

Table 4. Results of exergy analysis at 100 % PLF and various values of PHR

PLF, %	100					
Generator output, kW	20700					
PHR	0.6851	0.6365	0.6077	0.5460	0.5247	0.4660
SSC kg kWh⁻¹	5.655	5.687	5.709	5.763	5.785	5.855
$\dot{E}x_{dest,boi}$, kW	93673.20	92467.28	92335.50	92071.92	91851.12	91811.39
$\dot{E}x_{dest,tur}$, kW	11473.72	11307.80	11198.01	10910.47	10788.44	10428.95
$\dot{E}x_{dest,cond}$, kW	2647.10	2569.20	2550.46	2420.00	2341.33	2167.85
$\dot{E}x_{dest,tot}$, kW	107794.02	106344.28	106083.97	105402.39	104980.89	104408.19
$\dot{E}x_{in} = \dot{E}x_{15} + \dot{E}x_{16}$, kW	140715.52	139712.35	139713.98	139903.21	139813.60	140321.50
TE_{xDR}	0.7660	0.7611	0.7592	0.7533	0.7508	0.7440
$\eta_{ex,boi}$, %	29.62	30.01	30.10	30.37	30.50	30.75
$\eta_{ex,tur}$, %	64.33	64.67	64.89	65.48	65.73	66.49
$\eta_{ex,cond}$, %	20.81	20.83	20.63	20.63	20.63	20.88
$\dot{I}P_{boi}$, kW	65927.19	64717.84	64542.51	64109.67	63836.52	63579.38
$\dot{I}P_{tur}$, kW	4092.67	3995.04	3931.62	3766.29	3697.19	3494.74
$\dot{I}P_{cond}$, kW	2096.23	2034.03	2024.30	1920.75	1858.31	1715.20
$\eta_{ex,CHP}$, %	20.50	21.03	21.30	21.93	22.20	22.96

Table 5. Exergy rates at different state points at 89.37 % PLF and various values of PHR

PLF, %	89.37					
PHR	0.3923	0.3475	0.2921	0.2786	0.2549	0.2445
SSC, kg kWh⁻¹	5.978	6.075	6.220	6.300	6.397	6.445
S/B	2.23	2.29	2.31	2.33	2.36	2.38
State point	Ex, kW	Ex, kW	Ex, kW	Ex, kW	Ex, kW	Ex, kW
1	42044.31	42728.62	43755.10	44302.55	44986.86	45329.02
2	3292.60	3292.60	3569.45	3292.60	3292.60	3292.60
3	8793.93	10258.49	12455.32	13194.20	14658.75	15391.03
4	2671.54	2344.72	1801.29	1717.69	1390.87	1227.46
5	38.34	33.72	26.04	24.86	20.24	17.93
6	0.00	0.00	0.00	0.00	0.00	0.00
7	687.01	602.96	463.22	441.72	357.68	315.65
8	3231.35	3283.58	3362.44	3404.44	3456.67	3482.28
9	1827.66	1808.07	1835.85	1842.26	1847.60	1845.11
10	137184.00	135700.40	137777.45	138271.98	138667.61	138469.80
11	5284.60	5228.34	5306.94	5436.01	5342.52	5335.07
12	42643.36	43332.49	44366.18	44917.49	4560.62	45951.18

Table 6. Exergy rates at different state points at 75.36 % PLF and various values of PHR.

PLF, %	75.36					
PHR	0.1148	0.1113	0.1086	0.1064	0.1042	0.1016
SSC, kg kWh⁻¹	6.110	6.189	6.254	6.312	6.369	6.441
S/B	1.76	1.80	1.82	1.84	1.92	2.05
State point	Ex, kW	Ex, kW	Ex, kW	Ex, kW	Ex, kW	Ex, kW
1	36227.63	36706.65	37089.87	37432.03	37774.18	38198.46
2	3292.60	3292.60	3292.60	3292.60	3292.60	3292.60
3	8264.37	9249.13	10073.77	10806.04	11544.92	12455.32
4	2021.70	1799.39	1615.08	1451.67	1286.36	1083.05
5	29.159	26.01	23.41	21.10	18.76	15.89
6	0.00	0.00	0.00	0.00	0.00	0.00
8	2787.87	2824.74	2853.42	2880.05	2905.65	2938.42
9	1997.92	1979.40	1977.97	1974.06	1908.16	1808.07
10	149943.01	148558.31	148459.40	148162.68	143217.33	135700.40
11	5776.90	5723.12	5718.98	5708.23	5517.10	5228.34
12	36785.75	37268.15	37654.06	37998.62	38343.19	38770.45