Conversion of N-butane to Iso-Butane

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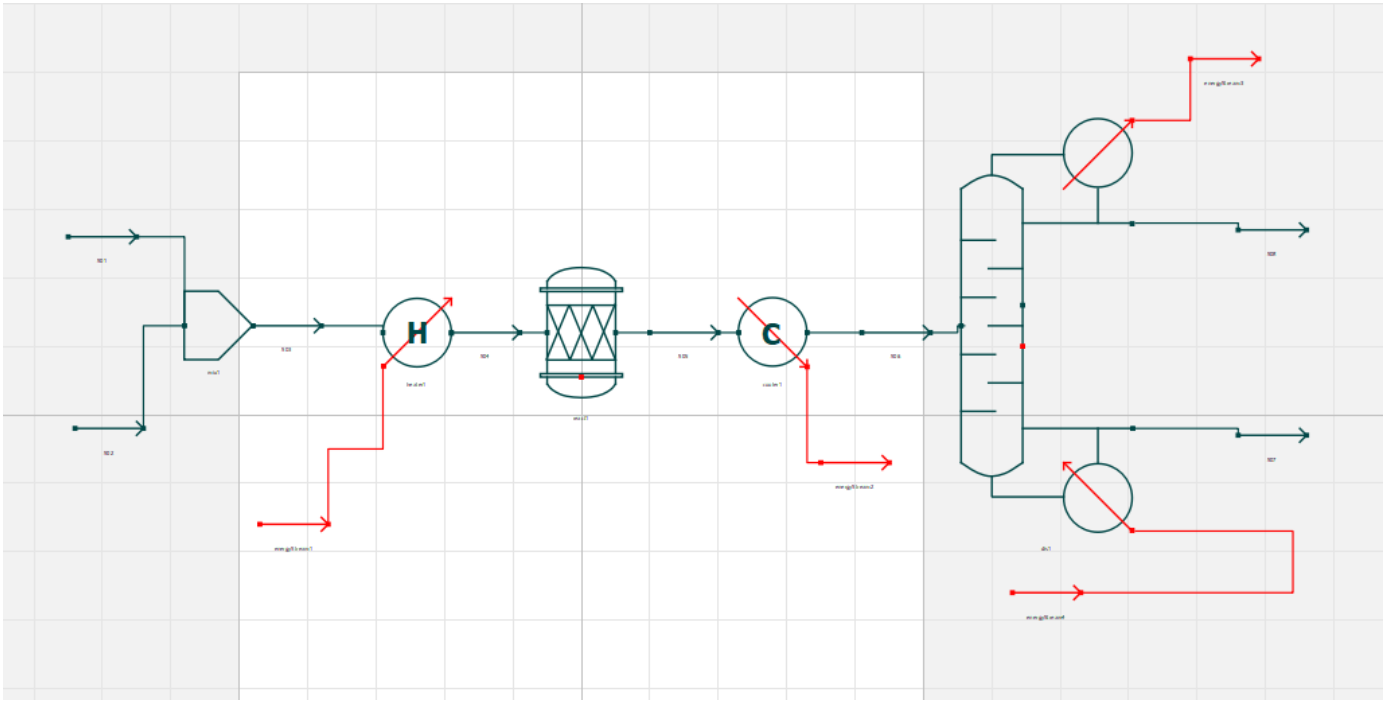
Background & Description:

Iso butane is a chemical compound with the molecular formula $HC(CH_3)_3$. It is an isomer of butane. Isobutane is used a san precursor molecule in the petrochemical industry, for example in the synthesis of isooctane. It is also used as the principle feedstock in alkylation units o refineries. Using isobutane, blend stocks are generated with high branching for good combustion characteristics.
In this flowsheet the recycled N-butane form the distillation column is mixed with fresh N-butane which is then heated to the required temperature of 623 kelvin for the isomerism to be the favored reaction. The partially reacted mixture is then fed into a distillation column where Isobutane and N-butane is separated.

Flowsheet:



Results:

	Temperature (K)	Pressure (Pa)	Mole flow (mol/s)	Mole fraction (Isobutane)
S01	298.15	101325	27.7778	0
S02	270.54	101325	49.7121	0.15
S07	270.54	101325	49.7121	0.15
S08	262.36	101325	27.6137	0.885