

BAB VI
NERACA PANAS

6.1 Neraca Panas Tiap Alat

a. Neraca Panas Heater-01

Tabel 6.1 Neraca Panas Heater-1

Input	kJ/jam	Output	kJ/jam
ΔH	47139534.1351	ΔH	481071852.0999
Qpemanas	433932317.9648		
Total	481071852.0999		481071852.0999

b. Neraca Panas Heater-02

Tabel 6.2 Neraca Panas Heater-2

Input	kJ/jam	Output	kJ/jam
ΔH	5531952.7997	ΔH	73114713.3751
Qpemanas	67582760.5755		
Total	73114713.3751		73114713.3751

c. Neraca Panas Heater-03

Tabel 6.3 Neraca Panas Heater-3

Input	kJ/jam	Output	kJ/jam
ΔH	8261754.0038	ΔH	74345032.1576
Qpemanas	66083278.1538		
Total	74345032.1576		74345032.1576

d. Neraca Panas Reaktor

Tabel 6.4 Neraca Panas Reaktor

Komponen	Panas Masuk (kj/jam)	Panas Keluar (kj/jam)
Metanol	820423.3109	701329.6044
Asam Benzoat	366204.0328	36620.4033
Asam Sulfat	26405.2697	26405.2967
Air	15129.1106	124295.5091
M.Benzoat	0	317364.8862
Pendingin		27370.4502
Panas reaksi	5225.3989	
Total	1233387.1499	1233387.1499

e. Neraca Panas Netralizer

Tabel 6.5 Neraca Panas Netralizer

Komponen	Panas In (kj/jam)	Panas Out (kj/jam)
Metanol	701199.6232	701199.6232
Asam benzoate	36610.32201	0
Metil benzoate	317322.0905	317322.0905
Air	220331.0497	260221.2768
Asam sulfat	26401.57788	0
NaOH	46163.80949	0
Natrium Sulfat	0	41961.67066
Natrium Benzoate	0	16342.52093
Panas Reaksi-1		-2332018.5959

Panas Reaksi-2		-604001.8685
Q-Pendingin		2947001.7550
Total	1348028.4728	1348028.4728

f. Neraca Panas Evaporator-01

Tabel 6.6 Neraca Panas Evaporator-01

Komponen	Panas In	Panas Out
	(kJ/Jam)	(kJ/jam)
Methanol	701199.6232	6621818.8672
asam benzoate	0	0.0000
asam sulfat	0	0.0000
Air	260221.2768	2313041.7060
Metil benzoate	317322.0905	2505185.7046
natrium hidroksida	0	0.0000
Natrium Sulfat	41961.67066	150703.9129
Natrium benzoat	16342.52093	56407.5249
Pemanas	10308010.81	
Total	11645057.9920	11645057.9920

g. Neraca Panas Menara Distilasi

Tabel 6.7 Neraca Panas Menara Distilasi

Komponen	Masuk		Keluar		
	QF	QR	QD	QB	Qc
CH4O	701785. 8146		493929.2161	14188.4140	
C8H8O2	317182. 9035		0.0000	632209.2608	

H₂O	145543. 9754		8127.2793	262368.6887	
Total	116451 2.6935	10226608. 5682	502056.4954	908766.3635	9980298.4 028
	11391121.2617		11391121.2617		

h. Neraca Panas Evaporator-02

Tabel 6.8 Neraca Panas Evaporator-02

Komponen	Panas In	Panas Out
	(kJ/Jam)	(kJ/jam)
Methanol	10741.22022	53221.8928
asam benzoate	0	0.0000
asam sulfat	0	0.0000
Air	201816.6498	1654686.3852
Metil benzoate	482385.7928	1473948.3963
natrium hidroksida	0	0.0000
Natrium Sulfat	0	0.0000
Natrium benzoat	0	0.0000
Pemanas	2486913.011	
Total	3181856.6743	3181856.6743

i. Neraca Panas Cooler-01

Tabel 6.9 Neraca Panas Cooler-01

Input	kJ/jam	Output	kJ/jam
ΔH	1471770.8470	ΔH	10351.4109
		Qpendingin	1461419.4361
Total	1471770.8470		1471770.8470