



Description:

Dedicated surfactants are used to generate gas conformance foam in oil reservoirs, with possible in-depth mobility control using repeated treatments. These foams improve gas utilization and accelerate recovery, resulting in gas savings and increased production.



Application:

Gas conformance control, Gas Oil Ratio control, gas shut-off, in-depth gas mobility control.



Results:

Foaming formulations are optimized in the lab using robotics and petrophysics experiments. Application tests demonstrate efficient gas mobility control results in various sets of conditions, including CO₂ in hard produced water and in presence of light oil. The formulations are successfully applied at pilot scale resulting in important CO₂ savings and improved gas utilization.

Challenges:

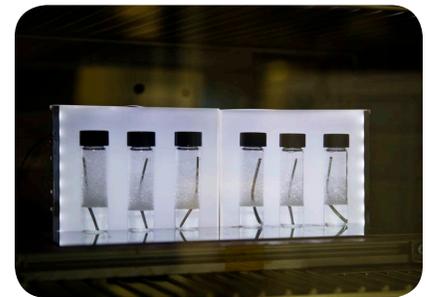
- Thief zones and poor conformance limit gas EOR efficiency at reservoir scale: gas produces less oil than expected and its cost per barrel increases.
- Classical water-based gel conformance treatments are not easily applicable to gas processes.
- Current foam treatments are not optimized from the formulation and execution standpoint.

Solutions:

- Economical and industrial gas conformance solution permitting a better gas utilization for oil recovery at reservoir scale.
- Ease of application of the designed solution on-field with on-site assistance/deployment.
- Gas foam conformance effect is reversible and does not induce permanent changes to the reservoir

Objectives:

- Develop a lab-to-pilot design of a fit-for-purpose foam conformance solution to improve gas utilization in a specific reservoir.
- Include reservoir engineering for treatment zones selection, lab design and characterization of the most adapted formulation.
- Provide on-site assistance for pilot deployment.



Screening of foaming formulation in given reservoir conditions of salinity and temperature



Formulation truck directly connected to injection pump for in-line mixing and direct injection of the foaming formulation.

References: SPE154147, SPE169116, SPE174658, SPE179855, SPE179811, SPE179632, SPE183352, SPE183326.

An Alliance between:

