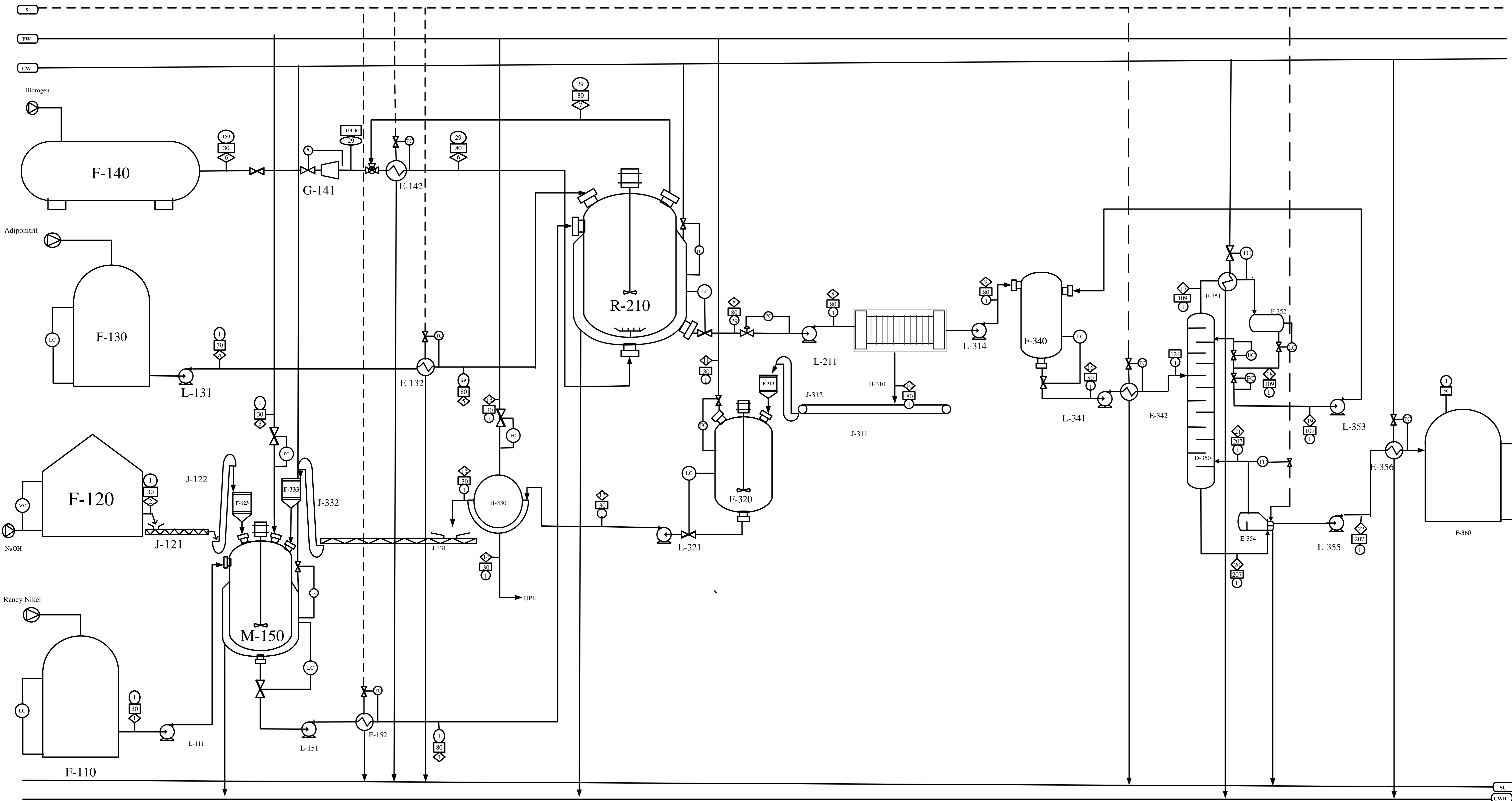


**PRA PERANCANGAN PABRIK HEXAMETHYLENEDIAMINE DARI ADIPONITRIL DAN HIDROGEN DENGAN PROSES HIDROGENASI
MENGUNAKAN KATALIS RANEY-NICKEL DENGAN KAPASITAS 45000 Ton/Tahun**

