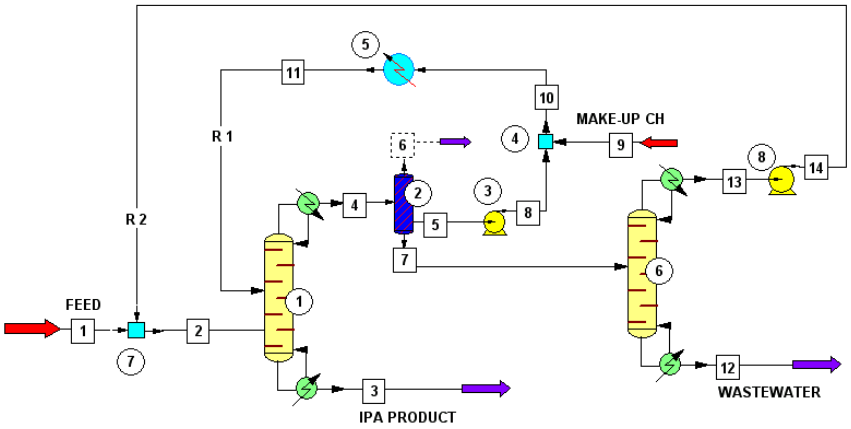
IPA Azeotropic Distillation with Entrainer



DESCRIPTION:

This flowsheet proved that design specifications calculated with CHEMCAD 5 matched data of an existing plant.

The feed to the process was saturated liquid containing 85 wt. % of isopropyl alcohol (IPA) and 15 wt. % of water. IPA-water system forms azeotrope of about 88 wt. % IPA at 4 bar abs. Cyclohexane was used as azeotrope-breaking component (the entrainer). The requirement was to produce 95 wt. % IPA, virtually cyclohexane-free. For environmental and economy reasons, wastewater from the process had to be cyclohexane-free, too.

IPA/water separation set- up were two distillation columns operating under different pressures. The primary separation (IPA) was occurring in the first column. and the solvent was recovered in the second one.

Specific problems related to this process: highly non-ideal system, distillation, recycles are easily handled with built-in modern thermodynamic methods, flexible SCDS distillation/absorption /stripping model, and automatic loop convergence tools.