Pressure Swing Distillation for separation of Acetone-Methanol system

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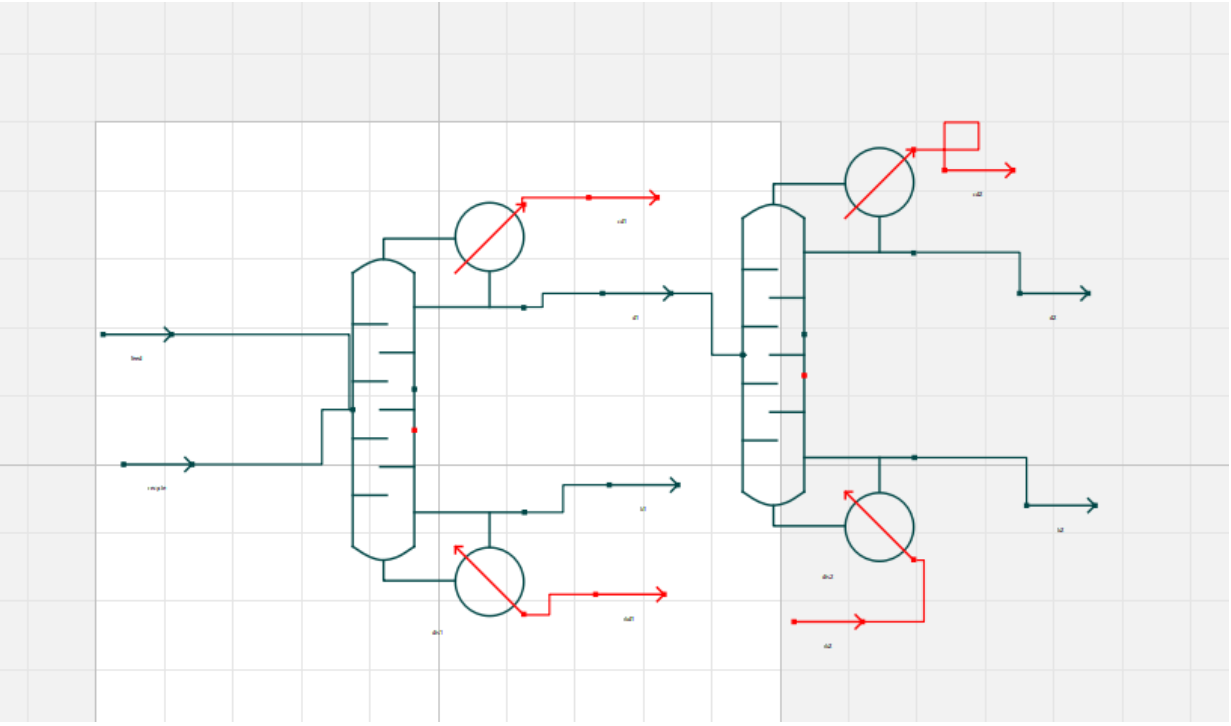
Background & Description:

Acetone and Methanol form a azeotrope and therefore cannot be separated by conventional methods like distillation, therefore to separate Methylal-Methanol mixture, pressure swing distillation is used which is dependent on the principle that azeotropic composition is dependent on the subjected pressure.
In this flowsheet, fresh feed is mixed with recycle from the second distillation column. The mixture is then fed into the first distillation column operating at a pressure of 101325 Pa, the bottom product contains methanol with small amount of acetone. The distillate goes into the second distillation column where the bottom product is acetone and the distillate as mentioned before is recycled.

Flowsheet:



Results:

	Temperature (K)	Pressure (Pa)	Mole flow (mol/s)	Mole fraction (methanol)
feed	300	101325	0.9968	0.5
recycle/d2	394.94	607950	1.90809	~ 0
b1	337.74	101325	0.5	0.9986
b2	393.15	607950	0.4986	~ 0