Simulation Report

DWSIM v.6.5

Details

Title: Water pump

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

Object: MSTR-03

Type: Material Stream

Property	Value	
Temperature	298.384	C
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
Molar Entropy (Mixture)	-123.116	kJ/[kmol.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	C
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	

Simulation Report

DWSIM v.6.5

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	C
Heat Added	1381.33	kW
Outlet Molar Vapor Fraction	1	
Delta-T	256.609	K.