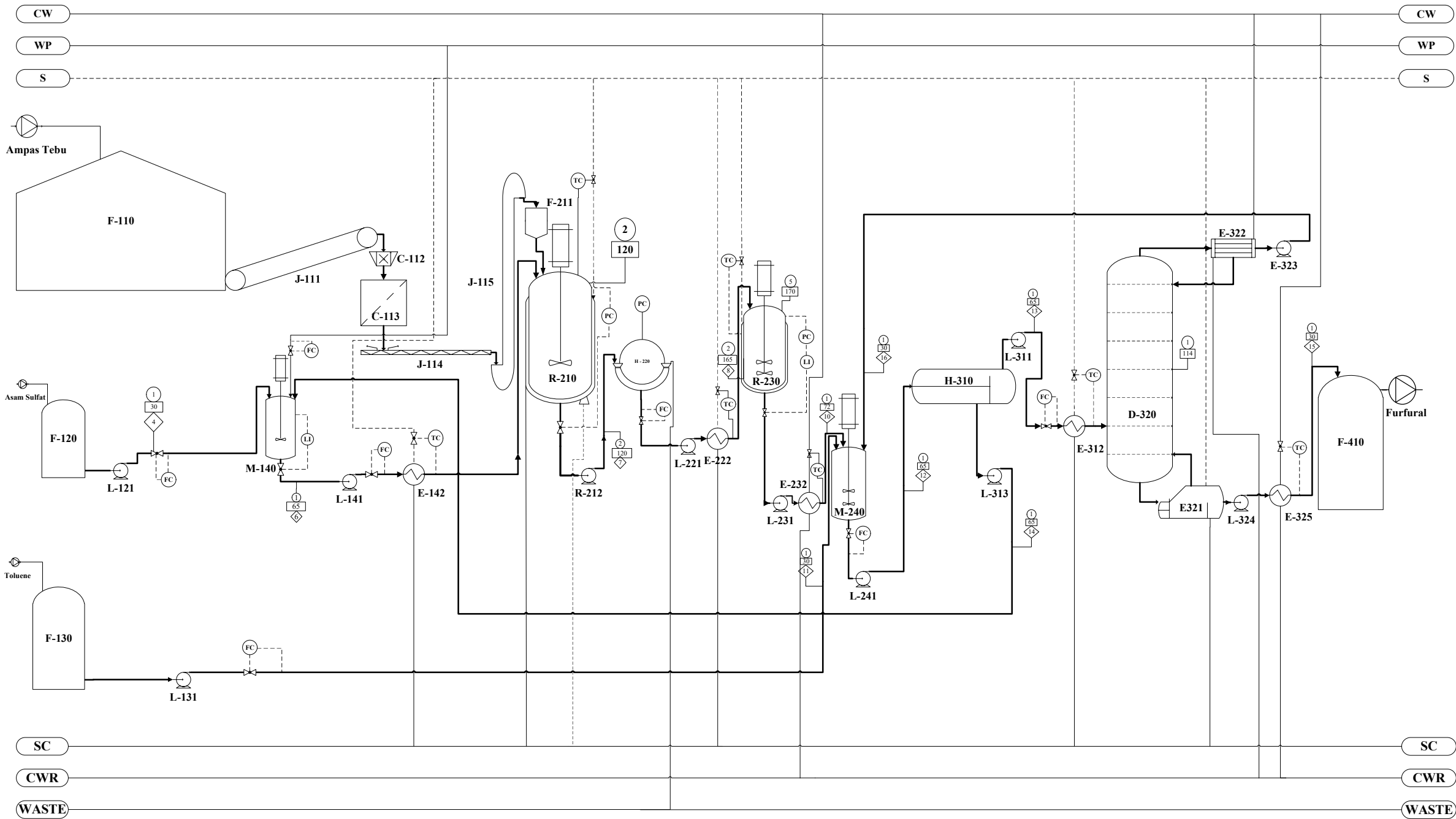


# FLOWSHEET PABRIK FURFURALDEHYDE DARI AMPAS TEBU DENGAN PROSES QUAKER OATS

## KAPASITAS 40.000 TON/TAHUN



| <div> <div>CW</div> <div>Cooling Water</div> <div>Aliran</div> </div> <div> <div>WP</div> <div>Water Process</div> <div>Suhu (°C)</div> </div> <div> <div>S</div> <div>Steam</div> <div>Tekanan (atm)</div> </div> |           |                               |        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------|--------|
| 35                                                                                                                                                                                                                 | F-410     | Tangki penyimpanan Furfural   | 1      |
| 34                                                                                                                                                                                                                 | E-325     | Cooler 2                      | 1      |
| 33                                                                                                                                                                                                                 | L-324     | Pompa 11                      | 1      |
| 32                                                                                                                                                                                                                 | L-323     | Pompa 10                      | 1      |
| 31                                                                                                                                                                                                                 | E-322     | Kondensor                     | 1      |
| 30                                                                                                                                                                                                                 | E-321     | Reboiler                      | 1      |
| 29                                                                                                                                                                                                                 | D-320     | Distilasi                     | 1      |
| 28                                                                                                                                                                                                                 | L-313     | Pompa 9                       | 1      |
| 27                                                                                                                                                                                                                 | E-312     | Heater 2                      | 1      |
| 26                                                                                                                                                                                                                 | L-311     | Pompa 8                       | 1      |
| 25                                                                                                                                                                                                                 | H-310     | Dekanter                      | 1      |
| 24                                                                                                                                                                                                                 | L-241     | Pompa 7                       | 1      |
| 23                                                                                                                                                                                                                 | M-240     | Mixer Pencampuran Toluene     | 1      |
| 22                                                                                                                                                                                                                 | E-232     | Cooler 1                      | 1      |
| 21                                                                                                                                                                                                                 | L-231     | Pompa 6                       | 1      |
| 20                                                                                                                                                                                                                 | R-230     | Reaktor Dehidrasi             | 1      |
| 19                                                                                                                                                                                                                 | E-222     | Heater 1                      | 1      |
