



PROJECT REPORT (PR-015)

SULFOLANE UNIT - SOLVENT RECOVERY COLUMN REVAMP

Customer: Major Petrochemical Producer, Taiwan
 Project: Sulfolane Unit - Solvent Recovery
 Column Revamp
 Date of Revamp: 2006

BACKGROUND

The Sulfolane Process is commonly used in recovering high purity aromatics from hydrocarbon mixtures such as reformed petroleum naphtha (reformate), pyrolysis gasoline (pygas), or coke-oven light oil. The Process uses Sulfolane as the extraction solvent to extract aromatic compounds from the hydrocarbon feed. After extraction, the aromatics-rich sulfolane, also known as "Rich Solvent" is sent the Solvent Recovery Column (SRC) to separate the extracted aromatics (extract) from the top of the column, and recycle the "Lean Solvent" from the bottom to the Sulfolane Extractor.

Due to rising energy costs, the client planned to reduce the energy consumption in its existing Sulfolane Unit, specifically in the existing Solvent Recovery Column. Upon process modeling and existing equipment evaluation, AMT supplied its high performance ADV Trays and Structured packing, and successfully revamped the subject Solvent Recovery Column in 2006.

REVAMP OBJECTIVES

- The objectives of this revamp were to:
1. Reduce column energy consumption by at least 15%.
 2. Increase Solvent Recovery Column capacity by 10%.

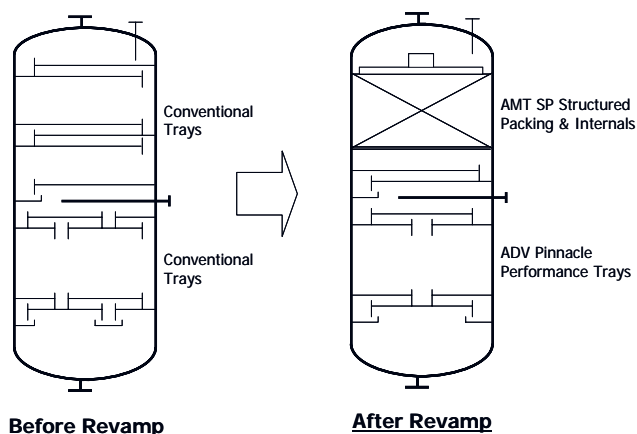
COLUMN PERFORMANCE

Before Revamp

The subject Solvent Recovery Column originally equipped with (30) conventional valve trays. Before revamp, the sulfolane content in the water phase of the SRC overhead decanter typically contains 2~5 ppm of solvent.

After Revamp

To meet the revamp objectives, AMT replaced all of the existing conventional trays with AMT's field-proven Structured Packing and ADV Pinnacle Performance Trays for this service:



After revamp, the Sulfolane Unit was successfully re-started and the revamped Solvent Recovery Column has met and exceeded all the design requirements. See performance comparison below:

Performance Comparison

	Before Revamp	After Revamp
Internal Type	Conventional valve tray	AMT S. Packing & ADV Trays
Energy Consumption	100%	72%-76%
Solvent Content in Decanter Water Phase	2-5 ppm	<1 ppm

As shown above, the energy consumption in the SRC has been reduced by **24-28%** after revamp. The sulfolane content in the water phase of the SRC overhead decanter has also been reduced to <1ppm. With the application of high performance internals, the column capacity has also been increased by 30%.

The return on investment (ROI) of this project, by energy saving alone, was less than 20 months.

Furthermore, due to lower pressure drop through the high performance Structured packing and ADV Trays, the column bottom temperature was reduced, which helped reducing the thermo-degradation of the solvent.