Software Information

General information

TESPy Version:	0.6.0 - Colored Chemicals
Commit:	d0739fcd@main
CoolProp version:	6.4.1
Python version:	3.8.10 (default, Mar 15 2022, 12:22:08) [GCC 9.4.0]
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Parameter highlighting

Variable component parameters:	*italic*
Specified input parameter:	**bold**
Results of simulation:	normalfont

Equations are displayed for input parameters only.

1 Connections in design mode

1.1 Connection specifications and results

Table 1: Connection specifications and results

label	m in kg/s (1)	p in bar (2)	h in kJ/kg	T in °C (3)	s in kJ/kgK	x in − (4)	Td_bp in °C (5)
1	38.969	**100.0000**	3,002.40	**371.0**	6.0697	-1.00	-
2	38.969	100.0000	3,002.40	371.0	6.0697	-1.00	-
3	**38.969**	**33.6100**	2,804.82	240.7	6.1443	-1.00	-
4	36.012	33.6100	2,804.82	240.7	6.1443	-1.00	-
5	36.012	**18.5800**	2,707.54	208.7	6.1810	0.95	-
6	33.524	18.5800	2,707.54	208.7	6.1810	0.95	-
7	33.524	**17.1000**	3,189.77	**371.0**	7.1106	-1.00	-
8	33.524	**7.9800**	3,015.17	280.3	7.1616	-1.00	-
9	31.041	7.9800	3,015.17	280.3	7.1616	-1.00	-
10	31.041	**2.7300**	2,797.89	166.4	7.2068	-1.00	-
11	29.273	2.7300	2,797.89	166.4	7.2068	-1.00	-
12	29.273	**0.9600**	2,623.62	98.5	7.2393	0.98	-
13	27.676	0.9600	2,623.62	98.5	7.2393	0.98	-
14	27.676	**0.2900**	2,461.05	68.3	7.3042	0.93	-
15	26.568	0.2900	2,461.05	68.3	7.3042	0.93	-
16	26.568	**0.0800**	2,348.06	41.5	7.5023	0.91	-
17	31.041	0.0800	2,040.95	41.5	6.5263	0.78	-
18	31.041	0.0800	173.84	41.5	0.5925	0.00	-
25	31.041	7.9800	526.89	125.3	1.5846	-1.00	-
26	38.969	7.9800	720.41	170.3	2.0446	**0.00**	-
31	38.969	**103.5600**	1,016.11	235.2	2.6433	-1.00	-
32	38.969	103.4200	1,410.39	311.5	3.3638	-1.00	**-2.0**
33	78.680	103.4200	1,422.74	313.5	3.3849	0.00	-
34	78.680	103.4200	2,070.94	313.5	4.4898	**0.50**	-
35	38.969	**103.4200**	2,719.14	313.5	5.5948	1.00	-
36	2.957	33.6100	2,804.82	240.7	6.1443	-1.00	-
39	2.957	18.5800	914.90	208.7	2.4605	0.01	-
40	2.489	18.5800	2,707.54	208.7	6.1810	0.95	-
41	5.445	18.5800	1,734.16	208.7	4.1608	0.44	-
44	5.445	7.9800	777.12	170.3	2.1725	0.03	-
45	2.483	7.9800	3,015.17	280.3	7.1616	-1.00	-
46	1.768	2.7300	2,797.89	166.4	7.2068	-1.00	-
49	1.768	0.9600	433.92	98.5	1.3470	0.01	-
50	1.596	0.9600	2,623.62	98.5	7.2393	0.98	-
51	3.364	0.9600	1,472.90	98.5	4.1428	0.47	-
54	3.364	0.2900	307.02	68.3	0.9961	0.01	-
55	1.108	0.2900	2,461.05	68.3	7.3042	0.93	-
56	4.472	0.2900	840.68	68.3	2.5589	0.24	-
59	4.472	0.0800	216.49	41.5	0.7280	0.02	-
60	2,132.083	1.0663	153.03	36.5	0.5255	-1.00	-
61	2,132.083	1.0663	153.03	36.5	0.5255	-1.00	-
62	2,132.083	**1.0130**	125.82	**30.0**	0.4367	-1.00	-
63	2,132.083	1.1848	125.85	30.0	0.4367	-1.00	-
64	11,691.521	**1.0130**	424.44	**25.0**	3.8806	-1.00	-
65	11,691.521	**1.0135**	424.51	25.1	3.8807	-1.00	-
66	11,691.521	**1.0130**	429.47	**30.0**	3.8973	-1.00	-

