

Extractive Distillation of THF and Ethanol using Ethylene glycol as Solvent AVSS.PRANEETH

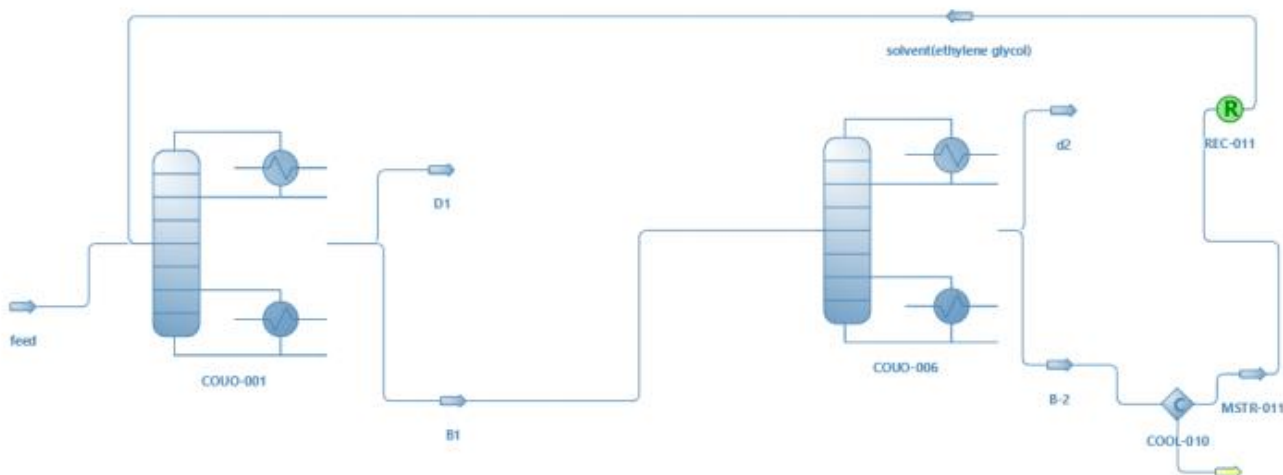
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Background & Description:

The separation of azeotrope and close boiling mixture is a challenge in most chemical process. For the separation, the use of a single convectional distillation column is impossible. Extractive distillation is a method where the relative volatilities of components to be separated are altered by using an additional component called solvent

Process: In this current flowsheet extractive distillation of Tetra Hydro Furan(THF) and Ethanol is carried out and ethylene glycol is used as solvent for this extractive distillation. Thermodynamic model UNIQUAC is used. The mixture "Tetra Hydro Furan and Ethanol" is feed to the 53th stage of 75 staged extractive distillation column with the solvent ethylene glycol fed to the 3rd stage. The presence of solvent alters the relative volatility between the two, causing pure ethanol to move toward the down and pure benzene on the top of the column. The mixture is feed into the 6th stage of a 10 stage extractive distillation to produce almost pure benzene at top of the column. ethylene glycol is recycled back to the extractive distillation column

Flowsheet:



Results:

MASTER PROPERTIES		ESTR-012						
Object	solvent(ethylene glycol)	feed	d2	MSTR-011	D1	B1	B-2	
Temperature	320	320	351.563	320	339.15	391.135	469.141	K
Pressure	101325	101325	101325	101325	101325	101325	101325	Pa
Mass Flow	2.72476	1.64131	0.677577	2.72476	0.970453	3.40234	2.72476	kg/s
Molar Flow	158.079	100	51.9212	158.079	48.469	2.10	158.079	kmol/h
Molar Fraction (Mixture) / Ethylene glycol	0.998953	0	0.0075406	0.998953	4.88681E-06	0.753832	0.998953	
Molar Fraction (Mixture) / Tetrahydrofuran	4.71259E-05	0.5	0.0303884	4.71259E-05	0.998995	0.00754883	4.71259E-05	
Molar Fraction (Mixture) / Ethanol	0.001	0.5	0.962071	0.001	0.001	0.238619	0.001	