

Case study: Gulf Coast, United States

# FOAMSTOP low catalyst impact antifoam saved \$2.75 million USD over 17 months

A Gulf Coast refinery experienced high silicon antifoam usage (approximately 1 lb [0.5 kg] of silicon per thousand barrels) at the coker while using 60,000-cSt antifoam. This usage rate was well above the refining group's other locations, which used approximately 0.25 lb of silicon per thousand barrels.

As a result, a higher than desired amount of silicon was being carried over into the coker naphtha. In addition, high concentrations of silicon were also found in the coker scrubber slop streams that were reprocessed at the pipestills.

The silicon carryover reduced the catalyst life at the ultraformer to less than a year versus the three-year plan. The refinery estimated the cost of catalyst replacement, lost production, and naphtha downgrade at \$3.6 million USD per year.

Representatives from Baker Hughes were asked to collaborate with the refinery staff to review the system and then recommend a plan to reduce the carryover. After the joint analysis, it was agreed that **FOAMSTOP™ low catalyst impact (LCI) antifoam**, a new, novel product from Baker Hughes, would be evaluated.

During the two-month trial period, the FOAMSTOP LCI antifoam reduced coker naphtha silicon approximately 75% early in the drum cycle, from an average of 19 to 5 ppm. Later in the cycle, the coker naphtha silicon content was reduced approximately 50%, from an average of 50 to 24 ppm. The coke drum foam control was maintained throughout the entire trial. In addition, the silicone usage dropped from 0.7 to 0.2 lb (0.32 to 0.09 kg) of silicone per thousand barrels (Figure 1).

Based on the trial results, the refinery ran off the incumbent product and permanently switched to the FOAMSTOP LCI antifoam. The current run on the ultraformer catalyst life is 28 months and still going versus a 12-month run typically. The refinery has estimated the cost savings to be \$2.75 million USD over a 17-month period.

This case history is presented for illustrative purposes only, since results may vary between applications.

## Challenges

- Silicon carryover into coker naphtha
- Reduced catalyst life

## Results

- Reduced silicon carryover approximately 75%
- Decreased silicon defoamer usage by 70%
- Improved refinery operations
- Extended catalyst life
- Maintained coke drum foam control

# Defoamer usage rate Lb Si/thousand barrels coker feed

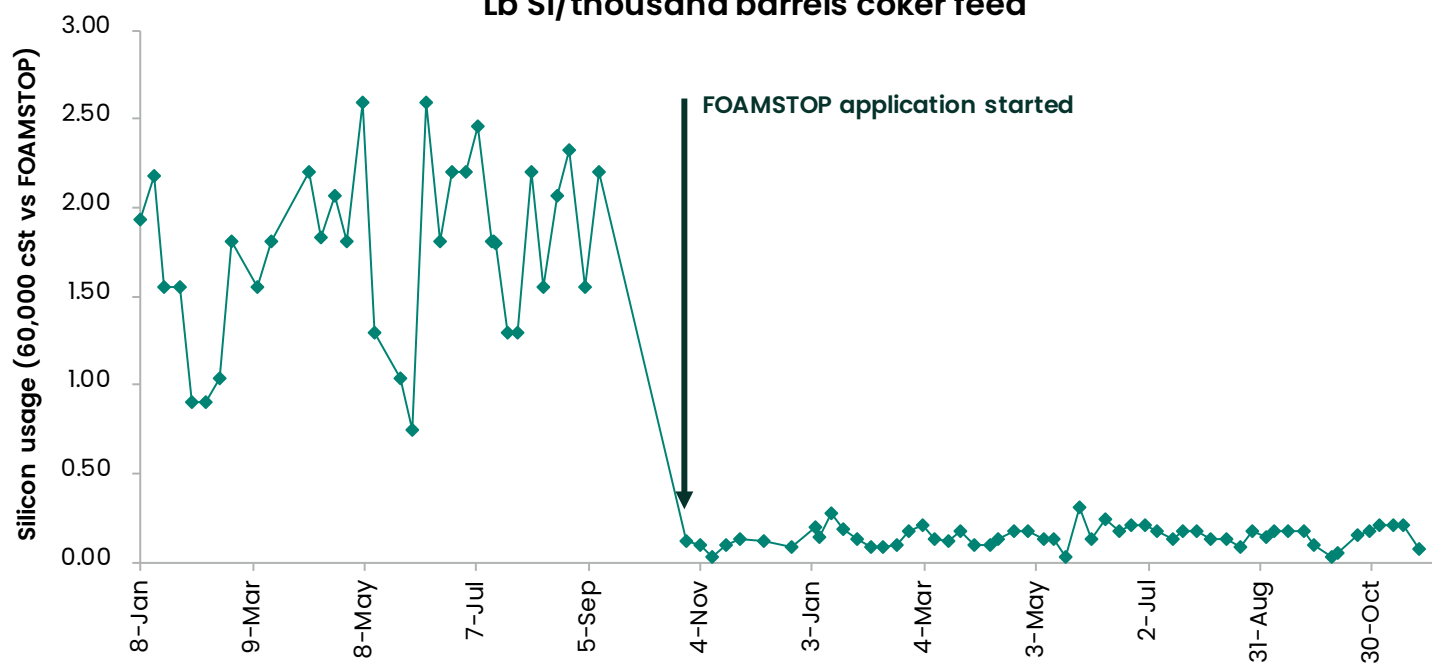


Figure 1