



# HAVE YOU EVER HAD A SLUG OF HYDROCARBON CONTAMINATE YOUR AMINE?

**HRT® REMOVES BOTH SOLIDS AND RECOVERS HYDROCARBON FROM AQUEOUS PROCESS STREAMS**

A Gulf Coast refinery's amine system was contaminated with up to 3% hydrocarbon. The contamination consisted of hydrocarbon from upstream process units and particulate. The hydrocarbon consisted of LCO and heavy diesel. The current system consisted of an undersized flash tank and a 20% slipstream filtration. The current system could not remove the contaminants so the refinery had to decommission the amine and replace it with new fresh amine.

The refinery contacted Pentair to see if there was a solution to remove both the solid and hydrocarbon contaminants that had contaminated the amine. Pentair provides a Hydrocarbon Recovery Technology (HRT) system that removes both solids and recovers hydrocarbon from aqueous process streams.

Our STAR Labs took bottle samples of the amine and ran bench scale tests to prove the solids and hydrocarbon could be removed. Upon evaluation, the HRT system could remove the solid contaminants completely and the hydrocarbon down to the soluble limit of hydrocarbon in amine.

The refiner requested to utilize an **HRT rental system** to clean up the amine that was being stored in Frac tanks. These rental vessels can be employed within 24 to 48 hours upon receipt of a purchase order. As soon as the vessels were on site, Pentair field personnel were on site to go over a safety review with the operations staff and to provide adequate training of how to operate the HRT system and change out internals as needed.

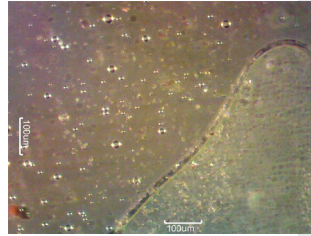
The Frac tanks were treated over a 48 hour time span. The amine went from having 2% hydrocarbon contamination down to 168 PPM hydrocarbon in the amine, which was the soluble limit at the given conditions. **The solid contaminant was completely removed from the amine.**

The system provided the refiner with clean non-contaminated amine ready to be utilized again without having to be thrown out. This saved the refiner \$200K+ since they didn't have to buy new amine or pay for disposal costs.

**Over \$200,000.00 in Savings!**

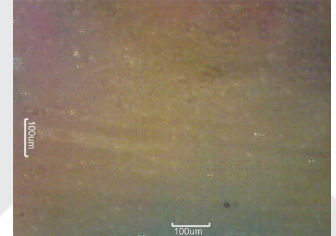
Currently Pentair and the refiner are working on implementing permanent full flow systems on the two main amine units to avoid having this amine contamination challenge in the future. The refiner will also have a much more reliable amine system with the implementation of a permanent HRT system and will not have to shut down for future hydrocarbon slugs which the HRT system will capture and remove from the system on a continuous basis.

AMINE BEFORE



Photomicrographs of Amine sample before processing. Large oil droplets are visible.

AMINE AFTER



Photomicrographs of Amine sample after processing through Liquidform media. No visible oil droplets.



HRT rental vessel on location



Recovered hydrocarbon level from frac tanks



Personnel training on change out