KETERANGAN

| | |
|-----------------------|----------------------|
| Temperatur : °C | Steam Condensate |
| Aliran massa : kg/jam | Cooling Water |
| Tekanan : atm | Cooling Water Return |
| Steam : °C ;atm | Process Water |

| NO | KODE | NAMA ALAT |
|----|-------|--|
| 1 | F-110 | Tangki Penyimpanan Raney Nikel |
| 2 | L-111 | Pompa-1 |
| 3 | F-120 | Gudang Natrium Hidroksida |
| 4 | J-121 | Screw Conveyor-1 |
| 5 | J-122 | Bucket Elevator-1 |
| 6 | F-123 | Hopper-1 |
| 7 | F-130 | Tangki Penyimpanan Adiponitril |
| 8 | E-131 | Pompa-2 |
| 9 | L-132 | Heater-1 |
| 10 | F-140 | Tangki Penyimpanan Hidrogen |
| 11 | G-141 | Ekspander |
| 12 | E-142 | Heater-2 |
| 13 | M-150 | Tangki Pencampuran |
| 14 | L-151 | Pompa-3 |
| 15 | E-152 | Heater-3 |
| 16 | R-210 | Reaktor |
| 17 | L-211 | pompa-4 |
| 18 | H-310 | Filter Press |
| 19 | L-314 | pompa-5 |
| 20 | J-311 | Belt Conveyor |
| 21 | J-312 | Bucket Elevator-2 |
| 22 | F-313 | hopper-3 |
| 23 | F-320 | Tangki Pencucian |
| 24 | L-321 | Pompa-6 |
| 25 | H-330 | Rotary Drum vacum Filter |
| 26 | J-331 | Screw Conveyor-2 |
| 27 | J-332 | Bucket Elevator-3 |
| 28 | F-333 | Hopper-2 |
| 29 | F-340 | Tangki penampungan sementara |
| 30 | L-341 | Pompa-7 |
| 31 | E-342 | Heater-4 |
| 32 | D-350 | Menara Distilasi |
| 33 | E-351 | Kondensor |
| 34 | F-352 | Akumulator |
| 35 | L-353 | Pompa-8 |
| 36 | E-354 | Reboiler |
| 37 | L-355 | Pompa-9 |
| 38 | E-356 | Cooler |
| 39 | F-360 | Tangki Penyimpanan C ₆ H ₁₆ N ₂ |



