Abstract

Objectives/Scope: Sustainability is a strong and accelerating business driver. This paper will cover several key sustainability drivers; namely, energy and utility use in gas processing, water use, sulfur recovery, and emissions minimization. Most midstream operations were not designed with optimized sustainability in mind. However, effective use of data, models, and operator KPI dashboards, provide a leadership ability to improve sustainability.

Methods, Procedures, Process: This paper will describe an integrated approach, from wellhead to sale gas, to optimizing the key sustainability drivers. Starting from an asset’s currently available data streams, an architecture and solution will be described that is suitable for operating, brownfield and greenfield assets, that accomplishes monitoring of key sustainability metrics as well as optimization of the midstream asset to optimize between the parameters of product value, energy use optimization, water use optimization, emissions, and safety. The paper will discuss case studies from organizations such as ADNOC, KOC, and ConocoPhillips as well as a recommended adoption strategy. Key components that will be described include; complete utility optimization model that can be run online or offline, energy integration model, process simulation model, and risk model. Future near-term innovations that will further expand the opportunity for improvement will be touched on.

Results, Observations, Conclusions: This approach typically can achieve 1-5% incremental product value, 5% energy reduction, 20% reduced water use, and 5-10% reduced carbon footprint. This will be validated through several case study approaches.

Novel/Additive Information: What is new in this approach is the extent to which the different models and methods are integrated to enable what-if tradeoffs between economic and sustainability driving parameters.