Performance evaluation of an LNG analyzer by mathematical modeling and experiments in a pilot rig

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Introduction and background:

To run an operation efficiently, it is required to extract real-time data with representative sampling. Representative sampling is collecting a small amount of the mainstream precisely to identify the characteristics of a batch or process stream. In other words, to monitor the process and control the quality, both to optimize the process and ensure the properties meet commercially required specifications (value of transactions).

By considering the nature of sampled materials and operation conditions, different sampling techniques have been developed appropriate to the required uncertainties of the measurements.

Problem description and objective:

Moreld Flux is developing improvements to the design of a system for sampling and analysis of the LNG. This project is to optimize the sampling system and obtain a representative LNG sample before sending it to a gas chromatography (GC) analyser or to allow a manual sample or composite samples to be taken as representative of cargo transfers. The vaporizer part of the sampling system is modelled thermodynamically based on SRK EoS. Therefore, instrument performance and insulation requirements can be evaluated. Apart from thermodynamic and mathematical modelling, some experiments are also to be performed in a pilot rig to compare experimental results and simulation outputs.
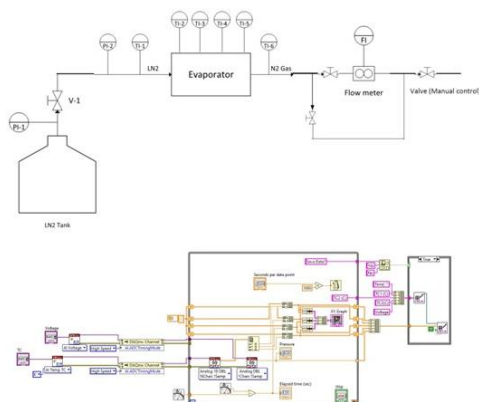
Candidate:

Javad Tavakolifaradonbe

Telephone:

48 668 430

Email:

h.javadtf@yahoo.com