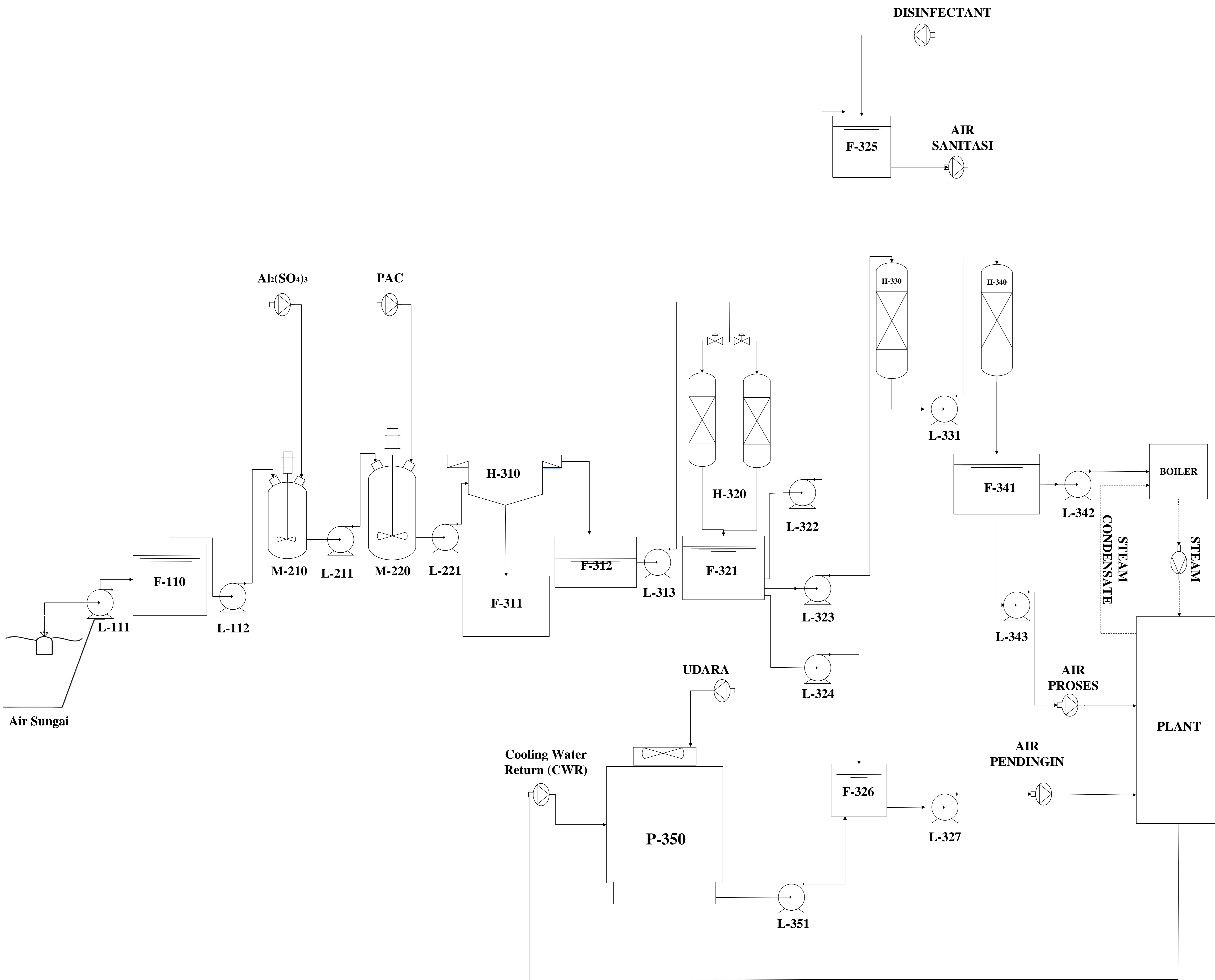
| Komponen | Aliran Massa (kg/jam) | | | | | | | | | | | | | | | | | | | | | |
|---|-----------------------|---------|----------|----------|------------|----------|--------|------------|------------|----------|----------|------------|----------|------------|----------|------------|------------|--------|------------|------------|------------|------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| C ₆ H ₈ N ₂ | | | | | 5,398.8884 | | 0.0001 | 43.1910 | 42.3272 | 0.8638 | | 0.8638 | | 0.0691 | 0.7947 | 42.3695 | 0.0424 | 0.0000 | 0.0424 | 75.9523 | 33.6252 | 42.3272 |
| C ₆ H ₁₆ N ₂ | | | | | | | 0.0687 | 5,754.9991 | 5,639.8991 | 115.1000 | | 115.1000 | | 9.2080 | 105.8920 | 5,685.0183 | 45.4872 | 0.0071 | 45.4801 | 10,119.7 | 4,480.1170 | 5,639.5381 |
| NaOH | | 35.0174 | | 35.0174 | | | 0.0027 | 35.0147 | 34.3144 | 0.7003 | | 0.7003 | | 0.3992 | 0.3011 | 68.6255 | 68.6292 | 0.0106 | 68.6186 | 0.0123 | 0.0055 | 0.0069 |
| H ₂ O | 357.3476 | 0.7146 | 239.8039 | 597.8661 | 54.5342 | | 0.0772 | 652.3231 | 639.2766 | 13.0465 | 974.1163 | 987.1627 | 292.2349 | 1,253.8097 | 25.5880 | 1,278.4893 | 1,278.5597 | 0.1982 | 1,278.3615 | 0.2294 | 0.1016 | 0.1278 |
| Ni | 357.3476 | | | 357.3476 | | | | 357.3476 | | 357.3476 | | 357.3476 | | 2.1441 | 355.2035 | | | | | | | |
| H ₂ | | | | | | 402.5914 | 3.2207 | | | | | | | | | | | | | | | |
| Total | 714.6952 | 35.7321 | 239.8039 | 990.2311 | 5,453.4226 | 402.5914 | 3.3695 | 6,842.8755 | 6,355.8174 | 487.0581 | 974.1163 | 1,461.1744 | 292.2349 | 1,265.6300 | 487.7793 | 7,074.5026 | 1,392.7186 | 0.2159 | 1,392.503 | 10,195.849 | 4,513.8492 | 5,682.0000 |

