This abstract will be presented during LNG2023 conference on 10-13 July in Vancouver, Canada among many other innovative projects, ideas and outlooks. LNG2023 will provide a unique platform for the global LNG industry and key stakeholders to discuss, debate, and showcase the latest industry developments and opportunities.

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POWER GEN PLANT ARCHITECTURE FOR EFFECTIVE POST COMBUSTION CARBON CAPTURE, RECAP

Carbon dioxide represents the largest fraction of greenhouse gases which are a major cause of climate changes and increase of the environment temperature. Conventional power gen plants burning fossil fuels play a major role in CO2 production. Based on exiting technology, Baker Hughes studied a specific combined cycle (ReCAP) to increase flue gases CO2 concentration making the capturing process easier and less expensive regardless of the capturing technology. The system is entitled to increase the CO2 content in the flue gas at the HRSG stack up to 8.2% mol before entering in the capture system, far beyond the typical ~3.5% mol a GT has. The combined cycle study has been done at ISO condition and coupled to a Chilled-Ammonia Process (CAP). The combine cycle and the chosen architecture of (HRSG) are also capable to generate the electricity and the heat power for the capturing process (~2.5 GJ per captured Ton of CO2).
The simulation was done considering building blocks composed by one LM9000, one Steam Turbine and one HRSG equipped with post firing and external recycle line. A case study considered 4 blocks to simulate 600 MW power island feeding electricity and thermal heat to a 10 MTPA eLNG liquefaction plant and the CAP system. The plant simulations show a CAP efficiency pretty much stable; the available power is double respect to a standard combined cycle solution made by LM9000 with much smaller plant size reaching a reduction of the overall total life cycle CO2 footprint