| 18                                                                                                                                                                                                                 | L-221     | Pompa 5                       | 1      |
| 17                                                                                                                                                                                                                 | H-220     | Rotary Drum Vacum Filter      | 1      |
| 16                                                                                                                                                                                                                 | R-212     | Pompa 4                       | 1      |
| 15                                                                                                                                                                                                                 | F-211     | Hopper Ampas Tebu             | 1      |
| 14                                                                                                                                                                                                                 | R-210     | Reaktor Hidrolisis            | 1      |
| 13                                                                                                                                                                                                                 | E-142     | Heater 1                      | 1      |
| 12                                                                                                                                                                                                                 | L-141     | Pompa 3                       | 1      |
| 11                                                                                                                                                                                                                 | M-140     | Mixer Pengenceran Asam Sulfat | 1      |
| 10                                                                                                                                                                                                                 | F-131     | Pompa 2                       | 1      |
| 9                                                                                                                                                                                                                  | F-130     | Tangki Penyimpanan Toluene    | 1      |
| 8                                                                                                                                                                                                                  | L-121     | Pompa 1                       | 1      |
| 7                                                                                                                                                                                                                  | F-120     | Tangki Penampung Asam Sulfat  | 1      |
| 6                                                                                                                                                                                                                  | J-115     | Bucket Elevator               | 1      |
| 5                                                                                                                                                                                                                  | J-114     | Screw Conveyor                | 1      |
| 4                                                                                                                                                                                                                  | C-113     | Screen Hammer Mill            | 1      |
| 3                                                                                                                                                                                                                  | C-112     | Hammer mill                   | 1      |
| 2                                                                                                                                                                                                                  | J-111     | Belt Conveyor                 | 1      |
| 1                                                                                                                                                                                                                  | F-110     | Gudang Penyimpanan Bagasse    | 1      |
| No                                                                                                                                                                                                                 | Kode Alat | Nama Alat                     | Jumlah |

