Hi-Purity Distillation

Customer: Major Specialty Chemicals Company

Location: Southeastern US

Problem: Client had a production capacity need to purify a precursor stored in railroad tank cars for use in low VOC carpets.

History: Market requirements for a high purity chemical intermediate product which is used in the manufacture of carpet yarn had increased to eliminate the VOC content so companies can make the claim of odorless carpets for the latest "Green" trends in home products. The company needed to add distillation capacity at their plant to meet the latest market demands.

Solution: The client requested that ChemPro design a flexible continuous distillation system that would remove the high boiling component in the chemical responsible for the lingering odor in installed carpeting. The unit needed to handle a wide range of feedstock variability. ChemPro conducted extensive process simulations to ensure the system could handle the varying feed, operate reliably throughout the feed range and minimize product losses. ChemPro designed, engineered, and built a skid-mounted continuous distillation system, incorporating several unique equipment designs to reduce fouling and polymerization of the product at the operating conditions. The unique design included a complex control scheme to ensure the system could operate over a wide range of feed rates and compositions, respond quickly to upsets while maintaining product purities and energy efficiency.

Results: The unit has met all process criteria, increased production capacity and conforms to the VOC requirements for odorless carpet production.

Modular distillation system:
Structural frame: Epoxy-coated steel
Stair module
Column: with antifouling trays
Forced Circulation Reboiler
Overhead Condenser
Product & Bottoms coolers
Reflux Tank
Reboiler Circulation Pump
Reflux Pump
Piping: Carbon Steel
Instrumentation: 316SS Wetted parts
Functional write-up and logic control system