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TECHNICAL AND ECONOMIC COMPARISON OF RICH METHANE STREAM LIQUEFACTION AT DIFFERENT SCALES: HOW DO BIOGAS TREATMENT AND LIQUEFACTION COMPARE WITH STANDARD NATURAL GAS LIQUEFACTION?

Natural gas liquefaction plant historically deals with production sufficiently large to allow economy of scale, with some exceptions such as Boil-Off-Gas (BOG) re-liquefaction application. However, situation for the last past five years has significantly changed with the need for green fuel notably for heavy duty transportation: in the vicinity of the biogas development, liquid biomethane projects, as small as few thousands tons of yearly capacity, have been booming, together with the number of new process licensors, especially in Europe and America. This study aims to compare both technically and economically the most recent biogas treatment and liquefaction processes with standard natural gas processes. First, the precise scope of process comparison is defined with detailing the difference in terms of feed gas characteristics as well as final liquid product specifications. Second, a process comparison is provided thanks to a new classification based on a clear separation between purification process, cooling cycle and of feed-product stream management. Attention is also paid on some key equipment description, such as compressor and heat exchanger, at different scale. Third, the final cost of production is analyzed through a comparison of the cost breakdown : the scale effect of equipment cost is investigated as well as the evolution at different scales of the ratio between equipment and installation cost.

To view the full conference agenda, visit <https://www.lng2023.org/lng-programme-overview>