Simulation Report

DWSIM v.6.5

Details

Title:

Water pump

Comments:

AHMED ABDULRAHMAN: U18CE1104, GANA GBARO: U18CE1106.

GANA GBARO: U18CE1106. SULEIMAN YUSUF U15CE1080

Object: MSTR-03

Type: Material Stream

Property	Value
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Temperature	298.384	С
Pressure	84	bar
Mass Flow	0.500425	kg/s
Molar Flow	100	kmol/h
Volumetric Flow	0.0116397	m3/s
Density (Mixture)	42.9928	kg/m3
Molecular Weight (Mixture)	18.0153	kg/kmol
Specific Enthalpy (Mixture)	306.563	kJ/kg
Specific Entropy (Mixture)	-1.06825	kJ/[kg.K]
Molar Enthalpy (Mixture)	5522.81	kJ/kmol
Molar Entropy (Mixture)	-19.2448	kJ/[kmol.K]
Thermal Conductivity (Mixture)	0.59138	W/[m.K]

Object: WATER INLET

Type: Material Stream

Property	Value

Temperature 25 C Pressure 1.01325 bar Mass Flow 1 kg/s Molar Flow 199.83 kmol/h Volumetric Flow 0.00100369 m3/s Density (Mixture) 996.327 kg/m3 Molecular Weight (Mixture) 18.0153 kg/kmol Specific Enthalpy (Mixture) -2537.04 kJ/kg Specific Entropy (Mixture) -6.83399 kJ/[kg.K] Molar Enthalpy (Mixture) -45705.5 kJ/kmol	1.01325 bar 1.01325 bar 1.01325 bar 1.01325 kg/s 1.01325 kmol/h 1.01325 kmol/h 1.01325 kmol/h 1.01325 kg/m3 1.01325			
Mass Flow 1 kg/s Molar Flow 199.83 kmol/h Volumetric Flow 0.00100369 m3/s Density (Mixture) 996.327 kg/m3 Molecular Weight (Mixture) 18.0153 kg/kmol Specific Enthalpy (Mixture) -2537.04 kJ/kg Specific Entropy (Mixture) -6.83399 kJ/[kg.K] Molar Enthalpy (Mixture) -45705.5 kJ/kmol	1	Temperature	25	С
Molar Flow 199.83 kmol/h Volumetric Flow 0.00100369 m3/s Density (Mixture) 996.327 kg/m3 Molecular Weight (Mixture) 18.0153 kg/kmol Specific Enthalpy (Mixture) -2537.04 kJ/kg Specific Entropy (Mixture) -6.83399 kJ/[kg.K] Molar Enthalpy (Mixture) -45705.5 kJ/kmol	199.83 kmol/h	Pressure	1.01325	bar
Volumetric Flow 0.00100369 m3/s Density (Mixture) 996.327 kg/m3 Molecular Weight (Mixture) 18.0153 kg/kmol Specific Enthalpy (Mixture) -2537.04 kJ/kg Specific Entropy (Mixture) -6.83399 kJ/[kg.K] Molar Enthalpy (Mixture) -45705.5 kJ/kmol	Iumetric Flow 0.00100369 m3/s nsity (Mixture) 996.327 kg/m3 ecific Enthalpy (Mixture) -2537.04 kJ/kg ecific Entropy (Mixture) -6.83399 kJ/[kg.K] blar Enthalpy (Mixture) -45705.5 kJ/kmol blar Entropy (Mixture) -123.116 kJ/[kmol.K]	Mass Flow	1	kg/s
Density (Mixture) 996.327 kg/m3 Molecular Weight (Mixture) 18.0153 kg/kmol Specific Enthalpy (Mixture) -2537.04 kJ/kg Specific Entropy (Mixture) -6.83399 kJ/[kg.K] Molar Enthalpy (Mixture) -45705.5 kJ/kmol	Insity (Mixture) 996.327 kg/m3 Idecular Weight (Mixture) 18.0153 kg/kmol ecific Enthalpy (Mixture) -2537.04 kJ/kg ecific Entropy (Mixture) -6.83399 kJ/[kg.K] blar Enthalpy (Mixture) -45705.5 kJ/kmol blar Entropy (Mixture) -123.116 kJ/[kmol.K]	Molar Flow	199.83	kmol/h
Molecular Weight (Mixture) 18.0153 kg/kmol Specific Enthalpy (Mixture) -2537.04 kJ/kg Specific Entropy (Mixture) -6.83399 kJ/[kg.K] Molar Enthalpy (Mixture) -45705.5 kJ/kmol	18.0153 kg/kmol	Volumetric Flow	0.00100369	m3/s
Specific Enthalpy (Mixture) -2537.04 kJ/kg Specific Entropy (Mixture) -6.83399 kJ/[kg.K] Molar Enthalpy (Mixture) -45705.5 kJ/kmol	ecific Enthalpy (Mixture) -2537.04 kJ/kg ecific Entropy (Mixture) -6.83399 kJ/[kg.K] plar Enthalpy (Mixture) -45705.5 kJ/kmol plar Entropy (Mixture) -123.116 kJ/[kmol.K]	Density (Mixture)	996.327	kg/m3
Specific Entropy (Mixture) -6.83399 kJ/[kg.K] Molar Enthalpy (Mixture) -45705.5 kJ/kmol	ecific Entropy (Mixture) -6.83399 kJ/[kg.K] plar Enthalpy (Mixture) -45705.5 kJ/kmol plar Entropy (Mixture) -123.116 kJ/[kmol.K]	Molecular Weight (Mixture)	18.0153	kg/kmol
Molar Enthalpy (Mixture) -45705.5 kJ/kmol	olar Enthalpy (Mixture) -45705.5 kJ/kmol olar Entropy (Mixture) -123.116 kJ/[kmol.K]	Specific Enthalpy (Mixture)	-2537.04	kJ/kg
	olar Entropy (Mixture) -123.116 kJ/[kmol.K]	Specific Entropy (Mixture)	-6.83399	kJ/[kg.K]
400 A40		Molar Enthalpy (Mixture)	-45705.5	kJ/kmol
Molar Entropy (Mixture) -123.116 KJ/[KMol.K]	ermal Conductivity (Mixture) 0.610248 W/[m.K]	Molar Entropy (Mixture)	-123.116	kJ/[kmol.K]
Thermal Conductivity (Mixture) 0.610248 W/[m.K]		Thermal Conductivity (Mixture)	0.610248	W/[m.K]

