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OPTIMISING EFFICIENCY IN GAS PROCESSING

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What are the current challenges facing operators in the gas processing business?

What operators encounter today is a threefold challenge: lowering operating costs for gas treatment while maintaining optimal cash flow and staying compliant with evolving regulatory requirements for CO₂ and SO₂ emissions.

In the onshore gas processing market, it all comes down to decreasing the total cost of ownership through the deployment of easily scalable technologies that can handle variable feed gas conditions.

For offshore gas processing, the size, footprint and weight of gas processing systems are of high importance as this space-constrained market continues to look for more compact solutions.

In both markets, a new challenge has recently emerged: cost-effectively recovering sour gas for enhanced oil recovery while reducing emissions in compliance with tightening regulations.

Apart from technology, staged field development plays a significant role in cash flow optimisation. It is critical to design a facility that is in tune with today's reservoir production profile but can easily adapt to future field requirements. The key is reservoir fluid characterisation and modeling throughout the life of the field. This enables operators to efficiently allocate capital expenditure by minimising operating expenses and downtime. Operators avoid costly underutilisation, which locks up capital, by building a scalable facility from the start with the capability for future upgrades and modifications as production changes.

How do new technologies contribute to optimising operational efficiency in the hydrocarbon recovery cycle?

New technologies have a huge impact on operational efficiency and gas processing economics in general. Because the process of cleaning, separating and treating raw natural gas begins at the wellhead, a thorough understanding of the reservoir dynamics, including fluid properties and the composition and location of underground deposits, is essential to an optimal outcome. This



The Schlumberger OneSurface reservoir-integrated production system connects the subsurface with the surface facility, enabling the operators to accelerate time to first gas. (Image courtesy of Schlumberger)

knowledge becomes all the more important when removing contaminants, including water, and processing H₂S—all of which must be handled in conformance with strict safety and environmental requirements.

In offshore gas processing, new approaches for gas treatment have demonstrated their ability to improve efficiency and maximise project economics. Using membrane technologies such as CYNARA* acid gas removal membrane systems has completely transformed gas monetisation by lowering opex and footprint requirements, which cannot be achieved with conventional processing techniques, such as amine sweetening. Additionally, unlike amine-based treatment, which involves significant solvent use that in turn builds operational complexity and poses an environmental compliance burden, membrane technology does not require any chemical consumables. Another example of the implementation of new technologies that lower gas treating costs is the THIOPAQ O&G biodesulfurisation system—a cost-effective, reliable, robust and environmentally friendly solution for H₂S removal from natural gas. This technology helps decrease treating costs by leveraging process dynamics compared with conventional approaches.

Finally, optimised operational efficiency depends on having access to a broader

portfolio of state-of-the-art gas processing technologies coupled with digital enablement to efficiently address the inevitable various processing challenges during production.

What value do the latest innovations in gas processing bring to the industry?

The latest innovation in gas processing that brings high value to the industry is the digitally enabled, reservoir-connected production facility.

The OneSurfaceSM system connects subsurface to surface from design through operations. The system is fully connected and digitally enabled for asset optimisation. During the production phase, the intelligent connected system uses data analytics, process modeling and automation to increase productivity by

maximising uptime.

The first layer is prognostic health monitoring of the individual processing units, which plays an integral part in full process train performance optimisation. Complete automation feedback loops drive the efficiency of the entire production facility, ultimately maximising hydrocarbon production at export quality.

What is Schlumberger showcasing at Gastech?

At Gastech 2018, Schlumberger is showcasing its surface production systems portfolio, specifically a complete integrated solution, from subsurface through surface facilities with universal digital enablement via a process-focused suite of applications in coordination with the DELFI* cognitive E&P environment. Two Schlumberger-authored technical papers will be presented at the conference. One focuses on unique dual-core acid gas removal membrane technology with a case study at a Southeast Asian gas plant. The second paper features a new axial cyclonic inlet device that enables recovery of 99 per cent of the liquids in the separator.

We look forward to sharing our positive outlook on the industry and the vision we bring to gas processing with conference participants at Schlumberger Booth C117.

**Mark of Schlumberger*