

BAB V

NERACA PANAS

Kapasitas produksi : 68.000 ton/tahun
 Operasi pabrik : 300 hari
 Basis : 1 jam
 Temperatur referensi : 25°C (298,15 K)

5.1 *Heater (HE-01)*

Tabel 5.1 Neraca panas HE-01

Komponen	<i>Input (kJ/jam)</i>	<i>Output (kJ/jam)</i>
Qin	84.759,8818	0,0000
Qout	0,0000	927.450,4938
Qs in	999.203,6346	0,0000
Qs out	0,0000	156.513,0226
Total	1.083.963,5164	1.083.963,5164

5.2 *Heater (HE-02)*

Tabel 5.2 Neraca panas HE-02

Komponen	<i>Input (kJ/jam)</i>	<i>Output (kJ/jam)</i>
Qin	24.850,5164	0,0000
Qout	0,0000	255.832,8975
Qs in	273.882,7649	0,0000
Qs out	0,0000	42.900,3837
Total	298.733,2812	298.733,2812

5.3 *Heater (HE-03)*

Tabel 5.3 Neraca panas HE-03

Komponen	<i>Input (kJ/jam)</i>	<i>Output (kJ/jam)</i>
Qin	100,4875	0,0000
Qout	0,0000	1.047,5323
Qs in	1.122,9396	0,0000
Qs out	0,0000	175,8947
Total	1.223,4271	1.223,4271

5.4 Reaktor (R-01)

Tabel 5.4 Neraca panas R-01

Komponen	Input (kJ/jam)	Ouput (kJ/jam)
Q _{in}	5.549.642,2974	0,0000
Q _{out}	0,0000	1.771.375,2062
Q reaksi	0,0000	80.709.960,3807
Q _{cw_{in}}	507.340.540,8715	0,0000
Q _{cw_{out}}	0,0000	430.408.847,5820
Total	512.890.183,1689	512.890.183,1689

5.5 Heater (HE-04)

Tabel 5.5 Neraca panas HE-04

Komponen	Input (kJ/jam)	Output (kJ/jam)
Q _{in}	1.683.552,0013	0,0000
Q _{out}	0,0000	2.266.558,6968
Q _{s in}	691.288,5949	0,0000
Q _{s out}	0,0000	108.281,8994
Total	2.374.840,5962	2.374.840,5962

5.6 Kolom Destilasi (KD-01)

Tabel 5.6 Neraca panas KD-01

Komponen	Input (kJ/jam)	Output (kJ/jam)
Q ₁₇	3.444.257,0129	0,0000
Q ₁₈	0,0000	2.604.425,7292
Q ₁₉	0,0000	439.695,5516
Q lepas	0,0000	400.135,7321
Total	3.444.257,0129	3.444.257,0129

5.7 Total Condensor (TC-01)

Tabel 5.7 Neraca panas TC-01

Komponen	Input (kJ/jam)	Output (kJ/jam)
Q masuk	1.433.115,8891	0,0000
Q keluar	0,0000	86.519,4542
Q kondensasi	3.850.919,4730	0,0000
Q _{cw in}	1.303.173,4381	0,0000
Q _{cw out}	0,0000	6.500.689,3460

Total	6.587.208,8002	6.587.208,8002
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5.8 Reboiler (RB-01)

Tabel 5.8 Neraca panas RB-01

Komponen	Input (kJ/jam)	Output (kJ/jam)
Q in	1.375.459,6027	0,0000
Q out boil up	0,0000	1.375.449,8906
Q out kondensat	0,0000	9,7121
Total	1.375.459,6027	1.375.459,6027

5.9 Evaporator (EVP-01)

Tabel 5.9 Neraca panas EVP-01

Komponen	Input (kJ/jam)	Output (kJ/jam)
Q ₂₈	613.082,9240	0,0000
Q ₂₉	0,0000	293.406,1582
Q ₃₀	0,0000	548.901,1121
Q _{lv}	0,0000	4.167.035,5830
Qs in	0,0000	-4.167.035,5830
Qs out	309.710,2972	80.485,9509
Total	922.793,2212	922.793,2212

5.10 Cooler (CO-02)

Tabel 5.11 Neraca panas CO-02

Komponen	Input (kJ/jam)	Output (kJ/jam)
Q in	294.615,3211	0,0000
Q out	0,0000	18.763,6142
Qcw in	137.125,0885	0,0000
Qcw out	0,0000	412.976,7954
Total	431.740,4096	431.740,4096

5.11 Cooler (CO-02)

Tabel 5.11 Neraca panas CO-02

Komponen	Input (kJ/jam)	Output (kJ/jam)
Q in	374.507,9380	0,0000
Q out	0,0000	236.468,2022
Qcw in	68.619,1549	0,0000

Qcw out	0,0000	206.658,8908
Total	443.127,0929	443.127,0929