



Blue Gentoo

CASE STUDY 02

Detected Hydrates Formation - Reduced Hydrates Inhibitor Use (AA-LDHI)

Despite AA-LDHI use, the client wanted assurance hydrates were not forming in the production system.

Hydrates management was optimised for night time; significantly reducing OPEX.

HydraSENS® can detect the formation of hydrates without the need for pressure and temperature measurements.

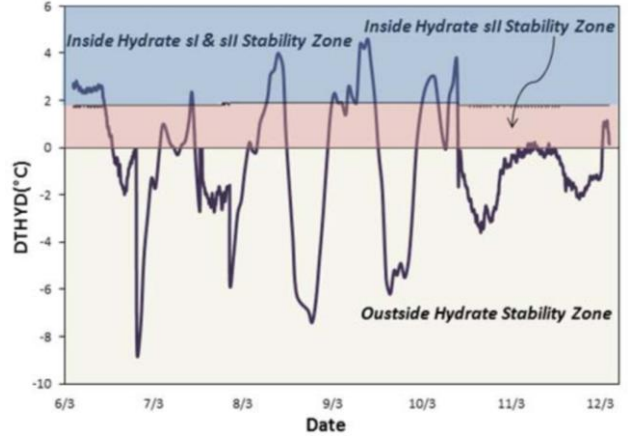
DIGITAL
GAS HYDRATE
MANAGEMENT

SYSTEM Sour gas condensate asset, South-Western France

SITUATION Increasing water-cut production

Hydrate formation at separator outlet

OUTCOME Inhibitor dosage rate reduced by over 50%



SITUATION AND CHALLENGE

Meillon is a mature sour (11% mole H₂S) gas condensate on-shore field and part of the giant sour gas LACQ field in South Western France. One of its producing wells, LANOT4 well, had GCR (Gas Condensate Ratio) of 14,000 vol/vol and a 50% water cut with 1% salinity (NaCl equivalent). A buried 10" flowline transported the well stream 1.6 km from LANOT4 to a separator whose internal conditions could be inside the hydrate stability zone during the mild winter seasons.

During the winter season of 2012/2013, operating conditions were within the hydrates P&T zone, with the separator outlet line blocking up regularly. Continuous injection of Anti-Agglomerant (Low Dose Hydrates Inhibitor), as a hydrates plug prevention strategy, was implemented at the wellhead to ensure well production.

The client wanted more assurance on the robustness of their hydrates management strategy, and questioned if any hydrates could form in the gas-condensate-water-AA system, even though no blockages occurred, nor signs of hydrate crystals at the receiving facilities being evident. The client decided to try HydraSENS®, a new technique to detect hydrates formation, and optimise their inhibition strategies thereafter.

SOLUTION

When hydrates begin to form, changes in the composition of the gas phase occurs. Stronger hydrate formers migrate from the gas phase into the aqueous phase where they are trapped, leaving behind a changed gas composition. HydraSENS® detects these changes as soon as they occur, providing ample time for any risk mitigation (it can do this in the absence of pressure and temperature measurements). Initial tests showed the client, that it would be a useful method for detecting the early signs of hydrates formation.

HydraSENS® measurements were conducted at the outlet of the separator on Meillon field and determined that propane and iso-butane migrated from the gas phase at night time but were released from the aqueous phase during the day time. This showed that, on this asset, hydrates did not form during the day time but only at night.

RESULTS

Hydrates inhibition using AA-LDHI on the Meillon field, was optimised and inhibition during the day time reduced and stopped with confidence, leading to significant reductions in OPEX.

