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LEAD AUTHOR

Abdulla Al-Emadi
Senior Process Engineer, Qatargas



CO-AUTHORS

None

REPETITIVE FOAMING EVENTS IN AGR UNIT

Acid Gas Removal (AGR) units are widely used for sour gas sweetening process which utilize formulated Methyl Diethanolamine (MDEA). One of the main problems associated with AGR process is the formation of stable foam during the absorption of H_2S and CO_2 . Foaming in AGR unit is undesirable as it can cause solvent loss, plant volumetric downtime (VDT), or probable damage to downstream equipment.

The AGR unit at Al-Khaleej Gas Project Phase-2 (AKG-2) located in Qatar experienced repetitive amine absorber foaming since mid of year 2022 and resulted in total plant trip twice. After performing deep analysis on AGR unit, it was identified that the root cause of repetitive foaming in AKG-2 is due to operating at high solvent circulation which shifted the AGR absorber temperature profile to cold zone, hence increasing HHC/BTEX co-absorption. With the aged carbon beds, the HHC/BTEX kept on accumulating in the solvent loop, eventually causing several foaming events in the unit.

This poster introduces a detailed engineering analysis which was conducted to troubleshoot the repetitive foaming events in AGR unit. The underlying causes of foaming have been studied and accordingly mitigative action plan was developed to troubleshoot the foaming issue. More than 120 actions were implemented such as replacement of antifoam type, performing de-pollution of amine loop, performing skimming in AGR unit, adjustment of process parameters, providing dynamic alarms, etc.

After implementation of the recommendations, the foaming symptoms in AGR unit have disappeared, and the unit is currently operating at design rate without encountering foaming. This helped to ensure continuous supply of sales gas to fulfill customer satisfaction. In addition, the lesson learned from AKG-2 foaming taskforce was cascaded among other Qatargas assets to help in improving reliability of the AGR Units.

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