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PEP Review 2015-13

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## Abstract

Offshore cryogenic liquefaction to product liquefied natural gas (LNG) offers an attractive means to monetize the stranded gas fields in the deep seas and to stop flaring of associated gas produced along with oil, among other advantages. However, there are potentially many commercial and technical challenges ahead. Expander processes and several of its variations need to be considered for offshore LNG applications.

Expander cycles using nitrogen as the refrigerant have all-gas service and no refrigerant storage, which decrease the plot area requirement, and are more suitable for desirable heat exchanger core arrangements and modularization since most surface area is dedicated to a gas-to-gas service. However, the while the process efficiency is the lowest for the expander process, it is possibly the safest process for the $N_2$ expander process.

For now, an operational project has yet to prove the technology. There are many aspects of the technology that have yet to be worked out and proven as well, such as the offloading equipment needed to transfer LNG from the floater to LNG carriers.

In this review, the first of its kind, we explore the technologies and economics for production of LNG offshore on a small scale. This review will be useful for those who are considering entry or are currently involved in building projects that will operate from a floating maritime platform for the monetization of stranded gas or shale gas resources offshore.

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