

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.



#### LEAD AUTHOR

**sunil solanki**  
Senior Process Engineer, Qatargas



#### CO-AUTHORS

None

#### HYDRATE FORMATION CAUSE AND LEARNING FOR LIQUEFACTION UNIT

In the LNG producing facility, Liquefaction unit is a key processing section and essentially focus area for uninterrupted LNG production. Most of the impurities in natural gas such as moisture, acid gas, mercury and heavy hydrocarbons are removed upstream of Liquefaction unit, to avoid freezing issue when natural gas is cooled from ambient temperature to -150degC. The Main Cryogenic Heat Exchanger (MCHE) is the spiral wound tube heat exchanger in which natural gas gets cooldown in essentially three sections named as bottom, middle and top tube bundle.

One of the LNG trains at Qatargas experienced the sharp increase in differential pressure at middle bundle of Main Cryogenic Heat Exchanger (MCHE) when it was in normal operating mode and eventually forced to shut down the facility. Thorough field and process parameters investigation accessed the various potential causes such as CO2 freeze out, hydrate formation, heavy hydrocarbon freeze out etc., This exercise revealed that the intermittent slippage of moisture from one of the natural gas driers and subsequent rapid hydrate formation and nucleation phenomena was the main cause of blockage in middle tube bundle and its upstream strainer. The vital learnings from this event were thereafter implemented to proactively mitigate issue for future.

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