

Simulation Report

DWSIM 9.0

Details

Title:MySimulation_53

Comments:

Object:Residue

Type:Material Stream

Property	Value	
Temperature	371.343	K
Pressure	101325	Pa
Mass Flow	0.252161	kg/s
Molar Flow	13.8889	mol/s
Volumetric Flow	0.000317048	m3/s
Mixture Molar Fraction		
Methanol	0.01	
Water	0.99	
Density (Mixture)	795.339	kg/m3
Molecular Weight (Mixture)	18.1555	kg/kmol
Specific Enthalpy (Mixture)	-2215.97	kJ/kg
Specific Entropy (Mixture)	-5.85467	kJ/[kg.K]
Molar Enthalpy (Mixture)	-40232.1	kJ/kmol
Molar Entropy (Mixture)	-106.295	kJ/[kmol.K]
Thermal Conductivity (Mixture)	0.663833	W/[m.K]
Molar Fraction (Vapor)		
Methanol	0.0713186	
Water	0.928681	
Molar Fraction (Overall Liquid)		
Methanol	0.00999227	
Water	0.990008	
Molar Fraction (Liquid 1)		
Methanol	0.00999227	
Water	0.990008	
Molar Fraction (Liquid 2)		
Methanol	0	
Water	0	
Molar Fraction (Aqueous)		
Methanol	0	
Water	0	
Molar Fraction (Solid)		
Methanol	0	
Water	0	

Object:Distillate

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Comments:

Temperature	337.901	K
Pressure	101325	Pa
Mass Flow	0.443078	kg/s
Molar Flow	13.8889	mol/s
Volumetric Flow	0.00171155	m3/s
Mixture Molar Fraction		
Methanol	0.99	
Water	0.01	
Density (Mixture)	258.875	kg/m3
Molecular Weight (Mixture)	31.9016	kg/kmol
Specific Enthalpy (Mixture)	-1123.05	kJ/kg
Specific Entropy (Mixture)	-3.28367	kJ/[kg.K]
Molar Enthalpy (Mixture)	-35827.2	kJ/kmol
Molar Entropy (Mixture)	-104.754	kJ/[kmol.K]
Thermal Conductivity (Mixture)	0.191847	W/[m.K]
Molar Fraction (Vapor)		
Methanol	0.99579	
Water	0.00420961	
Molar Fraction (Overall Liquid)		
Methanol	0.989983	
Water	0.0100169	
Molar Fraction (Liquid 1)		
Methanol	0.989983	
Water	0.0100169	
Molar Fraction (Liquid 2)		
Methanol	0	
Water	0	
Molar Fraction (Aqueous)		
Methanol	0	
Water	0	
Molar Fraction (Solid)		
Methanol	0	
Water	0	

Object: Feed

Type: Material Stream

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Comments:

Temperature	353.15	K
Pressure	101325	Pa
Mass Flow	0.695239	kg/s
Molar Flow	27.7778	mol/s
Volumetric Flow	0.548963	m3/s
Mixture Molar Fraction		
Methanol	0.5	
Water	0.5	
Density (Mixture)	1.26646	kg/m3
Molecular Weight (Mixture)	25.0286	kg/kmol
Specific Enthalpy (Mixture)	-446.226	kJ/kg
Specific Entropy (Mixture)	-0.968073	kJ/[kg.K]
Molar Enthalpy (Mixture)	-11168.4	kJ/kmol
Molar Entropy (Mixture)	-24.2295	kJ/[kmol.K]
Thermal Conductivity (Mixture)	0.14597	W/[m.K]
Molar Fraction (Vapor)		
Methanol	0.622125	
Water	0.377875	
Molar Fraction (Overall Liquid)		
Methanol	0.238369	
Water	0.761631	
Molar Fraction (Liquid 1)		
Methanol	0.238369	
Water	0.761631	
Molar Fraction (Liquid 2)		
Methanol	0	
Water	0	
Molar Fraction (Aqueous)		
Methanol	0	
Water	0	
Molar Fraction (Solid)		
Methanol	0	
Water	0	

Object: R-Duty

Time: Energy Stream

Simulation Report

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Energy Flow	556.74	kW
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Object: C-Duty

Type: Energy Stream

Property	Value	
Energy Flow	1302.89	kW

Object: SCOL-1

Type: Shortcut Column

Property	Value	
Reflux Ratio	1.5	
Heavy Key Molar Fraction	0.01	
Light Key Molar Fraction	0.01	
Condenser Pressure	101325	Pa
Reboiler Pressure	101325	Pa
Minimun Reflux Ratio	0.958599	
Minimum Stages	5.53555	
Optimal Feed Stage	5.28251	
Stripping Liquid Molar Flow	29.6736	mol/s
Rectify Liquid Molar Flow	20.8334	mol/s
Stripping Vapor Molar Flow	15.7847	mol/s
Rectify Vapor Molar Flow	34.7223	mol/s
Condenser Duty	1302.89	kW
Reboiler Duty	556.74	kW
Actual Stages	10.565	
Stage Height	0.5	m
Estimated Height	6.28251	m
Estimated Diameter	0.974612	m