

**PROJECT REPORT (PR-016):**  
**EDC DISTILLATION UNIT REVAMP WITH AMT'S**  
**ADVF PINNACLE PERFORMANCE TRAYS & SIEVE TRAYS**

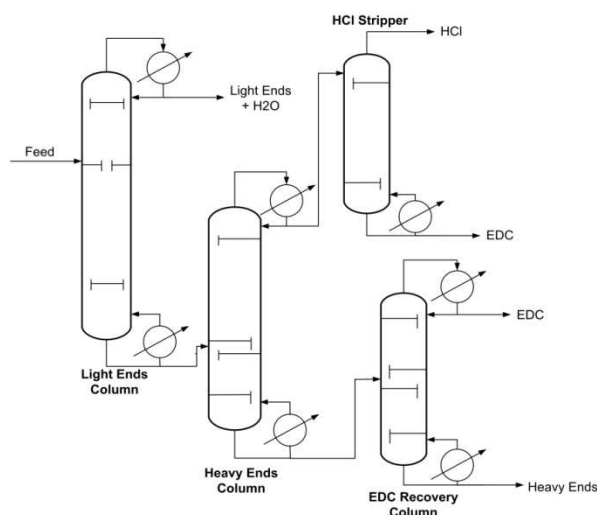
Customer: Major Petrochemical Company

Project: EDC Distillation Unit Expansion

Date of Revamp: 2004

## BACKGROUND

A major VCM producer in the North America wished to debottleneck its existing Ethylene Di-Chloride (EDC) Unit for greater throughput. The existing EDC unit, shown below, consists of the Light Ends Column, Heavy Ends Column, EDC Recovery Column and the HCL Stripper Column.



AMT performed process simulation/optimization of the EDC Unit, evaluated the existing distillation equipment, designed and supplied high performance ADVF Pinnacle Performance Trays and new sieve trays, for the successful revamp of the Unit in 2004.

## REVAMP OBJECTIVES

The objectives of this revamp were to:

1. Increase the Distillation Unit throughput to  $\geq 118\%$  of current maximum operation; and,

2. Maximize column throughput, mass transfer efficiency, and improve column run-time in this potentially high fouling service.

## COLUMN PERFORMANCE

### Before Revamp

The existing distillation units consisted of conventional sieve trays and were approaching their hydraulic limits under the current operation. Any additional loading increase would cause the column operation to become unstable, further deteriorate the column separation efficiency and result in off-spec products.

### After Revamp

The scope of mass transfer internal modifications for the revamp includes:

- Revamping all existing conventional sieve trays in the Light Ends, Heavy Ends and EDC Recovery Columns with ADVF Trays;
- Replacing all existing sieve trays in the HCl Stripper Column with new optimized sieve trays; and
- Reusing the existing tower attachments.

Since the start up after revamp, the columns' performance objectives have been achieved, in that the desired increase in capacity has been met and exceeded and the products are within the specification limits. It was determined that the maximum throughput in the unit with the newly revamped trays is 130% of the capacity before revamp.

The improved performance of the EDC production unit after revamp allowed for reduction in energy consumption and longer operation runtime. Furthermore, the advanced design features of the ADVF Trays allowed for optimal performance at wide operating ranges without a loss in separation efficiency, when compared to conventional sieve trays.