Pressure Swing Distillation For Separation Of Azeotropic Mixture Of Acetonitrile/N-Propanol

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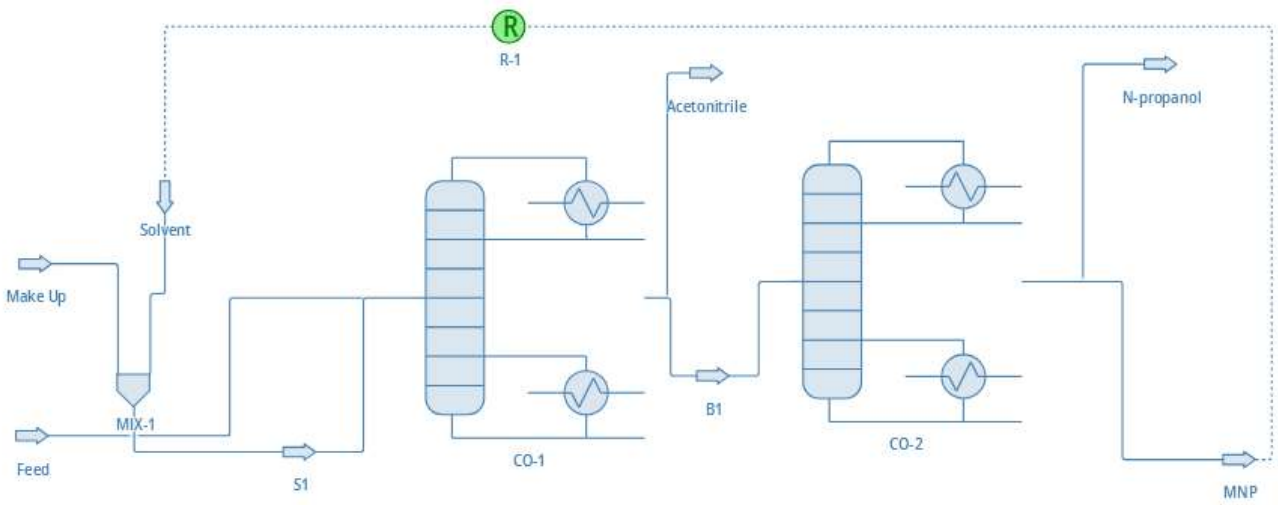
Background & Description:

Acetonitrile (MeCN) and N-propanol are both essential raw materials and solvents widely used in the chemical industry due to their excellent solubility. However, it remains a significant challenge to effectively separate their mixtures since the presence of minimum boiling azeotrope at composition and temperature of 0.5 weight percent Acetonitrile and 298.15 K at the atmospheric pressure (101325 Pa) respectively. Pressure swing distillation is a commonly used process to separate azeotropic mixtures whose compositions are pressure sensitive

Flowsheet:



Results:

Master Property Table					
Object	Solvent	N-propanol	MNP	Acetonitrile	
Temperature	119.332	97.1256	119.332	89.6151	C
Molar Flow	66.6919	0.160916	66.6919	78.7542	kmol/h
Molar Fraction (Mixture) / Acetonitrile	0.00396968	0.0165642	0.00396968	0.502106	
Molar Fraction (Mixture) / 1-propanol	0.446912	0.983436	0.446912	0.497882	
Molar Fraction (Mixture) / N-methyl-2-pyrrolidone	0.549118	1.3051E-07	0.549118	1.16617E-05	