

Effect of offshore conditions on the CO₂ absorption performance

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FPSOs (Floating Production Storage and Offloading) is one of the promising technology in natural gas and oil industries. It has many economic advantages but it is hard to handle, because it is exposed to offshore condition. Offshore conditions like permanent tilt and dynamic motions can cause mal-distribution of fluids in gas treating processes on the FPSOs. Therefore, contrary to onshore columns, for topside design in FPSO the offshore effect on gas treating processes should be studied and considered at the column design stage to prevent gas treating process from off-specification.

In this study, we focused on the performance of AGRU (Acid Gas Removal Unit) which is preconditioning process of LNG plant. For that reason, we carried out amine/CO₂ gas system experiment using a pilot scale column to investigate the effect of offshore conditions on the absorption performance. activated-MDEA (aMDEA) mixed with MDEA and PZ was used as a solvent for the experiment runs. 133 mm ID column with total 4.3 m packed height composed of 3 beds was employed. Representative offshore conditions were selected to permanent tilt from 2 to 6 degree and roll motions with period of 15 s ~ 30 s.