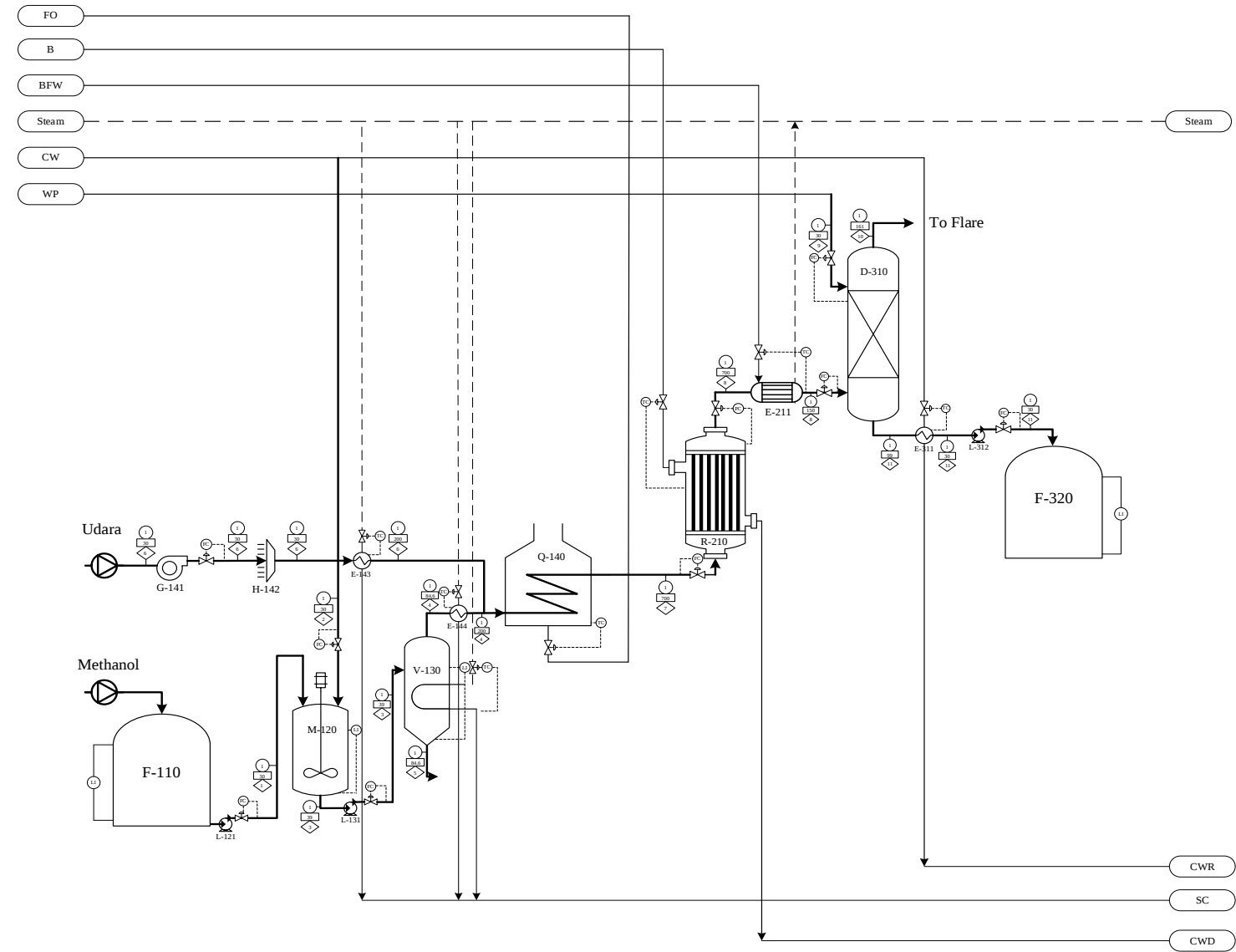


**PABRIK FORMALDEHID DARI METANOL DAN UDARA MENGGUNAKAN SILVER CATALYST DENGAN PROSES BASF (COMPLETE CONVERSION)**



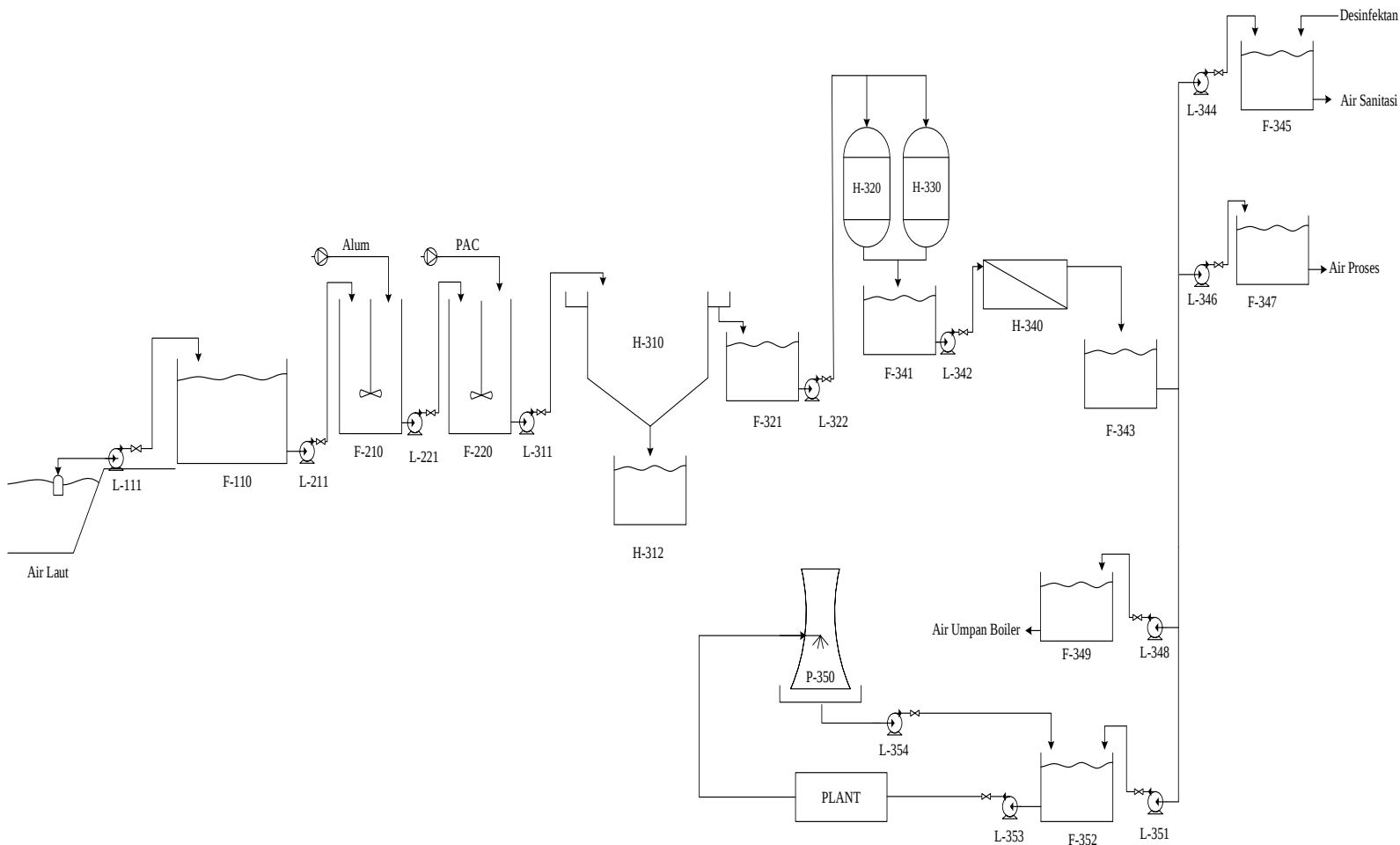
| KOMPONEN    | ALIRAN MASSA (KG/JAM) |           |           |           |   |            |            |            |           |           |           |
|-------------|-----------------------|-----------|-----------|-----------|---|------------|------------|------------|-----------|-----------|-----------|
|             | 1                     | 2         | 3         | 4         | 5 | 6          | 7          | 8          | 9         | 10        | 11        |
| Methanol    | 3596.4102             | -         | 3596.4102 | 3596.4102 | - | -          | 3596.4102  | 71.9282    | -         | 0.7193    | 71.2089   |
| Air         | 5.4027                | 1343.2511 | 1348.6538 | 1348.6538 | - | -          | 1348.6538  | 2538.1665  | 2957.8485 | -         | 5496.0150 |
| Oksigen     | -                     | -         | -         | -         | - | 2157.8461  | 2157.8461  | 1100.5015  | -         | 1100.5015 | -         |
| Nitrogen    | -                     | -         | -         | -         | - | 8117.6116  | 8117.6116  | 8117.6116  | -         | 8117.6116 | -         |
| Formaldehid | -                     | -         | -         | -         | - | -          | -          | 3304.2019  | -         | 88.1121   | 3271.1599 |
| Hidrogen    | -                     | -         | -         | -         | - | -          | -          | 88.1121    | -         | 33.0420   | -         |
| TOTAL       | 3601.8129             | 1343.2511 | 4945.0641 | 4945.0641 | - | 10275.4578 | 15220.5218 | 15220.5218 | 2957.8485 | 9339.9865 | 8838.3838 |

