Methanol Injection Optimisation Using OLGA Simulation

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EFFICIENCY HUB

1. Problem Statement

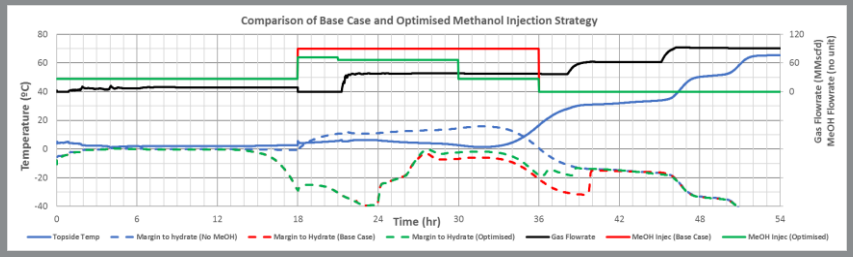
The use of methanol as a hydrate inhibitor in wells/pipelines is strictly controlled by Ineos for all users of the Forties Pipeline System due to the potential damage that can be caused to catalysts and effluent plant. If an operator causes the overall FPS methanol dosage to exceed the limit of $2m^3$ / day, it may be subject to a charge of up to £2m. This therefore leads operators to wait until a timeslot for methanol injection is allocated causing delays in start-up and the subsequent losses for deferred production.

2. Aims

Optimise methanol injection volumes required for start-up operations in subsea wells/pipelines to reduce operator contribution to overall FPS methanol injection thus facilitating the swifter approval of methanol waiver permits and reducing deferred production.

3. Method

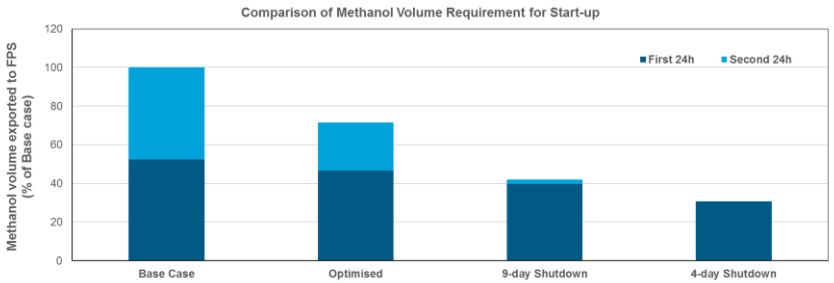
Traditional approaches use steady state analysis to calculate methanol injection volumes. Atkins developed a novel methodology combining OLGA transient simulations, inhibitor tracking and the latest equations of state to optimise the volume of methanol required during start-up operations. This provides a variable methanol injection rate which minimises the hydrate temperature margin along the pipeline.



4.Impact

The proposed methodology has been used to optimise methanol injection for one of the most challenging and strategically important HPHT gas-condensate subsea well and pipeline systems in the North Sea, resulting in:

- A 30% reduction in the total methanol injection volume for a cold depressurised start-up when compared with the output of the standard steady state methodology.
- 60 - 70% reductions in methanol volumes for warm depressurised start-ups (4-9 days after shutdown).
- Confidence in the effectiveness of the methanol injected.
- Maximising the length of time needed between tank refills.



Production savings from swifter permit approvals	Avoidance of need for high-usage methanol waiver
~ £3m / year	~ £2m / start-up