Continued on next page

Table 1: Connection specifications and results

label	m in kg/s (1)	p in bar (2)	h in kJ/kg	T in °C (3)	s in kJ/kgK	x in − (4)	Td_bp in °C (5)
70	405.389	**23.3040**	761.43	**390.0**	1.6201	-inf	-
71	405.389	23.3040	761.43	390.0	1.6201	-inf	-
72	353.337	23.3040	761.43	390.0	1.6201	-inf	-
73	353.337	**22.7530**	730.18	377.7	1.5726	-inf	-
74	353.337	**21.1670**	585.85	318.5	1.3406	-inf	-
75	353.337	20.3400	542.36	299.8	1.2661	-inf	-
76	52.052	23.3040	761.43	390.0	1.6201	-inf	-
77	52.052	20.3400	450.85	259.2	1.1005	-inf	-
78	405.389	**20.3400**	530.61	294.7	1.2455	-inf	-
79	405.389	**41.0240**	534.80	296.3	1.2484	-inf	-
19	31.041	**14.7550**	175.95	41.7	0.5945	-1.00	-
20	31.041	14.7550	185.97	44.1	0.6262	-1.00	-
21	31.041	**9.9975**	265.88	63.3	0.8722	-1.00	-
22	31.041	9.9975	277.34	66.1	0.9061	-1.00	-
23	31.041	**8.7012**	392.25	93.5	1.2323	-1.00	-
24	31.041	8.7012	398.73	95.0	1.2499	-1.00	-
27	38.969	**125.0000**	738.98	173.1	2.0571	-1.00	-
28	38.969	125.0000	754.98	176.8	2.0928	-1.00	-
29	38.969	**112.0000**	872.71	203.7	2.3501	-1.00	-
30	38.969	112.0000	882.11	205.8	2.3698	-1.00	-
37	2.957	33.6100	1,038.69	240.2	2.7042	0.00	-
38	2.957	33.6100	914.90	213.7	2.4566	-1.00	-
42	5.445	18.5800	891.63	208.7	2.4122	0.00	-
43	5.445	18.5800	777.12	183.1	2.1681	-1.00	-
47	1.768	2.7300	547.81	130.3	1.6382	0.00	-
48	1.768	2.7300	433.92	103.5	1.3461	-1.00	-
52	3.364	0.9600	412.71	98.5	1.2899	-0.00	-
53	3.364	0.9600	307.02	73.3	0.9954	-1.00	-
57	4.472	0.2900	286.02	68.3	0.9345	-0.00	-
58	4.472	0.2900	216.49	51.7	0.7258	-1.00	-

1.2 Equations applied

$$0 = \dot{m} - \dot{m}_{\mathrm{spec}} \tag{1}$$

$$0 = p - p_{\mathrm{spec}} \tag{2}$$

$$0 = T\left(p, h\right) - T_{\mathrm{spec}} \tag{3}$$

$$0 = h - h\left(p, x_{\mathrm{spec}}\right) \tag{4}$$

$$0 = \Delta T_{\mathrm{spec}} - T_{\mathrm{sat}}\left(p\right) \tag{5}$$

1.3 Specified fluids

Table 2: Specified fluids

label	TVP1 (6)	air (7)	water (8)
1	**0.000**	**0.000**	**1.000**
62	**0.000**	**0.000**	**1.000**
64	**0.000**	**1.000**	**0.000**
70	**1.000**	**0.000**	**0.000**

1.4 Equations applied

$$0 = x_{\mathrm{TVP1}} - x_{\mathrm{TVP1,spec}} \tag{6}$$

$$0 = x_{\mathrm{air}} - x_{\mathrm{air,spec}} \tag{7}$$

$$0 = x_{\mathrm{water}} - x_{\mathrm{water,spec}} \tag{8}$$

1.5 Referenced mass flow

Table 3: Specified reference values for mass flow

label	reference	factor in -	delta in $^{\mathrm{kg}}/_{\mathrm{s}}$
0	70	0.1284	0

1.6 Equation applied

$$0 = \mathrm{value} - \mathrm{value}_{\mathrm{ref}} \cdot \mathrm{factor} + \mathrm{delta} \tag{9}$$