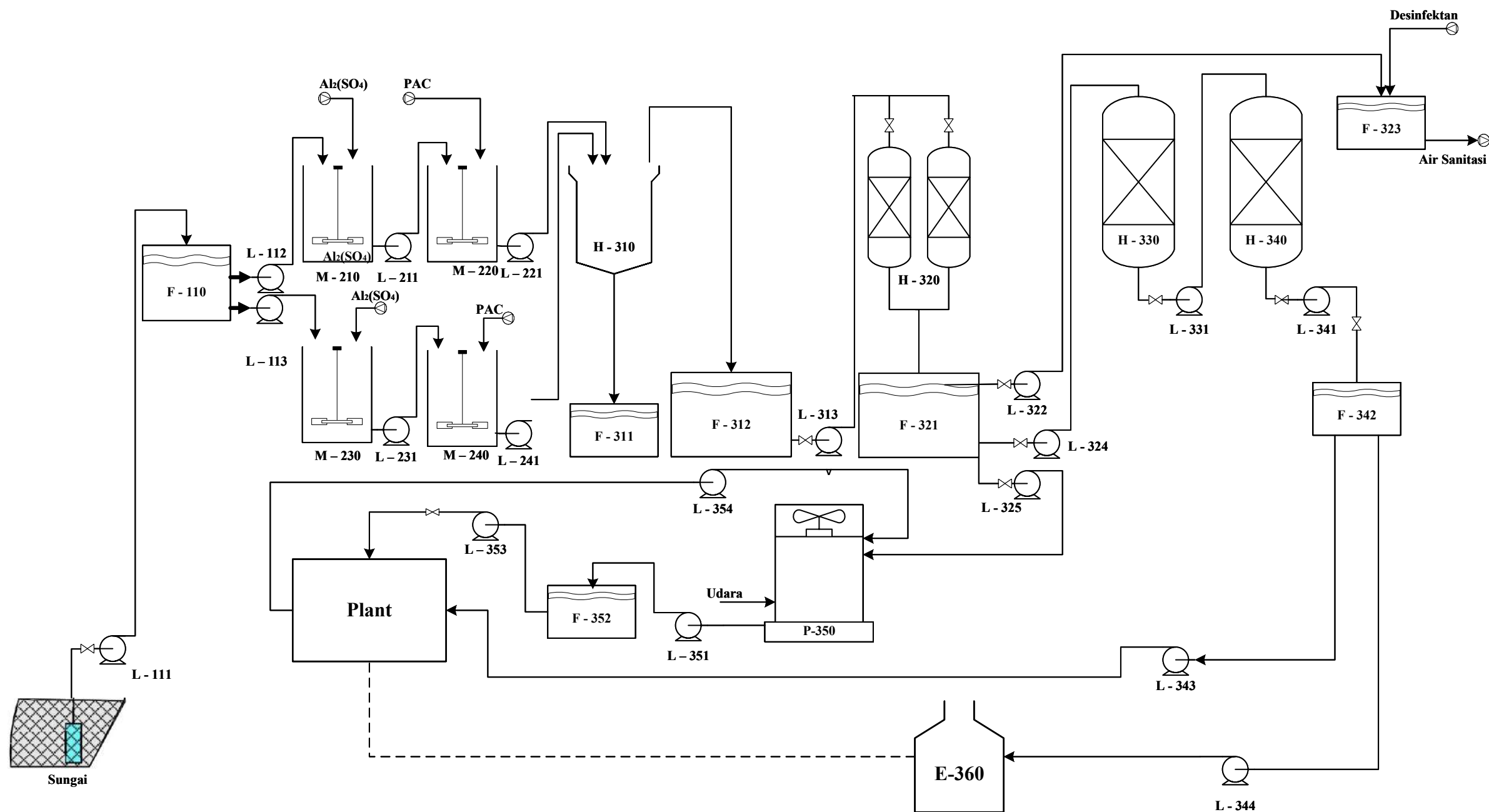
| Komponen/<br>Nomor | 1       | 2      | 3       | 4     | 5   | 6       | 7       | 8       | 9       | 10      | 11    | 12      | 13      | 14      | 15     | 16      |
|--------------------|---------|--------|---------|-------|-----|---------|---------|---------|---------|---------|-------|---------|---------|---------|--------|---------|
| C?H?O?             | 7381,0  | 388,5  | 8240,4  |       |     |         | 388,5   |         | 388,5   |         |       |         |         |         |        |         |
| C?H??O?            | 9841,4  | 518,0  | 9888,5  |       |     |         | 10359,3 |         | 10359,3 |         |       |         |         |         |        |         |
| Lignin             | 4473,4  | 235,4  | 4708,8  |       |     |         | 4708,8  |         | 4708,8  |         |       |         |         |         |        |         |
| Abu                | 671,0   | 35,3   | 706,3   |       |     |         | 706,3   |         | 706,3   |         |       |         |         |         |        |         |
| H2SO4              |         |        |         | 123,1 |     | 4012,7  | 4012,7  | 3889,6  | 123,1   | 3889,6  |       | 3889,6  |         | 3889,6  |        |         |
| H <sub>2</sub> O   |         |        |         | 2,5   | 0,0 | 47169,8 | 46163,1 | 50230,6 | 1589,5  | 53011,9 |       | 53011,9 |         | 53011,9 |        |         |
| C7H8               |         |        |         |       |     |         |         |         |         |         | 107,8 | 26506,0 | 26506,0 |         | 132,5  | 26373,4 |
| C?H??O?            |         |        |         |       |     |         | 8387,8  | 8130,5  | 257,3   | 406,5   |       | 406,5   |         | 406,5   |        |         |
| C5H4O2             |         |        |         |       |     |         |         |         |         | 4942,7  |       | 4942,7  | 4942,7  |         | 4918,0 | 24,7    |
| Total              | 22366,8 | 1177,2 | 23544,0 | 125,6 | 0,0 | 51182,6 | 74726,5 | 62250,8 | 18132,8 | 62250,8 | 107,8 | 88756,7 | 31448,6 | 57308,1 | 5050,5 | 26398,1 |

