $ 46,117.80 per day, and for CCPP with the utilization og BOG, the fuel savings up to U.S. $ 56,472.70 per day.

Keyword :LNG Carrier, Boil-off gas, CCPP, Gas turbine, Steam turbine, HRSG, Fuel Savings