

## IMPROVEMENT IN ASSET UTILIZATION AND PRODUCTIVITY IN THE FILTRATION AND SEPARATION OF QUENCH WATER

### Abstract

Quench water treatment is known to result in poor asset utilization. It affects productivity targets in ethylene production, resulting in increased manufacturing costs. Oil separation from quench (process) water is a difficult challenge due to presence of surfactants, tar and fine coke particles. Oil contaminated water will lead to increased usage of steam in the steam stripper and fouling of the dilution steam generator. In the worst scenario, it will result in premature shutdown of these units. It also leads to frequent cleaning of exchangers and reboilers from fouling deposits and the use of fresh demineralized water to make dilution steam. The losses to the plant are significant.

Pall's technology is used in more than 50 crackers. It includes a two stage pre-filtration system and a horizontal surface treated coalescer wherein solid contaminants (coke, tar) are filtered out and pyrolysis gasoline is separated from the quench water. It provides consistent removal of free oil below 20 ppmw. Losses and maintenance issues in the quench water circuit are greatly minimized.

Braskem Idesa's 1 million ton/year gas cracker in Mexico has been successfully utilizing this system since the summer of 2016. Aromatic solvent injection has been utilized to enhance performance. It results in much lowered OPEX and improved separation of pygas from water. These results are presented here. Recent results from other plants have also been reviewed in this paper. Emphasis has been placed on performance achieved in gas crackers, which experience significantly enhanced fouling in the quench water circuit. Since a majority of the new global plants use gas cracking, the approach presented here will be of interest to ethylene producers.