Design Oleh : Malik Fariksit Restaji  
 NPM : 20031010197  
 Dosen Pembimbing :  
 Dr. Ir. Sintha Soraya Santi, M.T

FLOWSHEET PABRIK FURFURALDEHYDE DARI AMPAS TEBU DENGAN  
 PROSES QUAKER OATS

PROGRAM STUDI  
 TEKNIK KIMIA  
 FAKULTAS TEKNIK DAN SAINS  
 UNIVERSITAS PEMBANGUNAN  
 NASIONAL "VETERAN" JAWA TIMUR  
 2025

# FLWSHEET UTILITAS PABRIK FURFURALDEHYDE DARI AMPAS TEBU DENGAN PROSES QUAKER OATS KAPASITAS 40.000 TON/TAHUN



## KETERANGAN :

|    |           |                             |        |
|----|-----------|-----------------------------|--------|
| 35 | E-360     | Boiler                      | 1      |
| 34 | L-354     | Pompa recycle air pendingin | 1      |
| 33 | L-353     | Pompa air pendingin 2       | 1      |
| 32 | F-352     | Bak penampung air pendingin | 1      |
| 31 | L-351     | Pompa air pendingin 1       | 1      |
| 30 | P-350     | Cooling Tower               | 1      |
| 29 | L-344     | Pompa Boiler                | 1      |
| 28 | L-343     | Pompa air proses            | 1      |
| 27 | F-342     | Bak air lunak               | 1      |
| 26 | L-341     | Pompa air lunak             | 1      |
| 25 | H-340     | Tangki anion                | 1      |
| 24 | L-331     | Pompa anion                 | 1      |
| 23 | H-330     | Tangki kation               | 1      |
| 22 | L-325     | Pompa cooling tower         | 1      |
| 21 | L-324     | Pompa kation                | 1      |
| 20 | F-323     | Bak air sanitasi            | 1      |
| 19 | L-322     | Pompa air sanitasi          | 1      |
| 18 | F-321     | Bak penampung air bersih 2  | 1      |
| 17 | H-320     | Sand filter                 | 1      |
| 16 | L-313     | Pompa sand filter           | 1      |
| 15 | F-312     | Bak penampung air bersih 1  | 1      |
| 14 | F-311     | Bak penampung flok          | 1      |
| 13 | H-310     | Clarifier                   | 1      |
| 12 | L-241     | Pompa clarifier 2           | 1      |
| 11 | M-240     | Tangki flokulasi 2          | 1      |
| 10 | L-231     | Pompa flokulasi 2           | 1      |
| 9  | M-230     | Tangki kouguasi 2           | 1      |
| 8  | L-221     | Pompa clarifier 1           | 1      |
| 7  | M-220     | Tangki flokulasi 1          | 1      |
| 6  | L-211     | Pompa flokuasi 1            | 1      |
| 5  | M-210     | Tangki kouguasi 1           | 1      |
| 4  | L-113     | Pompa kougulasi 2           | 1      |
| 3  | L-112     | Pompa kougulasi 1           | 1      |
| 2  | L-111     | Pompa air sungai            | 2      |
| 1  | F-110     | Bak penampung air sungai    | 2      |
| No | Kode Alat | Nama Alat                   | Jumlah |

|                                                                                                                                                           |                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| DIGAMBAR OLEH                                                                                                                                             | : Malik Fariksit Restaji           |
| NPM                                                                                                                                                       | : 20031010197                      |
| DOSEN PEMBIMBING                                                                                                                                          | : Dr. Ir. Sintha Soraya Santi, M.T |
| <b>FLWSHEET UTILITAS PABRIK FURFURALDEHYDE DARI AMPAS TEBU DENGAN PROSES QUAKER OATS</b>                                                                  |                                    |
| <b>PROGRAM STUDI TEKNIK KIMIA</b><br><b>FAKULTAS TEKNIK &amp; SAINS</b><br><b>UNIVERSITAS PEMBANGUNAN NASIONAL</b><br><b>"VETERAN" JAWA TIMUR</b><br>2025 |                                    |

