

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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3, 2, 1 ... K, NUCLEATION! OR RECENT IMPROVEMENTS IN ENHANCED HEAT TRANSFER IS FURTHER REDUCING TEMPERATURE APPROACHES IN LNG PRE-COOLING HEAT EXCHANGERS

Since the first greenfield deployment for Qatargas II in 2005, the authors' dual enhanced tubes have gone on to equip the precooling exchangers of 160Mtpa of LNG capacity in operation or under construction, demonstrating highest level of reliability and outstanding performances. All applications to date have been on APCI's propane precooled MR processes. In a world, which suddenly became thirsty of LNG, existing and new facilities are looking for any opportunity to push further efficiency, offering highest production rate at lowest power consumption, while decreasing carbon footprint and achieving attractive CAPEX. Wieland and T.EN have engaged in a state-of-the-art development programme including:

- a unique test bench (KoMeT-1), that can evaluate boiling performance of new surfaces at very low heat flux, particularly tuned to C3/MR precooling conditions,
- liquid vapor separation within the evaporator shell, generally upstream the compressor which helps to reduce the chiller size and the fluid inventory.

The paper will use operational feedback to explain how enhanced tube technology supports heat transfer performance maximization at the lowest heat flux. The second part will present enhanced chiller design keeping control over entrainment. Finally, a real case study targeting to maximize LNG production will show for a C3/MR precooling chilling train, the advantage to reduce the cold approach from 3°C to 1°C. The presentation will also detail the impact on CO₂ emissions.

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