| KETERANGAN |                       |  |                         |
|------------|-----------------------|--|-------------------------|
|            | Temperatur (°C)       |  | Brine                   |
|            | Tekanan (atm)         |  | Cooling Water Discharge |
|            | Aliran Massa (kg/jam) |  | Cooling Water           |
|            | Process Water         |  | Cooling Water Return    |
|            | Steam                 |  | Fuel Oil                |
|            | Steam Condensate      |  | Boiler Feed Water       |

| No. | Kode  | Nama Alat                      |
|-----|-------|--------------------------------|
| 1   | F-110 | Tangki Penyimpanan Metanol     |
| 2   | L-121 | Pompa-1                        |
| 3   | M-120 | Mixer                          |
| 4   | L-131 | Pompa-2                        |
| 5   | V-130 | Vaporizer                      |
| 6   | G-141 | Blower                         |
| 7   | H-142 | Filter Udara                   |
| 8   | E-143 | Heater-1                       |
| 9   | E-144 | Heater-2                       |
| 10  | F-140 | Furnace                        |
| 11  | R-210 | Reaktor                        |
| 12  | E-211 | Waste Heat Boiler              |
| 13  | D-310 | Kolom Absorpsi                 |
| 14  | E-311 | Cooler                         |
| 15  | L-312 | Pompa-3                        |
| 16  | F-320 | Tangki Penyimpanan Formaldehid |

| FLOWSHEET<br>PABRIK FORMALDEHID DARI METANOL DAN UDARA MENGGUNAKAN SILVER CATALYST DENGAN PROSES BASF (COMPLETE CONVERSION) |                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Disusun Oleh : Muchamad Fajar Alamsyah (21031010178)                                                                        |                                                                                                                             |
| Dosen Pembimbing :<br>Ir. Suprihatin, MT.                                                                                   |                                                                                                                             |
|                                                                                                                             | PROGRAM STUDI TEKNIK KIMIA<br>FAKULTAS TEKNIK DAN SAINS<br>UNIVERSITAS PEMBANGUNAN NASIONAL<br>"VETERAN" JAWA TIMUR<br>2025 |

# **FLWSHEET UTILITAS PABRIK FORMALDEHID DARI METANOL DAN UDARA MENGGUNAKAN SILVER CATALYST DENGAN PROSES BASF (COMPLETE CONVERSION)**



| No. | Kode  | Nama Alat                      |
|-----|-------|--------------------------------|
| 1   | L-111 | Pompa-1                        |
| 2   | F-110 | Bak Penampung Air Laut         |
| 3   | L-211 | Pompa-2                        |
| 4   | F-210 | Tangki Koagulasi               |
| 5   | L-221 | Pompa-3                        |
| 6   | F-220 | Tangki Flokulasi               |
| 7   | L-311 | Pompa-4                        |
| 8   | H-310 | Clarifier                      |
| 9   | F-312 | Bak Penampung Flok             |
| 10  | F-321 | Bak Penampung dari Clarifier   |
| 11  | L-322 | Pompa-5                        |
| 12  | H-320 | Sand Filter-1                  |
| 13  | H-330 | Sand Filter-2                  |
| 14  | F-341 | Bak Penampung dari Sand Filter |
| 15  | L-342 | Pompa-6                        |
| 16  | H-340 | Reverse Osmosis Membran        |
| 17  | F-343 | Bak Penampung Air Bersih       |
| 18  | L-344 | Pompa-7                        |
| 19  | F-345 | Bak Penampung Air Sanitasi     |
| 20  | L-346 | Pompa-8                        |
| 21  | F-347 | Bak Penampung Air Proses       |
| 22  | L-348 | Pompa-9                        |
| 23  | F-349 | Bak Penampung Air Umpan Boiler |
| 24  | L-351 | Pompa-10                       |
| 25  | F-352 | Bak Penampung Air Pendingin    |
| 26  | L-353 | Pompa-11                       |
| 27  | P-350 | Cooling Tower                  |
| 28  | L-354 | Pompa-12                       |

|                                                                                                                                                     |                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>FLWSHEET UTILITAS<br/>PABRIK FORMALDEHID DARI METANOL DAN UDARA<br/>MENGGUNAKAN SILVER CATALYST DENGAN PROSES<br/>BASF (COMPLETE CONVERSION)</b> |                                                                                                                                        |
| <b>Disusun Oleh : Muchamad Fajar Alamsyah (21031010178)</b>                                                                                         |                                                                                                                                        |
| <b>Dosen Pembimbing :<br/>Ir. Suprihatin, MT.</b>                                                                                                   |                                                                                                                                        |
|                                                                | <b>PROGRAM STUDI TEKNIK KIMIA<br/>FAKULTAS TEKNIK DAN SAINS<br/>UNIVERSITAS PEMBANGUNAN NASIONAL<br/>"VETERAN" JAWA TIMUR<br/>2025</b> |