Object: WATER OUTLET

Type: Material Stream

Property Value

Simulation Report

DWSIM v.6.5

Details

Title: Water pump

Comments: AHMED ABDULRAHMAN: U18CE1104,

GANA GBARO: U18CE1106. SULEIMAN YUSUF U15CE1080

Temperature	41.7748	С
Pressure	84	bar
Mass Flow	0.500425	kg/s
Molar Flow	100	kmol/h
Volumetric Flow	0.000504363	m3/s
Density (Mixture)	992.192	kg/m3
Molecular Weight (Mixture)	18.0153	kg/kmol
Specific Enthalpy (Mixture)	-2453.75	kJ/kg
Specific Entropy (Mixture)	-6.59427	kJ/[kg.K]
Molar Enthalpy (Mixture)	-44205	kJ/kmol
Molar Entropy (Mixture)	-118.798	kJ/[kmol.K]
Thermal Conductivity (Mixture)	0.633145	W/[m.K]

Object: ESTR-02

Type: Energy Stream

Property Value

Energy Flow 1381.33 kW

Object: ENERGY STREAM

Type: Energy Stream

Property Value

Energy Flow 83.2927 kW

Object: PUMP

Type: Adiabatic Pump

Property Value

Pressure Increase (Head)	8.29868E+06	Pa
Efficiency	10	
Delta-T	16.7748	K.
Power Required	83.2927	kW
Available NPSH	10.0421	m
Outlet Pressure	84	bar

Object: heater

Type: Material Stream Heater

Property Value

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Details

Title: Water pump

Comments:

AHMED ABDULRAHMAN: U18CE1104, GANA GBARO: U18CE1106. SULEIMAN YUSUF U15CE1080

Flow Conductance	1	[kg/s]/[Pa^0.5]
Volume	1	m3
Minimum Pressure	101325	bar
Initialize using Inlet Stream	1	
Reset Content	0	
Pressure Drop	0	Pa
Efficiency	100	
Outlet Temperature	298.384	С
Heat Added	1381.33	kW
Outlet Molar Vapor Fraction	1	
Delta-T	256.609	K.

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