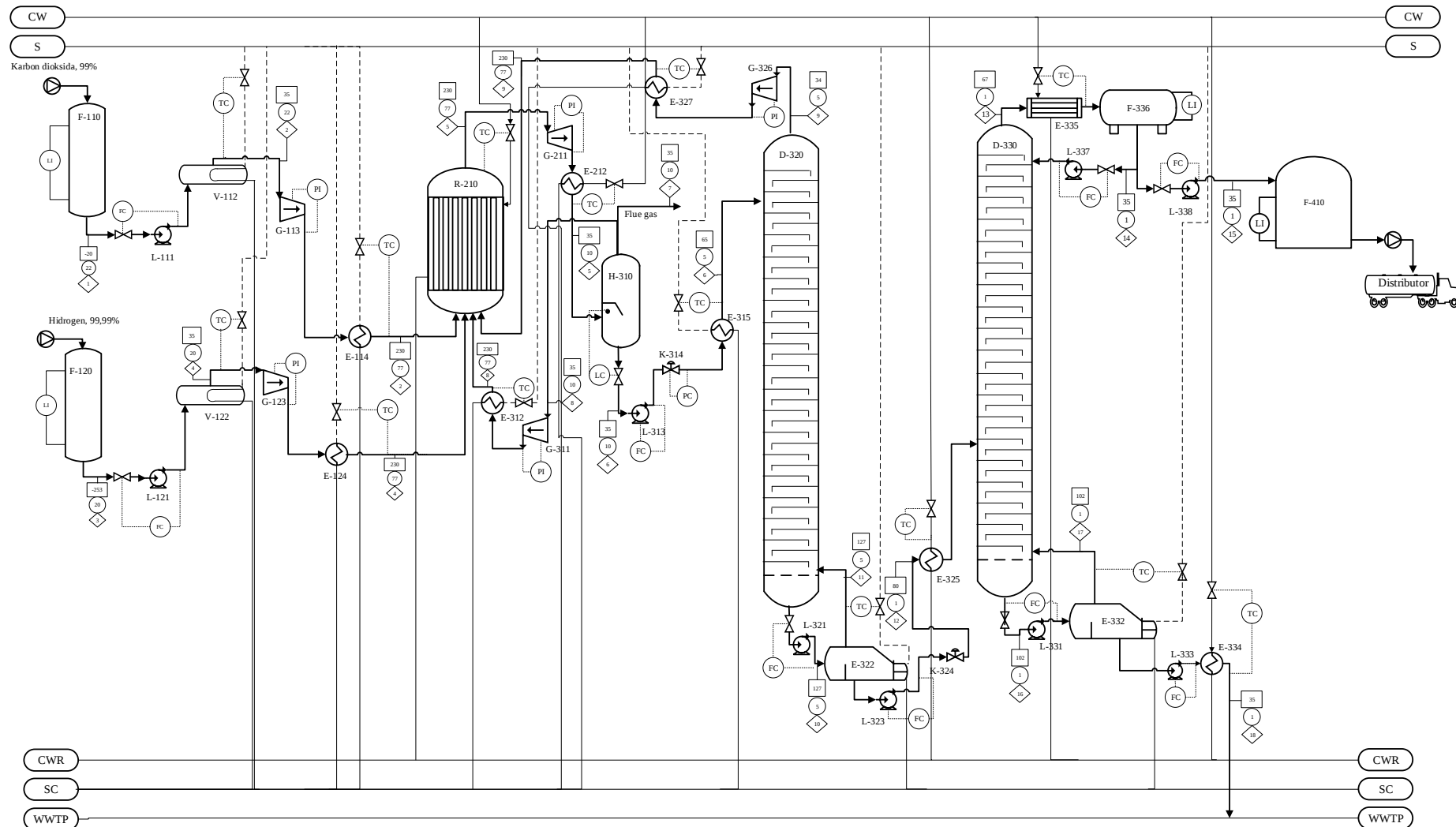


# PABRIK METHANOL DARI HIDROGENASI KARBON DIOKSIDA DENGAN PROSES ICI (IMPERIAL CHEMICAL INDUSTRIES)



| KETERANGAN |                               |
|------------|-------------------------------|
|            | Aliran Massa; kg/jam          |
|            | Temperatur; °C                |
|            | Tekanan; atm                  |
|            | Cooling water                 |
|            | Steam                         |
|            | Cooling water return          |
|            | Steam condensate              |
|            | Waste Water treatment process |

