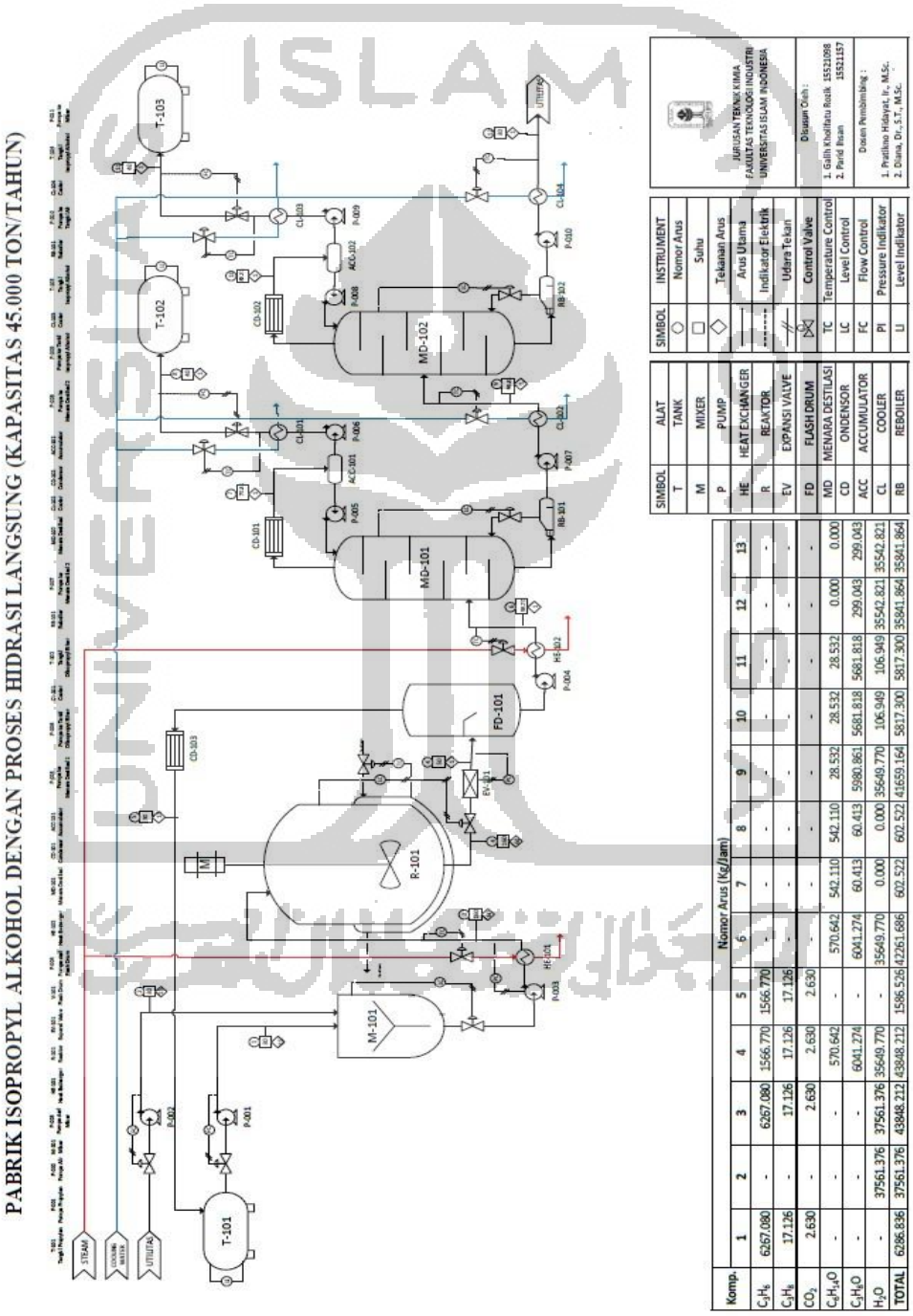
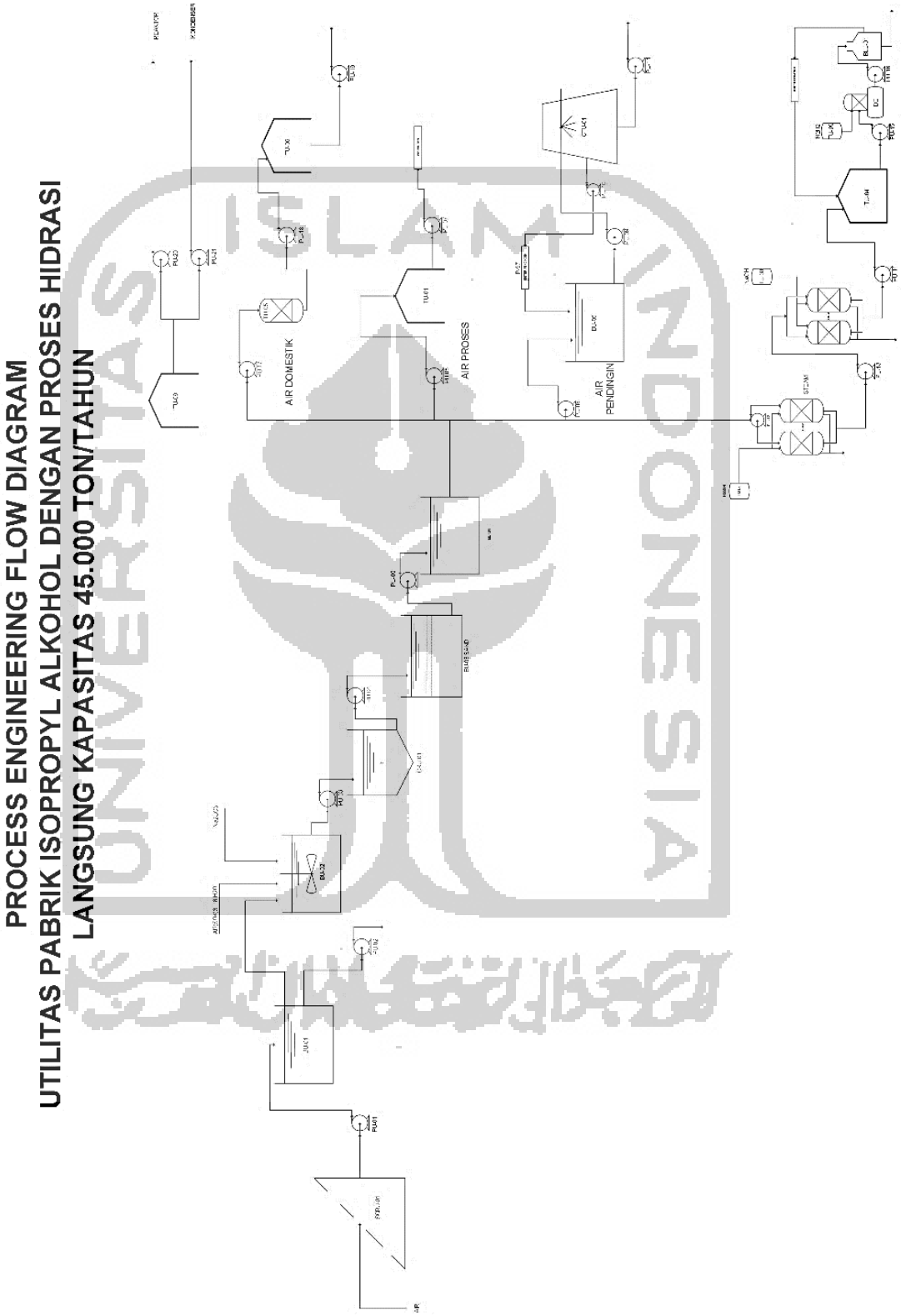
LAMPIRAN

Proses Flow Diagram



Komp.	1	2	3	4	5	6	7	8	9	10	11	12	13
	Nomor Arus (Kg/Jam)												
C_3H_6	6267.080	-	6267.080	1566.770	1566.770	-	-	-	-	-	-	-	-
C_3H_8	17.126	-	17.126	17.126	17.126	-	-	-	-	-	-	-	-
CO_2	2.630	-	2.630	2.630	2.630	-	-	-	-	-	-	-	-
$C_6H_{14}O$	-	-	-	570.642	-	570.642	542.110	542.110	28.532	28.532	28.532	0.000	0.000
C_3H_8O	-	-	-	6041.274	-	6041.274	60.413	60.413	5980.861	5681.818	5681.818	299.043	299.043
H_2O	-	37561.376	37561.376	35649.770	-	35649.770	0.000	0.000	35649.770	106.949	106.949	35542.821	35542.821
TOTAL	6286.836	37561.376	43848.212	43848.212	1586.526	42261.686	602.522	602.522	41659.164	5817.300	5817.300	35841.864	35841.864

Diagram Alir Proses Pengolahan Air:



Neraca Massa

1. **Neraca Massa Total**

Tabel Neraca Massa Total

Komponen	Masuk (Kg/Jam)	Keluar (Kg/Jam)
C_3H_6	6267,080	1566,770
C_3H_8	17,126	17,126
CO_2	2,630	2,630
$C_6H_{14}O$	-	5817,230
C_3H_8O	-	602,523
H_2O	37561,376	35841,864
Total	43848,212	43848,212

2. **Mixer**

Tabel Neraca Massa Mixer

Komp.	BM	kg/jam
C3H6	42,081	6267,080092
C3H8	44,097	17,12641358
CO2	44,009	2,629574785
H2O	18,015	37561,37616
TOTAL		43848,21224

3. Reaktor (R-01)

Tabel Neraca Massa Reaktor

Reaktor			
KOMPONEN	**INPUT Kg/Jam**		**OUTPUT Kg/Jam**
	1	2	3
C3H6	6267,080092		1566,770023
C3H8	17,12641358		17,12641358
CO2	2,629574785		2,629574785
C3H7OH			6041,273984
[(CH3)2CH]2O			570,6418359
H2O		37561,37616	35649,7704
TOTAL	6286,83608	37561,37616	
	43848,21224		43848,21224

4. Flash Drum

Tabel Neraca Massa Flash Drum

KOMPONEN	**INPUT Kg/Jam**	**OUTPUT Kg/Jam**	
	3	4	5
C3H6	1566,770023		1566,770023
C3H8	17,12641358		17,12641358
CO2	2,629574785		2,629574785
C3H7OH	6041,273984	6041,273984	
[(CH3)2CH]2O	570,6418359	570,6418359	
H2O	35649,7704	35649,7704	
TOTAL		42261,68622	1586,526011
	43848,21224	43848,21224	

5. Menara Distilasi I

Tabel Neraca Massa Menara Distilasi I

KOMPONEN	INPUT Kg/Jam	OUTPUT Kg/Jam	
	4	6	7
[(CH3)2CH]2O	570,6418359	28,53209179	542,1097441
C3H7OH	6041,273984	5980,861244	60,41273984
H2O	35649,7704	35649,7704	0
TOTAL	42261,68622	41659,16374	602,5224839
		42261,68622	

6. Menara Distilasi II

Tabel Necara Massa Menara Distilasi II

KOMPONEN	INPUT Kg/Jam	OUTPUT Kg/Jam	
	6	8	9
[(CH3)2CH]2O	28,53209179	0	28,53209179
C3H7OH	5980,861244	299,0430622	5681,818182
H2O	35649,7704	35542,82109	106,9493112
TOTAL	41659,16374	35841,86416	5817,299585
		41659,16374	

Neraca Panas

14. ***Heat Exchanger* (HE-101)**

Tabel 4. 41. Neraca Panas *HE* 1

Panas Masuk (Kj/Jam)		**Panas Keluar (Kj/Jam)**	
Q In	5615572,12	**Q Out**	180228027,47
Q Pemanas	174612455,35		
Total	180228027,47	**Total**	180228027,47

15. **Reaktor (R-101)**

Tabel 4. 42. Neraca Panas Reaktor

Panas Masuk (Kj/Jam)		**Panas Keluar (Kj/Jam)**	
Q In	180228027,47	**Q Out**	179573668,94
ΔHrks	6421,63		
		Q Pendingin	660780,16

Total	180234449,1	**Total**	180234449,1

16. *Heat Exchanger* (HE-102)

Tabel 4. 43. Neraca Panas *HE* 2

Panas Masuk (Kj/Jam)		**Panas Keluar (Kj/Jam)**	
Q In	4140720,34	**Q Out**	12408601,18
Q Pemanas	8267880,84		
Total	12408601,18	**Total**	12408601,18

17. Menara Destilasi (MD-101)

Tabel 4. 44. Neraca Panas Menara Destilasi 1

Panas Masuk (Kj/Jam)		**Panas Keluar (Kj/Jam)**	
ΔHumpan	12433806,14	**ΔHbottom**	12350293
ΔHreboiler	349905,07	**ΔHdestilat**	63419,29
		ΔHcondensor	369998,93
Total	12783711,21	**Total**	12783711,21

18. *Condensor* (CD-101)

Tabel 4. 45. Neraca Panas *Condensor* 1

Panas Masuk (Kj/Jam)		**Panas Keluar (Kj/Jam)**	
Q In	805980,53	**Q Out**	435981,60
		Q Pendingin	369998,93
Total	805980,53	**Total**	805980,53

19. *Cooler* (CL-101)

Tabel 4. 46. Neraca Panas *Cooler* 1

Panas Masuk (Kj/Jam)		**Panas Keluar (Kj/Jam)**	
Q In	61549,65	**Q Out**	19758,71

		Q Pendingin	41790,94
Total	61549,65	**Total**	61549,65

20. *Reboiler* (RB-101)

Tabel 4. 47. Neraca Panas *Reboiler* 1

Panas Masuk (Kj/Jam)		**Panas Keluar (Kj/Jam)**	
Q In	12433806,14	**Q Out**	12783711,21
Q Pemanas	349905,07		
Total	12783711,21	**Total**	12783711,21

21. *Cooler* (CL-102)

Tabel 4. 48. Neraca Panas Cooler 2

Panas Masuk (Kj/Jam)		**Panas Keluar (Kj/Jam)**	
Q In	12443841,45	**Q Out**	12324263,31
		Q Pendingin	119578,14
Total	12443841,45	**Total**	12443841,45

22. Menara Destilasi (MD-102)

Tabel 4. 49. Neraca Panas Menara Destilasi 2

Panas Masuk (Kj/Jam)		Panas Keluar (Kj/Jam)	
ΔHumpan	12349272,70	**ΔHbottom**	11216014,66
ΔHreboiler	20575303,41	**ΔHdestilat**	1028421,67
		ΔHcondensor	20680139,78
Total	32924576,11	**Total**	32924576,11

23. *Condensor* (CD-102)

Tabel 4. 50. Neraca Panas *Condensor* 2

Panas Masuk (Kj/Jam)		Panas Keluar (Kj/Jam)	
Q In	26746551,66	**Q Out**	6066411,88
		Q Pendingin	20680139,78
Total	26746551,66	**Total**	805980,53

24. *Cooler* (CL-103)

Tabel 4. 51. Neraca Panas *Cooler* 3

Panas Masuk (Kj/Jam)		Panas Keluar (Kj/Jam)	
Q In	1014202,13	**Q Out**	254281,37
		Q Pendingin	759920,76
Total	1014202,13	**Total**	1014202,13

25. *Reboiler* (RB-102)

Tabel 4. 52. Neraca Panas *Reboiler* 2

Panas Masuk (Kj/Jam)		**Panas Keluar (Kj/Jam)**	
Q In	12349272,70	**Q Out**	32924576,11
Q Pemanas	20575303,41		
Total	32924576,11	**Total**	32924576,11

26. *Cooler* (CL-104)

Tabel 4. 53. Neraca Panas *Cooler* 4

Panas Masuk (Kj/Jam)		**Panas Keluar (Kj/Jam)**	
Q In	11128304,10	**Q Out**	749066,02
		Q Pendingin	10379238,08
Total	11128304,10	**Total**	11128304,10

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