

Comprehensive Strategies for Flared Gas Recovery during Train Start-up at GL1Z

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In a proactive move to significantly reduce gas flaring, SONATRACH's GL1Z Plant has successfully implemented a new system to recover flared gases during the startup of a processing train after a shutdown. This initiative directly addresses upcoming Hydrocarbons Law provisions, which will impose a flaring tax based on the volume of natural gas flared (per normal cubic meter, Nm³).

Technical Overview and Simulation Results

The feasibility of this innovative modification was confirmed through a two-part simulation study:

Common Header Pressure Drop Simulation: This crucial first step, performed using Pipe Flow Expert software, analyzed pressure drops within the Common Header. Understanding these drops is vital for ensuring efficient gas flow from a starting train to an operational production train. Based on an estimated average gas composition of a starting train at -40°C, the simulation revealed that the distance between sending and receiving trains inversely affects reinjection pressure. For instance, the greater the distance, the lower the reinjection pressure, impacting gas transfer efficiency. Increasing the sending train's pressure from 40 Barg to 43 Barg proved beneficial, enhancing gas reinjection pressure upstream of the receiving train's washing tower. The most favorable scenario for reinjection pressure is between adjacent trains, while the least favorable is between trains 100 and 600.

Aspen Hysys Dynamic Simulation and Impact Assessment: The second part of the simulation, conducted using Aspen Hysys in dynamic mode, focused on the impact of reinjected gas parameters—specifically pressure, temperature, and composition—on the stability of the receiving, operational train. This analysis also considered the flow rate of the recovered gas from the starting LNG train.

The simulations conclusively confirmed the feasibility of recovering flared gases through the existing 6-inch common header and a designated flared valve during the startup of an LNG production train, directing them to another operational train.

Successful Implementation: Train 500 Startup, December 24, 2022

The effectiveness of this modification was demonstrated during the startup of Train 500 on December 24, 2022. The gas recovery operation was executed safely, with no anomalies or deviations reported. Notably, zero normal cubic meters (0 Nm³) of gas were flared through the designated valve, which remained closed throughout the startup until the Treated Natural Gas was safely transferred to the main cryogenic heat exchanger. In total, approximately 165,000 Nm³ of gas were recovered during the six-hour startup of Train 500.

This successful implementation of the flaring gas recovery modification during train startups represents a significant step forward in SONATRACH's commitment to environmental stewardship, directly contributing to the reduction of greenhouse gas (GHG) emissions and the company's carbon footprint.

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