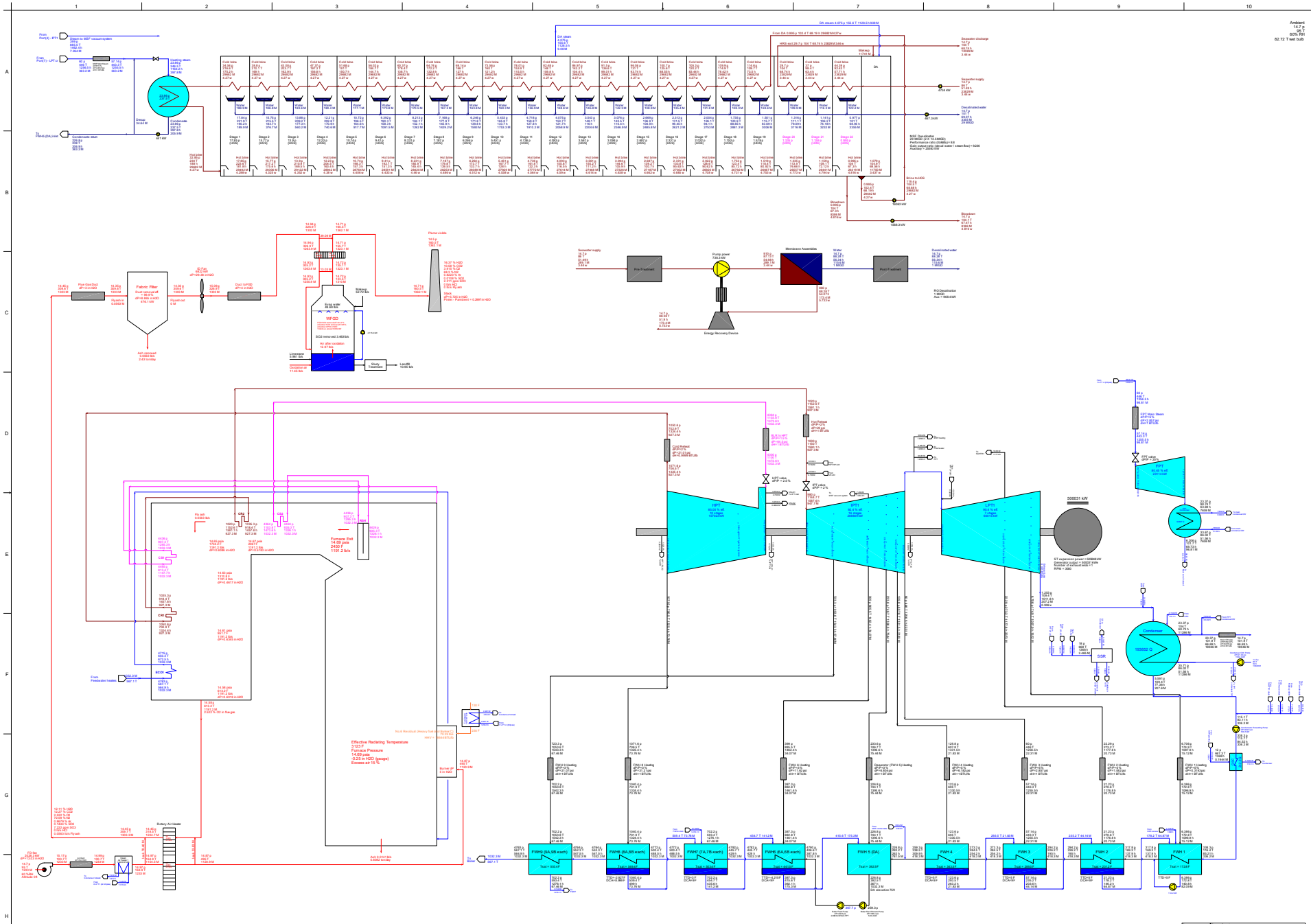
Ambient
14.7 p
0 ft
60% RH
82.72 T wet bulb
HPT
IPT1
LPT1
500031 kW
Condenser
Furnace Exit
14.69 psia
2450 F
1191.2 lb/s
Effective Radiating Temperature
3.72 ft
Furnace Pressure
14.69 psia
-0.25 in H2O (gauge)
Excess air 15 %
Fabric Filter
WFGD
Pump power
736.3 kW
Membrane Assemblies
Pre-Treatment
Post-Treatment
Energy Recovery Device
Rotary Air Heater
FWH 5 (DA)
FWH 4
FWH 3
FWH 2
FWH 1
FWHB (5A,5B each)
FWHB (6A,6B each)
FWHB (7A,7B each)
FWHB (8A,8B each)
Plant Gross Power = 500031 kW, Plant Aux. & Transformer losses = 4729.1 kW, Plant Net Power Output = 495270 kW
Net process heat = 0 BTU/s, Desalinated water = 5456 lb/s (98.0345% MWR)
Plant Net Heat Rate = 6888 BTU/kWh (LHV), 7640 BTU/kWh (HHV)
Gross Elec.Eff = 38.13 %, Net Elec.Eff = 34.32 %, PURPA Eff = 34.32 %, CHP (Total)Eff = 34.32 % (LHV)
Plant Fuel LHV chemical energy input= 1293076 BTU/s
Boiler adjusted efficiency = 88.66 % (HHV), 93.93 % (LHV)
Boiler fuel input = 1012642 BTU/s (HHV), 1292879 BTU/s (LHV)
ASME boiler efficiency (Output/Input = 90.34 % (HHV), 95.96 % (LHV)
ASME gross efficiency (Output/Input+Credits) = 88.2 % (HHV), 93 % (LHV)
Steam cycle heat rate = 6539 BTU/kWh
Steam cycle efficiency = 39.98 %
Turbine Heat rate = 5513 BTU/kWh
STEAM PRO 27.0 ME Thermoflow, Inc.
S 08-16-2019 14:08:55 C:\TFLOW27\MYFILES\STP-designed hybrid MSF-RO desalination plant.STP
p [psia], T [F], h [BTU/lb], M [lb/s], Q [BTU/s], x [-]. Steam Properties: IFC-67
Company: Thermoflow, Inc.
Plant: Hybrid
Unit Configuration: Conventional boiler
Steam turbine: Single reheat condensing turbine 300+300/3000
Desalination facility: SIDEM/CDEM
Cooling system: Once-through water cooling
Project:
Date:
Heat Balance:
Case:
Date: 08-16-2019
Notes: