

Case study: Midwest, United States

FOAMSTOP low catalyst impact antifoam reduced silicon carryover 89%

A Midwest United States refinery using a 600,000-cSt antifoam in their delayed coker was experiencing silicon carryover in the streams exiting the main fractionator. Base case coker liquid product samples were collected at identical periods in the drum cycles while filling both Drum A and Drum B.

Drum A samples showed silicon levels of 58.0, 38.8, and 5.5 ppm in coker naphtha, light coker gas oil (LCGO), and heavy coker gas oil (HCGO), respectively. Drum B samples showed silicon levels of 33.8, 28.7, and 1.8 ppm in coker naphtha, LCGO, and HCGO, respectively.

Representatives from Baker Hughes were asked to collaborate with the refinery staff to review the system and then present recommendations. After a joint analysis by both parties, it was agreed that a newly developed product, **FOAMSTOP™ low catalyst impact (LCI) antifoam**, would be evaluated. Additional sets of naphtha, LCGO, and HCGO samples were collected to monitor silicon levels, using

the same sampling protocol developed to generate the baseline data.

Following the application of the new antifoam, the levels of silicon in coker liquid products dropped considerably. While filling Drum A, the naphtha contained 35.9 ppm silicon, the LCGO contained 10.3 ppm silicon, and the HCGO contained 2.2 ppm silicon. While filling Drum B, the naphtha contained 8.2 ppm silicon, the LCGO contained 3.2 ppm silicon, and the HCGO contained 0.9 ppm silicon.

Figure 1 compares the base rate with the FOAMSTOP LCI antifoam trial and shows the percent reduction in all the silicon levels for both Drum A and Drum B operations. In all the cases, the FOAMSTOP LCI antifoam significantly reduced the silicon carryover. As a result, the refinery also observed extended downstream hydrotreater catalyst life.

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

Challenges

Silicon carryover in coker liquid streams

Results

- Reduced silicon carryover up to 89%
- Improved refinery operations
- Extended hydrotreater catalyst life

Silicon reduction by stream

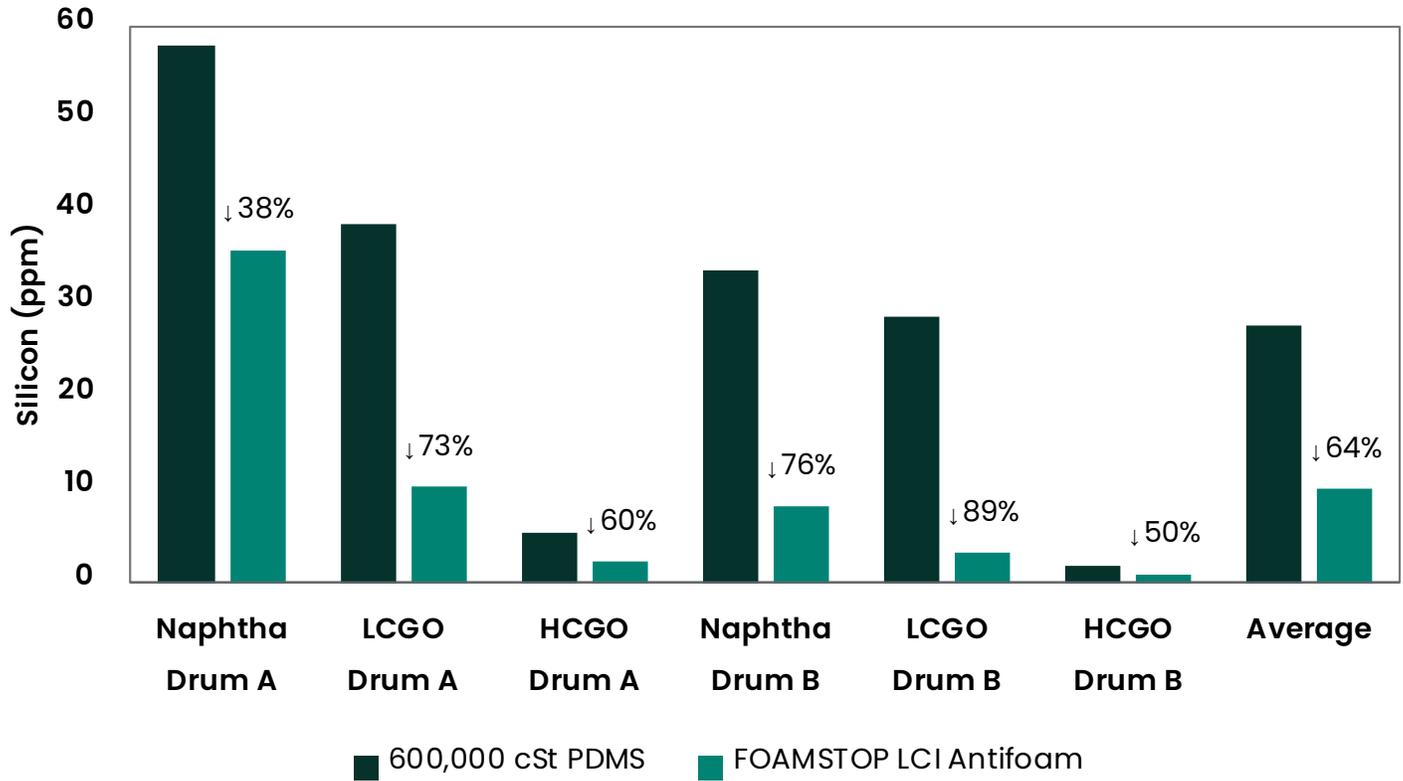


Figure 1