| No | Kode alat | Nama Alat                          |
|----|-----------|------------------------------------|
| 1  | F-110     | Tangki penyimpanan CO <sub>2</sub> |
| 2  | L-111     | Pompa-1                            |
| 3  | V-112     | Vaporizer - 1                      |
| 4  | G-113     | Kompresor - 1                      |
| 5  | E-114     | Heater - 1                         |
| 6  | F-120     | Tangki penyimpanan hidrogen        |
| 7  | L-121     | Pompa-2                            |
| 8  | V-122     | Vaporizer - 2                      |
| 9  | G-123     | Kompresor - 2                      |
| 10 | E-124     | Heater - 2                         |
| 11 | R-210     | Fixed Bed Reactor                  |
| 12 | G-211     | Expander                           |
| 13 | E-212     | Cooler - 1                         |
| 14 | H-310     | Flash drum                         |
| 15 | G-311     | Kompresor - 3                      |
| 16 | E-312     | Heater - 3                         |
| 17 | L-313     | Pompa - 3                          |
| 18 | K-314     | Expansion valve - 1                |
| 19 | E-315     | Heater - 4                         |
| 20 | D-320     | Stripper                           |
| 21 | L-321     | Pompa - 4                          |
| 22 | E-322     | Reboiler - 1                       |
| 23 | L-323     | Pompa - 5                          |
| 24 | K-324     | Expansion valve - 2                |
| 25 | E-325     | Cooler - 2                         |
| 26 | G-326     | Kompresor - 4                      |
| 27 | E-327     | Heater - 5                         |
| 28 | D-330     | Distilasi                          |
| 29 | L-331     | Pompa - 6                          |
| 30 | E-332     | Reboiler - 2                       |
| 31 | L-333     | Pompa - 7                          |
| 32 | E-334     | Cooler - 3                         |
| 33 | E-335     | Kondensor - 1                      |
| 34 | F-336     | Akumulator                         |
| 35 | L-337     | Pompa- 8                           |
| 36 | L-338     | Pompa- 9                           |
| 37 | F-410     | Tangki penyimpanan methanol        |

Nama : Nazila Alif Rahmah  
NPM : 21031010082

Dosen Pembimbing :  
Prof. Dr. Ir. Sri Muljani, M.T

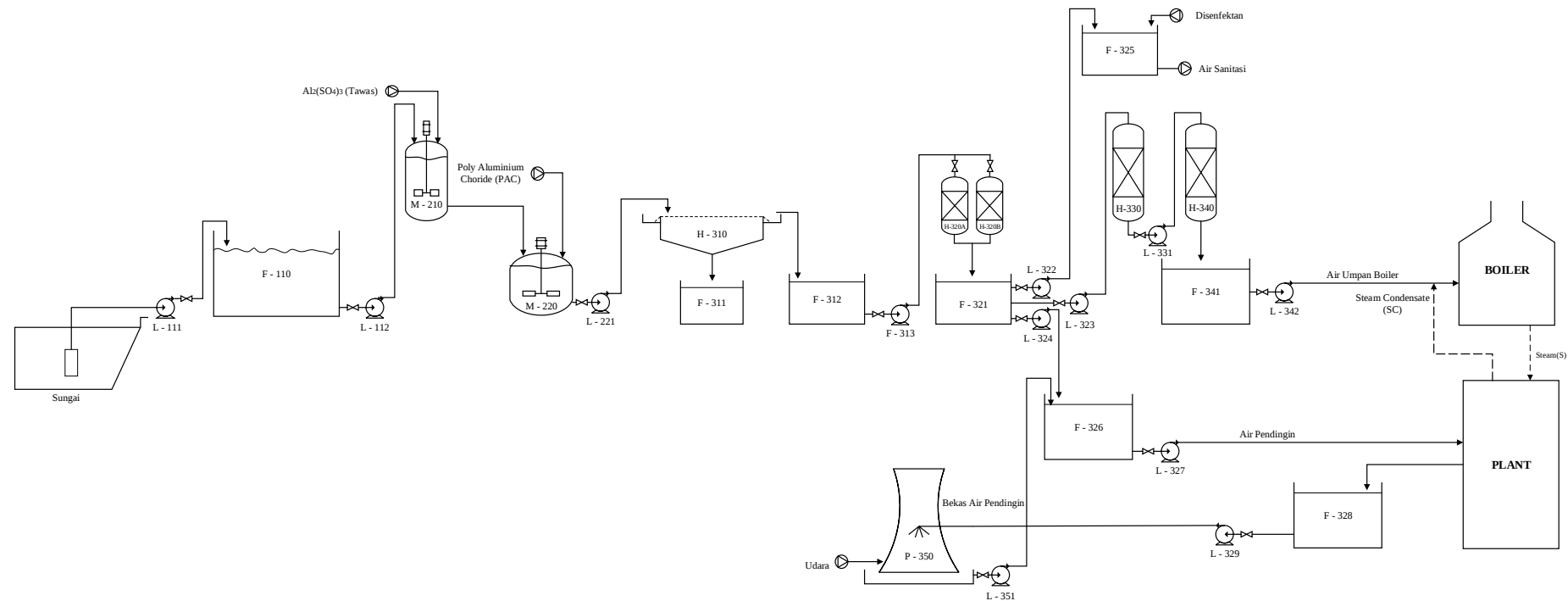
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2025

