



Case Study

De-Salter Process Water Filtration
Petromax Refining Company
Houston, TX Dec 2016 - Feb 2017

ROI: 5 DAYS

Matthew Caster, Chief Engineer for Petromax states, "Magnetic filtration has been a quick, simple and inexpensive way to dramatically improve our product quality and unit reliability. Black Powder Magnetic Separators are our first choice now in applications we never would have considered in the past."

Problem:

Black Powder Contamination in the process water system.

- (1) The Pentair, 10-micron filter system is unable to clean the solids from the water with high efficiency. Change out of the elements cost \$13,000, every 5 days including disposal cost.
- (2) High values of Black Powder contamination post Pentair filtration caused the \$800,000 dollar MycelX salt and oil purifying system to be taken off line. The MycelX unit is designed to clean the water of salts and oil before discharging into the city water system.
- (3) Transportation of the contaminated process water to a deep well injection site cost \$100,000 per month.

Solution:

Install BPS Magnetic Separator (Cost: \$13,000 for (2X) B5SCFD118SCLFFLN4) between the desalter vessel and the water tanks, before Pentair filtration. Note BPS separators operate with less than 1 PSI DP with a large holding capacity of ferrous and non-ferrous contamination and an expected operational life of 16+ years. The individual Filters are isolated and cleaned daily, removing significant volumes of contamination each time.



BPS Magnetic Separator



Black Powder contamination caught after 18 hours

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Results:

The Black Powder contamination levels reduced by 95+ percent prior to the Pentair filter, extending the Pentair filter element change out to 45 Days. The housing differential pressure reads 25 PSI (current run is 30 days with only 2 PSI Pressure drops, so interval is extended).

65 element change outs have been eliminated, realizing cost savings of \$845,000. The Pentair elements changed to 1-micron with projected change out every 45 days.

The collective base line savings for a 12-month period will be \$1,200,000, eliminating the cost of removing process water for disposal.



Contamination captured after 18 hours

The reduced filter element consumption of \$845,000 equals a savings of \$2,045,000 from an investment of \$13,000 in BPS separation technology.

The MycelX unit that is now working reliably was an \$800,000 investment, the savings are \$2,845,000. When factoring the labor, downtime, and exposure involved with change-outs, water hauling trucks and drivers, the savings increase again.

Recommendation:

Install a BPS Separator at the inlet of the refinery to remove the large volumes of Black Powder before it enters the production process. Install magnetic separators before every pump within the refinery to extend pump life, traditional filter life and improve the sale quality of the finished product.