2 Components in design mode

2.1 Components of type HeatExchanger

2.1.1 Mandatory constraints

$$0 = \dot{m}_{\mathrm{in},i} - \dot{m}_{\mathrm{out},i} \; \forall i \in [1,2] \tag{10}$$

$$0 = x_{fl,\mathrm{in},i} - x_{fl,\mathrm{out},i} \; \forall fl \in \text{network fluids}, \forall i \in [1,2] \tag{11}$$

$$0 = \dot{m}_{\mathrm{in},1} \cdot \left(h_{\mathrm{out},1} - h_{\mathrm{in},1}\right) + \dot{m}_{\mathrm{in},2} \cdot \left(h_{\mathrm{out},2} - h_{\mathrm{in},2}\right) \tag{12}$$

2.1.2 Specifications and results

Table 4: Parameters of components of type HeatExchanger

label	Q	ttd_u	ttd_l (13)	pr1 (14)	pr2 (15)
Superheater	-11,038,645.89	19.00	64.21	0.98	0.97
Reheater	-16,165,997.53	19.00	50.50	0.87	0.92
Economizer	-15,364,788.65	7.00	64.59	0.96	1.00
Evaporator	-51,000,483.02	64.21	**5.00**	0.93	1.00
Cooling tower	-58,008,902.88	6.51	4.93	**0.95**	1.00
Low pressure preheater 1 subcooling	-310,958.68	24.21	**10.00**	**1.00**	**1.00**
Low pressure preheater 2 subcooling	-355,547.41	32.41	**10.00**	**1.00**	**1.00**
Low pressure preheater 3 subcooling	-201,352.32	35.32	**10.00**	**1.00**	**1.00**
High pressure preheater 1 subcooling	-623,547.56	31.90	**10.00**	**1.00**	**1.00**
High pressure preheater 2 subcooling	-366,012.28	34.45	**10.00**	**1.00**	**1.00**

2.1.3 Equations applied

$$0 = ttd_\mathrm{l} - T_\mathrm{out,1} + T_\mathrm{in,2} \tag{13}$$

$$0 = p_\mathrm{in,1} \cdot pr1 - p_\mathrm{out,1} \tag{14}$$

$$0 = p_\mathrm{in,2} \cdot pr2 - p_\mathrm{out,2} \tag{15}$$

2.2 Components of type CycleCloser

2.2.1 Mandatory constraints

$$0 = p_{\mathrm{in},i} - p_{\mathrm{out},i} \; \forall i \in [1] \tag{16}$$

$$0 = h_{\mathrm{in},i} - h_{\mathrm{out},i} \; \forall i \in [1] \tag{17}$$

2.2.2 Specifications and results

Table 5: Parameters of components of type CycleCloser

label	mass_deviation	fluid_deviation
Cycle closer power cycle	0.00	0.00
Cycle closer cw	0.00	0.00
Cycle closer pt	0.00	0.00

2.3 Components of type Turbine

2.3.1 Mandatory constraints

$$0 = \dot{m}_{\mathrm{in},i} - \dot{m}_{\mathrm{out},i} \; \forall i \in [1] \tag{18}$$

$$0 = x_{fl,\mathrm{in},i} - x_{fl,\mathrm{out},i} \; \forall fl \in \text{network fluids}, \forall i \in [1] \tag{19}$$

2.3.2 Specifications and results

Table 6: Parameters of components of type Turbine

label	P	eta_s (20)	pr
HP turbine 1	-7,699,459.42	**0.84**	0.34
HP turbine 2	-3,503,353.54	**0.85**	0.55
LP turbine 1	-5,853,157.76	**0.86**	0.47
LP turbine 2	-6,744,442.54	**0.92**	0.34
LP turbine 3	-5,101,417.76	**0.94**	0.35
LP turbine 4	-4,499,249.42	**0.88**	0.30
LP turbine 5	-3,001,919.77	**0.64**	0.28

2.3.3 Equations applied

$$0 = -\left(h_{\mathrm{out}} - h_{\mathrm{in}}\right) + \left(h_{\mathrm{out,s}} - h_{\mathrm{in}}\right) \cdot \eta_{\mathrm{s}} \tag{20}$$

2.4 Components of type Splitter

2.4.1 Mandatory constraints

$$0 = \sum \dot{m}_{\mathrm{in},i} - \sum \dot{m}_{\mathrm{out},j} \; \forall i \in \mathrm{inlets}, \forall j \in \mathrm{outlets} \tag{21}$$

$$0 = x_{fl,\mathrm{in}} - x_{fl,\mathrm{out},j} \; \forall fl \in \text{network fluids}, \forall j \in \mathrm{outlets} \tag{22}$$

$$0 = h_{in} - h_{\mathrm{out},j} \; \forall j \in \mathrm{outlets} \tag{23}$$

$$\begin{aligned} 0 = p_{\mathrm{in},1} - p_{\mathrm{in},i} \; \forall i \in \mathrm{inlets} \setminus \{1\} \\ 0 = p_{\mathrm{in},1} - p_{\mathrm{out},j} \; \forall j \in \mathrm{outlets} \end{aligned} \tag{24}$$

