

Production of Paraxylene

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Background & Description:

- 1) Paraxylene is an aromatic hydrocarbon. It is the one of the isomers of dimethyl benzene known collectively as xylenes.
- 2) Paraxylene is widely used as a feedstock (or “building block”) to manufacture other industrial chemicals, notably terephthalic acid (TPA), purified terephthalic acid (PTA) and dimethyl-terephthalate (DMT)

DISCRIPTION OF FLOWSHEET

The feed streams are S1, S2.

S1:17400Kg/h of Pure Toluene at 25 C,101325 Pa

S2:393650 mol/h of pure methanol at 25 C,101325 Pa

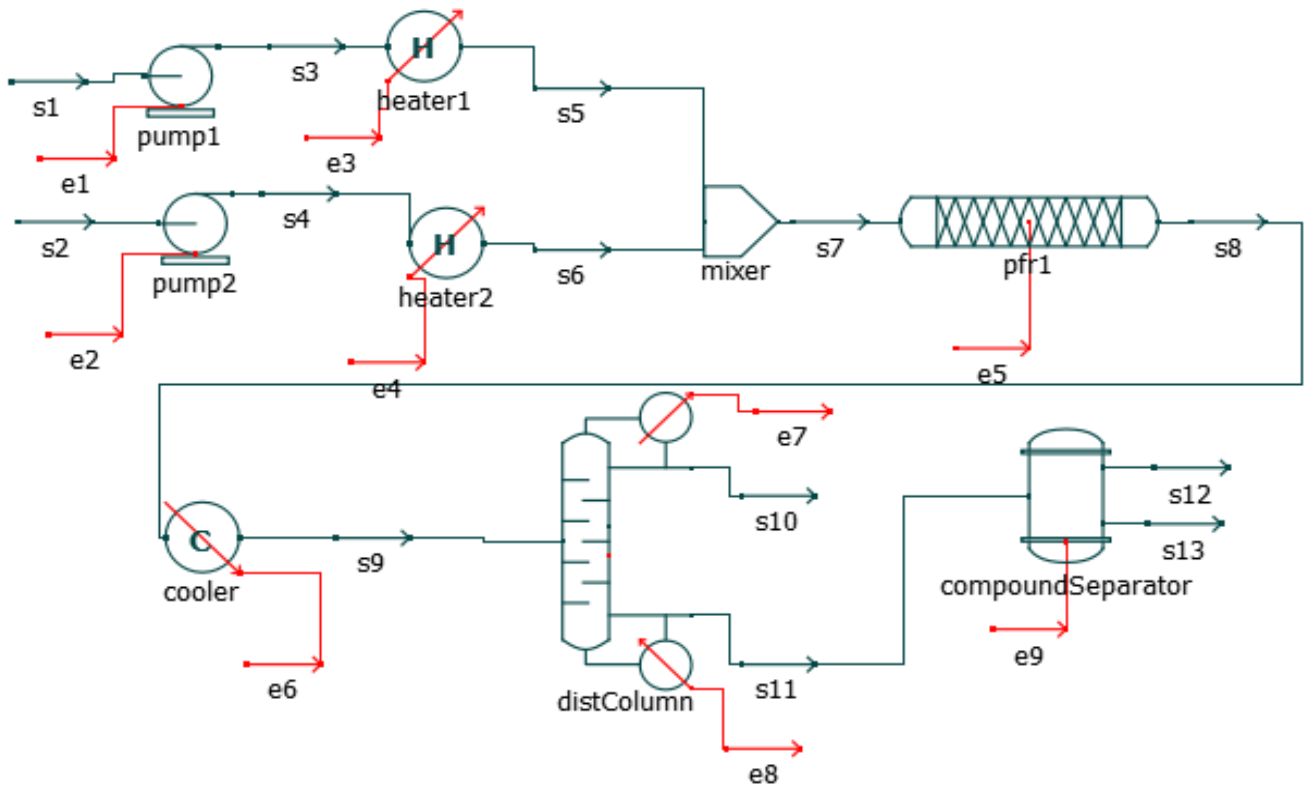
Using heaters, the temperature of both the streams are increased to desired temperatures.

A PFR reactor is used for production of P Xylene from Toluene and Methanol. PFR is operated isothermally. Outlet stream of PFR contains water, Pxylyene, methanol.

Using distillation column with 14 stages and feed at 7th stage methanol, Pxylyene and water are separated. Reflux ratio of distillation column is 3.683.the streams from distillation column are S10(Pxylyene and Water) and S11(methanol)

Pxylyene is separated from stream S11 using a compound separator.

Flowsheet:



Results:

Simulation-Results-DWSIM

Object	S1	S2	S12	S13	
Temperature	298	298	388.755	388.755	K
Pressure	101325	101325	101325	101325	Pa
Moler flow	52.4522	109.387	30.221	49.8069	Mol/s
Molar fraction (P xylene)	0	0	0	1	

Simulation-Results-OpenModelica

Object	S1	S2	S12	S13	
Temperature	298	298	388.755	388.755	K
Pressure	101325	101325	101325	101325	Pa
Moler flow	52.4522	109.387	54.8871	51.629	Mol/s
Molar fraction (P xylene)	0	0	0	1	