FLOW SHEET PERANCANGAN PABRIK HEXAMETHYLENEDIAMINE DARI ADIPONITRIL DAN HIDROGEN DENGAN PROSES HIDROGENASI MENGGUNAKAN KATALIS RANEY NIKEL

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 Ir. Mutasim Billah,M.S.

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 UNIVERSITAS PEMBANGUNAN NASIONAL "VETERAN"
 JAWA TIMUR
 2025

FLWSHEET UTILITAS
PRA PERANCANGAN PABRIK HEXAMETHYLENEDIAMINE DARI ADIPONITRIL DAN HIDROGEN DENGAN PROSES HIDROGENASI
MENGGUNAKAN KATALIS RANEY-NICKEL DENGAN KAPASITAS 45000 Ton/Tahun



| 28 | L-342 | POMPA - 13 |
|----|-----------|----------------------------------|
| 28 | L-327 | POMPA - 12 |
| 26 | L-343 | POMPA - 11 |
| 24 | L-351 | POMPA - 10 |
| 23 | P-350 | COOLING WATER |
| 22 | F-326 | BAK PENAMPUNG AIR PENDINGIN |
| 21 | L-324 | POMPA - 9 |
| 20 | F-341 | BAK PENAMPUNG AIR DEMINERALISASI |
| 19 | H-340 | TANGKI ANION EXCHANGER |
| 18 | L-331 | POMPA - 8 |
| 17 | H-330 | TANGKI KATION EXCHANGER |
| 16 | L-323 | POMPA - 7 |
| 15 | F-325 | BAK PENAMPUNG AIR SANITASI |
| 14 | L-322 | POMPA - 6 |
| 13 | F-321 | BAK PENAMPUNG AIR BERSIH |
| 12 | H-320 | SAND FILTER |
| 11 | L-313 | POMPA - 5 |
| 10 | F-312 | BAK PENAMPUNG AIR JERNIH |
| 9 | F-311 | BAK PENAMPUNG FLOK |
| 8 | H-310 | CLARIFIER |
| 7 | L-221 | POMPA - 4 |
| 6 | M-220 | TANGKI FLOKULASI |
| 5 | L-211 | POMPA - 3 |
| 4 | M-210 | TANGKI KOAGULASI |
| 3 | L-112 | POMPA - 2 |
| 2 | F-110 | BAK PENAMPUNG AIR SUNGAI |
| 1 | L-111 | POMPA - 1 |
| NO | KODE ALAT | NAMA ALAT |

FLOW SHEET PERANCANGAN PABRIK HEXAMETHYLENEDIAMINE DARI ADIPONITRIL DAN HIDROGEN DENGAN PROSES HIDROGENASI MENGGUNAKAN KATALIS RANEY NIKEL

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