| Komponen           | Aliran massa (kg/jam) |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |       |         |
|--------------------|-----------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-------|---------|
|                    | 1                     | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10      | 11      | 12      | 13      | 14      | 15      | 16      | 17    | 18      |
| CO <sub>2</sub>    | 20477,0               | 16381,6 |         |         | 28362,4 | 3869,89 | 39,0087 | 3861,86 | 3869,89 |         |         |         |         |         |         |         |       |         |
| H <sub>2</sub>     |                       |         | 2816,38 | 2253,11 | 3900,87 |         | 244,925 | 24247,6 |         |         |         |         |         |         |         |         |       |         |
| CO                 |                       |         |         |         | 43,6319 |         | 0,43632 | 43,1956 |         |         |         |         |         |         |         |         |       |         |
| H <sub>2</sub> O   | 206,839               | 165,471 | 0,28167 | 0,22533 | 8787,48 | 8748,68 | 3,3232  | 328,997 | 4,37434 | 9551,09 | 806,778 | 8744,31 | 1,7196  | 0,84517 | 0,87443 | 25494,8 | 16751 | 8743,43 |
| CH <sub>3</sub> OH |                       |         |         |         | 15492,1 | 15159,7 | 0,3879  | 38,4055 | 7,57987 | 16550,1 | 1397,99 | 15152,2 | 29794,4 | 14643,7 | 15150,6 | 4,41819 | 2,903 | 1,51522 |
| Total              | 20683,9               | 16547,1 | 2816,66 | 2253,33 | 56586,5 | 27778,3 | 287,694 | 28520,1 | 15151,5 | 26101,2 | 2204,76 | 23896,5 | 29796,1 | 14644,6 | 15151,5 | 25499,2 | 16754 | 8744,95 |

## UNIT PENGOLAHAN AIR

# PRA RANCANGAN PABRIK METHANOL DARI HIDROGENASI KARBON DIOKSIDA DENGAN PROSES IMPERIAL CHEMICAL INDUSTRIES



| No | Kode alat | Nama Alat                            |
|----|-----------|--------------------------------------|
| 1  | L-111     | Pompa 1                              |
| 2  | F-110     | Bak Penampung Air Sungai             |
| 3  | L-112     | Pompa 2                              |
| 4  | M-210     | Tangki koagulasi                     |
| 5  | M-220     | Tangki flokulasi                     |
| 6  | L-221     | Pompa 4                              |
| 7  | H-310     | Clarifier                            |
| 8  | F-311     | Bak penampung air bersih clarifier   |
| 9  | F-312     | Bak penampung air bersih clarifier   |
| 10 | L-313     | Pompa 5                              |
| 11 | H-320 A   | Sand filter 1                        |
| 12 | H-320 B   | Sand filter 2                        |
| 13 | F-321     | Bak penampung air bersih sand filter |
| 14 | L-322     | Pompa 6                              |
| 15 | L-323     | Pompa 7                              |
| 16 | L-324     | Pompa 8                              |
| 17 | F-325     | Bak air sanitasi                     |
| 18 | F-326     | Bak air pendingin                    |
| 19 | L-327     | Pompa 9                              |
| 20 | L-328     | Bak air bekas pendingin              |
| 21 | L-329     | Pompa 10                             |
| 22 | H-330     | Tangki Kation Exchanger              |
| 23 | L-331     | Pompa 11                             |
| 24 | H-340     | Tangki Anion Exchanger               |
| 25 | F-341     | Bak penampung air demineralisasi     |
| 26 | L-342     | Pompa 12                             |
| 27 | P-350     | Cooling tower                        |
| 28 | L-351     | Pompa 13                             |
| 29 | E-360     | Boiler                               |

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