

Sensitivity Analysis for Optimal Recirculation Operating in Liquefied Natural Gas Receiving Terminal

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The imported LNG is transported from LNG ship to storage tank and stored before send-out in LNG receiving terminal. Boiled-off gas (BOG) is generated due to heat flow through the temperature difference in transport pipe and storage. The generation of the BOG is able to cause serious problems in LNG terminal. In order to reduce this problem, when there is no unloading a small amount of LNG from storage tank are circulated in unloading pipe line to maintain the condition of the cryogenic piping. The recirculation flow rate that determines temperature of pipe, greatly affects the amount of BOG inflow to storage tank is an important process variable. Hence the operations of the BOG compressor and HP compressor which handle the BOG in storage tank are affected recirculation flow rate. The recirculation flow rate makes a trade-off of operating costs of BOG/HP compressor and recirculation pump which send the recirculation flow. This study proposes the optimal recirculation flow rate considering the operating costs of the BOG/HP compressor and pump. Also BOG handling method is different depending on the amount of send-out because the BOG is condensed through LNG transporting. Therefore the optimal method of recirculation flow rates depending on the amount of LNG send-out is proposed.