2.5 Components of type Merge

2.5.1 Mandatory constraints

$$0 = \sum \dot{m}_{\mathrm{in},i} - \sum \dot{m}_{\mathrm{out},j} \; \forall i \in \mathrm{inlets}, \forall j \in \mathrm{outlets} \tag{25}$$

$$0 = \sum_i \dot{m}_{\mathrm{in},i} \cdot x_{fl,\mathrm{in},i} - \dot{m}_{\mathrm{out}} \cdot x_{fl,\mathrm{out}} \; \forall fl \in \text{network fluids}, \forall i \in \mathrm{inlets} \tag{26}$$

$$0 = \sum_i \left(\dot{m}_{\mathrm{in},i} \cdot h_{\mathrm{in},i}\right) - \dot{m}_{\mathrm{out}} \cdot h_{\mathrm{out}} \; \forall i \in \mathrm{inlets} \tag{27}$$

$$\begin{aligned} 0 = p_{\mathrm{in},1} - p_{\mathrm{in},i} \; \forall i \in \mathrm{inlets} \setminus \{1\} \\ 0 = p_{\mathrm{in},1} - p_{\mathrm{out},j} \; \forall j \in \mathrm{outlets} \end{aligned} \tag{28}$$

2.6 Components of type Condenser

2.6.1 Mandatory constraints

$$0 = \dot{m}_{\mathrm{in},i} - \dot{m}_{\mathrm{out},i} \; \forall i \in [1, 2] \tag{29}$$

$$0 = x_{fl,\mathrm{in},i} - x_{fl,\mathrm{out},i} \; \forall fl \in \text{network fluids}, \forall i \in [1, 2] \tag{30}$$

$$0 = \dot{m}_{\mathrm{in},1} \cdot \left(h_{\mathrm{out},1} - h_{\mathrm{in},1}\right) + \dot{m}_{\mathrm{in},2} \cdot \left(h_{\mathrm{out},2} - h_{\mathrm{in},2}\right) \tag{31}$$

2.6.2 Specifications and results

Table 7: Parameters of components of type Condenser

label	Q	ttd_u (32)	ttd_l	pr1 (33)	pr2 (34)
Condenser	-57,956,348.47	**5.00**	11.51	**1.00**	**0.90**
Low pressure preheater 1	-2,480,570.42	**5.00**	24.21	**1.00**	0.68
Low pressure preheater 2	-3,566,757.71	**5.00**	32.41	**1.00**	0.87
Low pressure preheater 3	-3,978,057.22	**5.00**	35.32	**1.00**	0.92
High pressure preheater 1	-4,587,816.13	**5.00**	31.90	**1.00**	0.90
High pressure preheater 2	-5,221,925.04	**5.00**	34.45	**1.00**	0.92

2.6.3 Equations applied

$$0 = ttd_\mathrm{u} - T_\mathrm{sat}\left(p_\mathrm{in,1}\right) + T_\mathrm{out,2} \tag{32}$$

$$0 = p_\mathrm{in,1} \cdot pr1 - p_\mathrm{out,1} \tag{33}$$

$$0 = p_\mathrm{in,2} \cdot pr2 - p_\mathrm{out,2} \tag{34}$$

2.7 Components of type Pump

2.7.1 Mandatory constraints

$$0 = \dot{m}_{\mathrm{in},i} - \dot{m}_{\mathrm{out},i} \; \forall i \in [1] \tag{35}$$

$$0 = x_{fl,\mathrm{in},i} - x_{fl,\mathrm{out},i} \; \forall fl \in \text{network fluids}, \forall i \in [1] \tag{36}$$

2.7.2 Specifications and results

Table 8: Parameters of components of type Pump

label	P	eta_s (37)	pr
Condenser pump	65,605.65	**0.70**	184.44
Feedwater pump	723,827.94	**0.70**	15.66
Cooling water pump	52,554.42	**0.70**	1.17
HTF pump	1,700,238.56	**0.60**	2.02

2.7.3 Equations applied

$$0 = -\left(h_\mathrm{out} - h_\mathrm{in}\right) \cdot \eta_\mathrm{s} + \left(h_\mathrm{out,s} - h_\mathrm{in}\right) \tag{37}$$

