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Brazed Aluminium Heat Exchanger's Reliability Improvement by Driers Sequence Change

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In LNG plants, Mol-Sieves Dehydration units ensures treated dry sweet gas ready for liquification process. It ensures water < 1 〖mg/Nm〗^3and Total Sulfur < 11 ppmv. This operation follows a sequence and switch overs (SWO) from Adsorption (ADS) to Regeneration (REG) to regenerate Mol-sieves when saturated with impurities.

A resultant of SWO from REG to ADS is temperature and compositional swings in downstream NGL unit, as fresh warm Mol-sieve bed joins ADS it tends to co-adsorb hydrocarbons which leads to leaner gas compared to other dryer beds in ADS. Consequently, this swing will cause an energy and mass imbalance across BAHX, leading to exceedances in ALPEMA temperature rate of change (TROC) > 1 ℃ contributing to equipment failure over long run.

REG sequence modified to include mediator step to close the wide operating gap in temperature and pressure between ADS and REG. High pressure purge with colder Feed-gas combined with 5 bed adsorptions will ensure cooling the dryer bed further and saturate Mol-sieves with hydrocarbons before lining up for ADS.

Testing this method showed substantial improvement in reducing BAHX temperature rate of change by >~70% due to reduction of Temperature and Compositional swings generated with Dryers SWO Allowing the process to meet ALPEMA standard for TROC. This enhancement will help extend equipment life by~1.1 year. Besides, eliminating the purge gas flow to fuel gas system and turning it into extra LNG production and improving recovery of propane gives ~37 MUSD for Tr-6/7 in S3 over lifecycle.

All data backed up by test results and economics verified by PPMID with CFROI 1287%.

To view the full technical programme, visit https://lng2026.com/technical-programme

This abstract will be presented during LNG2026 conference on 2-5 February in Doha, Qatar