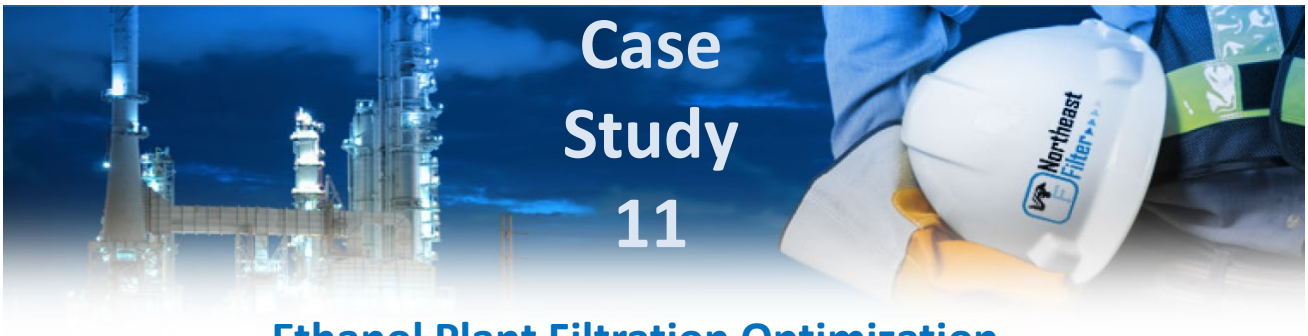

Ethanol Plant Filtration Optimization

Background

Ethanol as a biofuel additive blended with gasoline has been around since the 1970's but more recently, ethanol fuel as an alternative to gasoline has gained in popularity. Ethanol fuel is produced from the fermentation of various feedstocks and purified through distillation. During fermentation, in addition to ethyl alcohol, other (undesirable) higher aliphatic alcohols are produced. While they combust like ethyl alcohol, the presence of these undesirable alcohols are known to kill yeast and obstruct fermentation. As a result, they are drawn out during distillation, filtered to remove the stillage fines and blended back into the final purified ethanol fuel. An ethanol plant in the Eastern US contacted Northeast Filter with concerns about very short filter life and high OPEX and invited us to evaluate their process for process improvement recommendations.

Solution

Upon arrival, our VAS team learned firsthand just how bad the on-stream life problem was with their filters *(2 – 4 hours cycle life).* While effluent quality was good, the high change-out frequency was an operations nightmare in addition to the high cost of filtration. An autopsy of a spent filter disclosed the reason for such short on-stream life. Using this information, the VAS team performed on-site, benchtop filterability testing using an industrial grade mobile test kit. By testing various media were able to develop a hybrid/custom media with extended surface area that would drop into the existing housing with no modifications to the housing required. Our testing indicated an onstream life improvement of ≥10X as compared to the current filter however we could not test full benefit of a pleated platform on our test unit. Production samples were provided for full scale proof-of-concept trial and on-stream life improved from 4 hours to 5 days with substantial OPEX savings.