

Combination of Foam Assisted Lift & Gas Lift (Fagl) to De-Liquefy Gas Wells

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Abstract

Liquid loading is an ineluctable problem encountered by gas wells as their reservoir pressure declines and Gas-Liquid Ratio (GLR) increases. Foam Assisted Lift (FAL) is one of the modern methods for dewatering gas wells by reducing effective density and surface tension of produced fluid. Gas lift is also a widely used method that reduces flowing bottom-hole pressure by injecting gas in the well to lower hydrostatic head.

This paper proposes a combination of above mentioned technologies called Foam Assisted Gas Lift (FAGL) and recommends its' efficiency over two specific scenarios; a) when reservoir pressure is low and static liquid level remains below bottommost SPM, b) when there is a considerable liquid column in wellbore and gas injection pressures are limited due to surface constraints, injecting foam decreases the hydrostatic head and requires less gas injection pressure to offload the well. In either case, FAL can offload the well but the stabilized rates achieved are uneconomical compared to the soap requirement per day. FAGL is applied on mature wells having low reservoir pressures and completed with single SPM. These wells had frequent load-up issues and FAL/gas-lift failed due to low reservoir inflow. After FAGL is implemented, frequent load-up issues have been resolved and wells began to produce at increased stabilized rates. FAGL also emerged as an economical option because it reduced the soap /injected gas requirement per day and increased gas rates and overall recovery.

For wells with deep SPMs, depleted reservoir pressure and liquid loading problems, FAGL could be an economical de-liquefaction method when compared to standalone gas-lift or FAL due to its lower OPEX.