

Reducing Energy Consumption and GHG Emission by Integration of Flare Gas with Fuel Gas Network in Refinery

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Abstract : Gas flaring is one of the most GHG emitting sources in the oil and gas industries. It is also a major way for wasting such an energy that could be better utilized and even generates revenue. Minimize flaring is an effective approach for reducing GHG emissions and also conserving energy in flaring systems. Integrating waste and flared gases into the fuel gas networks (FGN) of refineries is an efficient tool. A fuel gas network collects fuel gases from various source streams and mixes them in an optimal manner, and supplies them to different fuel sinks such as furnaces, boilers, turbines, etc. In this article we use fuel gas network model proposed by Hasan et al. as a base model and modify some of its features and add constraints on emission pollution by gas flaring to reduce GHG emissions as possible. Results for a refinery case study showed that integration of flare gas stream with waste and natural gas streams to construct an optimal FGN can significantly reduce total annualized cost and flaring emissions.

Keywords : flaring, fuel gas network, GHG emissions, stream

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