2.8 Components of type Drum

2.8.1 Mandatory constraints

$$0 = \sum \dot{m}_{\mathrm{in},i} - \sum \dot{m}_{\mathrm{out},j} \; \forall i \in \text{inlets}, \forall j \in \text{outlets} \tag{38}$$

$$0 = x_{fl,\mathrm{in},1} - x_{fl,\mathrm{out},j} \; \forall fl \in \text{network fluids}, \forall j \in \text{outlets} \tag{39}$$

$$0 = \sum_i \left(\dot{m}_{\mathrm{in},i} \cdot h_{\mathrm{in},i}\right) - \sum_j \left(\dot{m}_{\mathrm{out},j} \cdot h_{\mathrm{out},j}\right) \; \forall i \in \text{inlets} \; \forall j \in \text{outlets} \tag{40}$$

$$0 = p_{\mathrm{in},1} - p_{\mathrm{in},i} \ \forall i \in \mathrm{inlets} \setminus \{1\}$$
$$0 = p_{\mathrm{in},1} - p_{\mathrm{out},j} \ \forall j \in \mathrm{outlets} \quad (41)$$

$$0 = h_{\mathrm{out},1} - h\left(p_{\mathrm{out},1}, x = 0\right)$$
$$0 = h_{\mathrm{out},2} - h\left(p_{\mathrm{out},2}, x = 1\right) \quad (42)$$

2.9 Components of type Valve

2.9.1 Mandatory constraints

$$0 = \dot{m}_{\mathrm{in},i} - \dot{m}_{\mathrm{out},i} \ \forall i \in [1] \quad (43)$$

$$0 = x_{fl,\mathrm{in},i} - x_{fl,\mathrm{out},i} \ \forall fl \in \text{network fluids}, \forall i \in [1] \quad (44)$$

$$0 = h_{\mathrm{in},i} - h_{\mathrm{out},i} \ \forall i \in [1] \quad (45)$$

2.9.2 Specifications and results

Table 9: Parameters of components of type Valve

label	pr	zeta
Valve 1	0.55	116,509,403.93
Valve 2	0.43	9,926,543.49
Valve 3	0.35	7,513,567.89
Valve 4	0.30	288,942.73
Valve 5	0.28	8,013.54

2.10 Components of type Compressor

2.10.1 Mandatory constraints

$$0 = \dot{m}_{\mathrm{in},i} - \dot{m}_{\mathrm{out},i} \ \forall i \in [1] \quad (46)$$

$$0 = x_{fl,\mathrm{in},i} - x_{fl,\mathrm{out},i} \ \forall fl \in \text{network fluids}, \forall i \in [1] \quad (47)$$

2.10.2 Specifications and results

Table 10: Parameters of components of type Compressor

label	P	eta_s (48)	pr
Cooling tower fan	822,719.88	**0.60**	1.00

2.10.3 Equations applied

$$0 = -\left(h_{\mathrm{out}} - h_{\mathrm{in}}\right) \cdot \eta_{\mathrm{s}} + \left(h_{\mathrm{out,s}} - h_{\mathrm{in}}\right) \quad (48)$$

2.11 Components of type ParabolicTrough

2.11.1 Mandatory constraints

$$0 = \dot{m}_{\mathrm{in},i} - \dot{m}_{\mathrm{out},i} \; \forall i \in [1] \tag{49}$$

$$0 = x_{fl,\mathrm{in},i} - x_{fl,\mathrm{out},i} \; \forall fl \in \text{network fluids}, \forall i \in [1] \tag{50}$$

2.11.2 Specifications and results

Table 11: Parameters of components of type ParabolicTrough

label	Q	pr	zeta	Q_loss	energy_group (51)
Parabolic trough	91,869,676.53	0.57	10,127.07	-60,124,279.32	True

Table 12: Parametergroup energy_group

label	E	eta_opt	aoi	doc	c_1	c_2	iam_1	iam_2	A	Tamb
Parabolic trough	**1,000.00**	**0.73**	**0.00**	**0.95**	**0.00**	**0.00**	**1.00**	**1.00**	*151,993.96*	**25.00**

2.11.3 Equations applied

$$\begin{split}0 =& \dot{m}_{\mathrm{in}} \cdot (h_{\mathrm{out}} - h_{\mathrm{in}})\\ & - A \cdot \left[E \cdot \eta_{\mathrm{opt}} \cdot doc^{1.5} \cdot iam \right.\\ & \left. -c_1 \cdot (T_{\mathrm{m}} - T_{\mathrm{amb}}) - c_2 \cdot (T_{\mathrm{m}} - T_{\mathrm{amb}})^2 \right]\\ T_{\mathrm{m}} =& \frac{T_{\mathrm{out}} + T_{\mathrm{in}}}{2}\\ iam =& 1 - iam_1 \cdot |aoi| - iam_2 \cdot aoi^2\end{split} \tag{51}$$

3 Busses in design mode

3.1 Bus “total output power”

This bus is used for postprocessing only.

