

Keterangan :

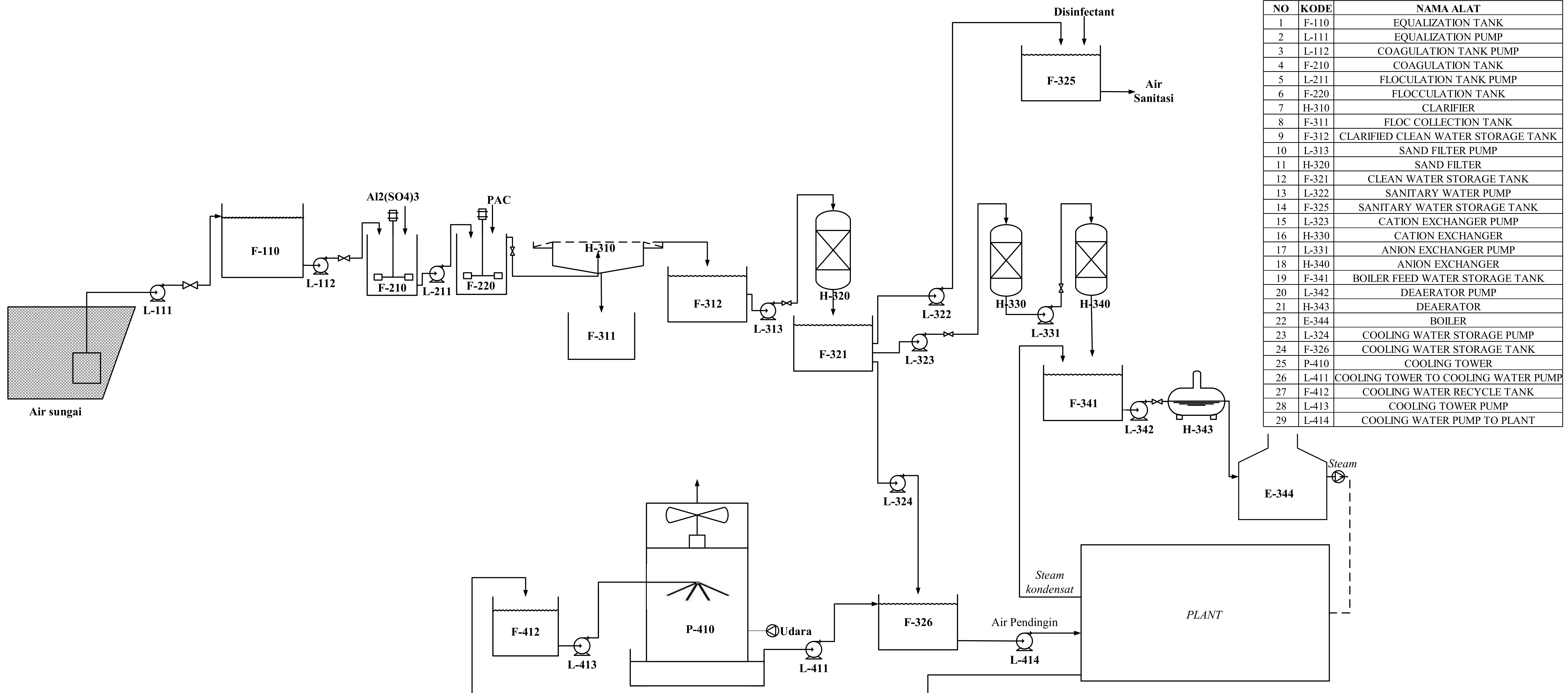
- ◇ Aliran Massa ; kg/jam
- Tekanan ; atm
- Temperatur ; °C
- S Steam
- CW Cooling Water
- CWR Cooling Water Return
- SC Steam Condensate
- WWTP Waste Water Treatment Plant

NO	KODE	NAMA ALAT
1	F-110	PFAD STORAGE TANK
2	L-111	CENTRIFUGAL PUMP
3	H-112	CARTRIDGE FILTER
4	E-113	HEATER I
5	E-114	HEATER II
6	L-115	RECIPROCATING PUMP
7	F-120	HYDROGEN STORAGE TANK
8	G-121	EXPANDER I
9	E-122	HEAT EXCHANGER I
10	E-123	HEATER III
11	R-210	HYDRODEOXYGENATION REACTOR
12	G-124	EXPANDER II
13	E-125	HEAT EXCHANGER II
14	E-126	HEATER IV
15	K-211	PRESSURE VALVE
16	E-212	COOLER I
17	H-213	THREE-PHASE SEPARATOR
18	L-214	CENTRIFUGAL PUMP
19	E-215	HEATER V
20	K-220	HYDROCRACKING REACTOR
21	E-221	COOLER II
22	E-222	COOLER III
23	H-310	FLASH DRUM
24	K-311	PRESSURE VALVE
25	E-312	HEATER VI
26	D-320	DISTILLATION COLUMN
27	E-321	CONDENSER
28	F-322	ACCUMULATOR
29	L-323	CENTRIFUGAL PUMP
30	F-324	NAPHTHA STORAGE TANK
31	H-325	REBOILER
32	L-326	CENTRIFUGAL PUMP
33	E-327	COOLER IV
34	F-328	BIOAVTUR STORAGE TANK

ALIRAN MASSA																																													
Komponen	Massa (Kg/jam)																																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
C ₁₀ H ₈ O ₂	10355,982	10355,98	10,35598	10345,626	10345,63	10345,63	10345,63							36,94866	36,94866	36,94866		36,94866		36,94866	0,0000014	36,94865		36,94865	36,94865	36,94865	36,94865	36,94865	0,00000000	36,94865	36,94865	36,94865	0,000381	0,000381	0,000381	0,000381	0,0000011	0,000369	36,94866	0,000381	36,94828	36,94828	36,94828		
C ₁₀ H ₈ O ₂	7238,0298	7238,03	7,23803	7230,7918	7230,792	7230,792	7230,792							25,82426	25,82426	25,82426		25,82426		25,82425	0,0000002	25,82425		25,82425	25,82425	25,82425	25,82425	25,82425	0,000266	0,000266	0,000266	0,000266	0,0000008	0,000258	25,82426	0,000266	25,824	25,824	25,824						
C ₁₀ H ₈ O ₂	944,27052	944,2705	0,944271	943,32625	943,3263	943,3263	943,3263							3,369022	3,369022	3,369022		3,369022		3,369022	0,0000000	3,369022		3,369022	3,369022	3,369022	3,369022	3,369022	0,000003	0,000003	0,000003	0,000003	0,0000001	0,000034	3,369023	3,47E-05	3,368988	3,368988	3,368988						
C ₁₀ H ₈ O ₂	1535,2144	1535,214	1,535214	1533,6792	1533,679	1533,679	1533,679							5,477426	5,477426	5,477426		5,477426		5,477425	0,0000001	5,477425		5,477425	5,477425	5,477425	5,477425	5,477425	0,000006	0,000006	0,000006	0,000006	0,0000002	0,000055	5,477427	5,64E-05	5,47737	5,47737	5,47737						
C ₁₀ H ₈ O ₂	289,27324	289,2732	0,289273	288,98397	288,984	288,984	288,984							1,032086	1,032086	1,032086		1,032086		1,032085	0,0000001	1,032085		1,032085	1,032085	1,032085	1,032085	1,032085	0,000001	0,000001	0,000001	0,000001	0,0000000	0,000010	1,032085	1,06E-05	1,032075	1,032075	1,032075						
C ₁₀ H ₈ O ₂	293,40572	293,4057	0,293406	293,11231	293,1123	293,1123	293,1123							1,04683	1,04683	1,04683		1,046828		1,046828	0,0000002	1,046828		1,046828	1,046828	1,046828	1,046828	1,046828	0,000001	0,000001	0,000001	0,000001	0,0000000	0,000010	1,046828	1,08E-05	1,046818	1,046818	1,046818						
C ₁₀ H ₃₈														8711,692	8711,692	8711,692		8711,692		8711,692	0,000052	8711,692		8711,692	8711,692	8711,692	8711,692	8711,692	0,000359	0,000359	0,000359	0,000359	0,0000010	0,000348	34,84678	0,000359	34,84642	34,84642	34,84642						
C ₁₀ H ₃₄														9103,305	9103,305	9103,305		9103,305		9103,305	0,0000007	9103,305		9103,305	9103,305	9103,305	9103,305	9103,305	0,000375	0,000375	0,000375	0,000375	0,0000011	0,000364	36,41323	0,000375	36,41285	36,41285	36,41285						
C ₁₀ H ₃₀														250,1463	250,1463	250,1463		250,1463		250,1463	0,0000006	250,14																							

Disusun Oleh: I.Nashrul Amin (22031010098)	
Dosen Pembimbing: I.Erwan Adi Saputro, S.T., M.T., Ph.D	
Disetujui dan Disahkan Oleh:	
Erwan Adi Saputro, S.T., M.T., Ph.D	
FLOWSHEET PRA RANCANGAN PABRIK BIOAVTUR DARI <i>PALM FATTY ACID DISTILLATE</i> MENGGUNAKAN PROSES <i>HYDROPROCESS ESTER AND FATTY ACID</i>	
	PROGRAM STUDI TEKNIK KIMIA FAKULTAS TEKNIK DAN SAINS UNIVERSITAS PEMBANGUNAN NASIONAL "VETERAN" JAWA TIMUR 2026

MENGGUNAKAN PROSES *HYDROPROCESSED ESTERS AND FATTY ACID* DENGAN KAPASITAS 100.000 TON/TAHUN



NO	CODE	NAMA ALAT
1	F-110	EQUALIZATION TANK
2	L-111	EQUALIZATION PUMP
3	L-112	COAGULATION TANK PUMP
4	F-210	COAGULATION TANK
5	L-211	FLOCCULATION TANK PUMP
6	F-220	FLOCCULATION TANK
7	H-310	CLARIFIER
8	F-311	FLOC COLLECTION TANK
9	F-312	CLARIFIED CLEAN WATER STORAGE TANK
10	L-313	SAND FILTER PUMP
11	H-320	SAND FILTER
12	F-321	CLEAN WATER STORAGE TANK
13	L-322	SANITARY WATER PUMP
14	F-325	SANITARY WATER STORAGE TANK
15	L-323	CATION EXCHANGER PUMP
16	H-330	CATION EXCHANGER
17	L-331	ANION EXCHANGER PUMP
18	H-340	ANION EXCHANGER
19	F-341	BOILER FEED WATER STORAGE TANK
20	L-342	DEAERATOR PUMP
21	H-343	DEAERATOR
22	E-344	BOILER
23	L-324	COOLING WATER STORAGE PUMP
24	F-326	COOLING WATER STORAGE TANK
25	P-410	COOLING TOWER
26	L-411	COOLING TOWER TO COOLING WATER PUMP
27	F-412	COOLING WATER RECYCLE TANK
28	L-413	COOLING TOWER PUMP
29	L-414	COOLING WATER PUMP TO PLANT

Disusun Oleh: 1.Nashrul Amin (22031010098)	
Dosen Pembimbing: 1.Erwan Adi Saputro, S.T., M.T., Ph.D	
Disetujui dan Disahkan Oleh: Erwan Adi Saputro, S.T., M.T., Ph.D	
FLWSHEET UTILITAS PRA RANCANGAN PABRIK BIOAVTUR DARI <i>PALM FATTY ACID DISTILLATE</i> MENGUNAKAN PROSES <i>HYDROPROCESS ESTER AND FATTY ACID</i>	
	PROGRAM STUDI TEKNIK KIMIA FAKULTAS TEKNIK DAN SAINS UNIVERSITAS PEMBANGUNAN NASIONAL "VETERAN" JAWA TIMUR 2026