Table 13: Results overview for bus total output power

label	$\dot{E}_\mathrm{comp}$	$\dot{E}_\mathrm{comp,result}$	$\dot{E}_\mathrm{bus}$	$\dot{E}_\mathrm{bus,result}$	η_result
HP turbine 1	$\dot{m}_\mathrm{in} \cdot (h_\mathrm{out} - h_\mathrm{in})$	-7,699,459.42	$\dot{E}_\mathrm{comp} \cdot \eta$	-7,468,475.64	0.97
HP turbine 2	$\dot{m}_\mathrm{in} \cdot (h_\mathrm{out} - h_\mathrm{in})$	-3,503,353.54	$\dot{E}_\mathrm{comp} \cdot \eta$	-3,398,252.93	0.97
LP turbine 1	$\dot{m}_\mathrm{in} \cdot (h_\mathrm{out} - h_\mathrm{in})$	-5,853,157.76	$\dot{E}_\mathrm{comp} \cdot \eta$	-5,677,563.03	0.97
LP turbine 2	$\dot{m}_\mathrm{in} \cdot (h_\mathrm{out} - h_\mathrm{in})$	-6,744,442.54	$\dot{E}_\mathrm{comp} \cdot \eta$	-6,542,109.27	0.97
LP turbine 3	$\dot{m}_\mathrm{in} \cdot (h_\mathrm{out} - h_\mathrm{in})$	-5,101,417.76	$\dot{E}_\mathrm{comp} \cdot \eta$	-4,948,375.22	0.97
LP turbine 4	$\dot{m}_\mathrm{in} \cdot (h_\mathrm{out} - h_\mathrm{in})$	-4,499,249.42	$\dot{E}_\mathrm{comp} \cdot \eta$	-4,364,271.94	0.97
LP turbine 5	$\dot{m}_\mathrm{in} \cdot (h_\mathrm{out} - h_\mathrm{in})$	-3,001,919.77	$\dot{E}_\mathrm{comp} \cdot \eta$	-2,911,862.18	0.97
Feedwater pump	$\dot{m}_\mathrm{in} \cdot (h_\mathrm{out} - h_\mathrm{in})$	723,827.94	$\frac{\dot{E}_\mathrm{comp}}{\eta}$	761,924.15	0.95
Condenser pump	$\dot{m}_\mathrm{in} \cdot (h_\mathrm{out} - h_\mathrm{in})$	65,605.65	$\frac{\dot{E}_\mathrm{comp}}{\eta}$	69,058.58	0.95
HTF pump	$\dot{m}_\mathrm{in} \cdot (h_\mathrm{out} - h_\mathrm{in})$	1,700,238.56	$\frac{\dot{E}_\mathrm{comp}}{\eta}$	1,789,724.80	0.95
Cooling water pump	$\dot{m}_\mathrm{in} \cdot (h_\mathrm{out} - h_\mathrm{in})$	52,554.42	$\frac{\dot{E}_\mathrm{comp}}{\eta}$	55,320.44	0.95
Cooling tower fan	$\dot{m}_\mathrm{in} \cdot (h_\mathrm{out} - h_\mathrm{in})$	822,719.88	$\frac{\dot{E}_\mathrm{comp}}{\eta}$	866,020.92	0.95
total	-	-33,038,053.77	-	-31,768,861.32	-

3.2 Bus "heat input"

This bus is used for postprocessing only.

Table 14: Results overview for bus heat input

label	$\dot{E}_\mathrm{comp}$	$\dot{E}_\mathrm{comp,result}$	$\dot{E}_\mathrm{bus}$	$\dot{E}_\mathrm{bus,result}$	η_result
Parabolic trough	$\dot{m}_\mathrm{in} \cdot (h_\mathrm{out} - h_\mathrm{in})$	91,869,676.53	$\frac{\dot{E}_\mathrm{comp}}{\eta}$	91,869,676.53	1.00
total	-	91,869,676.53	-	91,869,676.53	-