

The diagram illustrates a complex chemical process involving several stages of separation, reaction, and distillation. Key components include:

- Feed and Storage:** Sodium Carbonate (F-240), FAME (F-210), and Sulfur (F-110) are the primary feedstocks. Wet Air (G-311) is also used in the initial stages.
- Distillation and Separation:** Distillation columns D-310A and D-310B are used for initial separation. A large distillation column R-140 is used for the main separation process, with a reboiler R-230 and condenser E-146. A second distillation column R-210 is used for further purification.
- Reaction and Heat Exchange:** A reactor R-140 is used for the main reaction, with a reboiler R-230 and condenser E-146. A heat exchanger E-144 is used for preheating the feed.
- Storage and Handling:** Various storage tanks (F-210, F-110, F-280) and handling units (G-312, G-313, G-314, G-315, G-316, G-317, G-318, G-319, G-320, G-321, G-322, G-323, G-324, G-325, G-326, G-327, G-328, G-329, G-330, G-331, G-332, G-333, G-334, G-335, G-336, G-337, G-338, G-339, G-340, G-341, G-342, G-343, G-344, G-345, G-346, G-347, G-348, G-349, G-350, G-351, G-352, G-353, G-354, G-355, G-356, G-357, G-358, G-359, G-360, G-361, G-362, G-363, G-364, G-365, G-366, G-367, G-368, G-369, G-370, G-371, G-372, G-373, G-374, G-375, G-376, G-377, G-378, G-379, G-380, G-381, G-382, G-383, G-384, G-385, G-386, G-387, G-388, G-389, G-390, G-391, G-392, G-393, G-394, G-395, G-396, G-397, G-398, G-399, G-400, G-401, G-402, G-403, G-404, G-405, G-406, G-407, G-408, G-409, G-410, G-411, G-412, G-413, G-414, G-415, G-416, G-417, G-418, G-419, G-420, G-421, G-422, G-423, G-424, G-425, G-426, G-427, G-428, G-429, G-430, G-431, G-432, G-433, G-434, G-435, G-436, G-437, G-438, G-439, G-440, G-441, G-442, G-443, G-444, G-445, G-446, G-447, G-448, G-449, G-450, G-451, G-452, G-453, G-454, G-455, G-456, G-457, G-458, G-459, G-460, G-461, G-462, G-463, G-464, G-465, G-466, G-467, G-468, G-469, G-470, G-471, G-472, G-473, G-474, G-475, G-476, G-477, G-478, G-479, G-480, G-481, G-482, G-483, G-484, G-485, G-486, G-487, G-488, G-489, G-490, G-491, G-492, G-493, G-494, G-495, G-496, G-497, G-498, G-499, G-500, G-501, G-502, G-503, G-504, G-505, G-506, G-507, G-508, G-509, G-510, G-511, G-512, G-513, G-514, G-515, G-516, G-517, G-518, G-519, G-520, G-521, G-522, G-523, G-524, G-525, G-526, G-527, G-528, G-529, G-530, G-531, G-532, G-533, G-534, G-535, G-536, G-537, G-538, G-539, G-540, G-541, G-542, G-543, G-544, G-545, G-546, G-547, G-548, G-549, G-550, G-551, G-552, G-553, G-554, G-555, G-556, G-557, G-558, G-559, G-560, G-561, G-562, G-563, G-564, G-565, G-566, G-567, G-568, G-569, G-570, G-571, G-572, G-573, G-574, G-575, G-576, G-577, G-578, G-579, G-580, G-581, G-582, G-583, G-584, G-585, G-586, G-587, G-588, G-589, G-590, G-591, G-592, G-593, G-594, G-595, G-596, G-597, G-598, G-599, G-600, G-601, G-602, G-603, G-604, G-605, G-606, G-607, G-608, G-609, G-610, G-611, G-612, G-613, G-614, G-615, G-616, G-617, G-618, G-619, G-620, G-621, G-622, G-623, G-624, G-625, G-626, G-627, G-628, G-629, G-630, G-631, G-632, G-633, G-634, G-635, G-636, G-637, G-638, G-639, G-640, G-641, G-642, G-643, G-644, G-645, G-646, G-647, G-648, G-649, G-650, G-651, G-652, G-653, G-654, G-655, G-656, G-657, G-658, G-659, G-660, G-661, G-662, G-663, G-664, G-665, G-666, G-667, G-668, G-669, G-670, G-671, G-672, G-673, G-674, G-675, G-676, G-677, G-678, G-679, G-680, G-681, G-682, G-683, G-684, G-685, G-686, G-687, G-688, G-689, G-690, G-691, G-692, G-693, G-694, G-695, G-696, G-697, G-698, G-699, G-700, G-701, G-702, G-703, G-704, G-705, G-706, G-707, G-708, G-709, G-710, G-711, G-712, G-713, G-714, G-715, G-716, G-717, G-718, G-719, G-720, G-721, G-722, G-723, G-724, G-725, G-726, G-727, G-728, G-729, G-730, G-731, G-732, G-733, G-734, G-735, G-736, G-737, G-738, G-739, G-740, G-741, G-742, G-743, G-744, G-745, G-746, G-747, G-748, G-749, G-750, G-751, G-752, G-753, G-754, G-755, G-756, G-757, G-758, G-759, G-760, G-761, G-762, G-763, G-764, G-765, G-766, G-767, G-768, G-769, G-770, G-771, G-772, G-773, G-774, G-775, G-776, G-777, G-778, G-779, G-780, G-781, G-782, G-783, G-784, G-785, G-786, G-787, G-788, G-789, G-790, G-791, G-792, G-793, G-794, G-795, G-796, G-797, G-798, G-799, G-800, G-801, G-802, G-803, G-804, G-805, G-806, G-807, G-808, G-809, G-810, G-811, G-812, G-813, G-814, G-815, G-816, G-817, G-818, G-819, G-820, G-821, G-822, G-823, G-824, G-825, G-826, G-827, G-828, G-829, G-830, G-831, G-832, G-833, G-834, G-835, G-836, G-837, G-838, G-839, G-840, G-841, G-842, G-843, G-844, G-845, G-846, G-847, G-848, G-849, G-850, G-851, G-852, G-853, G-854, G-855, G-856, G-857, G-858, G-859, G-860, G-861, G-862, G-863, G-864, G-865, G-866, G-867, G-868, G-869, G-870, G-871, G-872, G-873, G-874, G-875, G-876, G-877, G-878, G-879, G-880, G-881, G-882, G-883, G-884, G-885, G-886, G-887, G-888, G-889, G-890, G-891, G-892, G-893, G-894, G-895, G-896, G-897, G-898, G-899, G-900, G-901, G-902, G-903, G-904, G-905, G-906, G-907, G-908, G-909, G-910, G-911, G-912, G-913, G-914, G-915, G-916, G-917, G-918, G-919, G-920, G-921, G-922, G-923, G-924, G-925, G-926, G-927, G-928, G-929, G-930, G-93

	Cooling Water		Level Indicator
	Demineralized Water		Temperature Control
	Cooling Water Return		pH Control
	Steam Condensate		Alizan Massa (Kg/tan)
	Flow Control		Temperature (°C)
	Level Control		Tekanan (Atm)

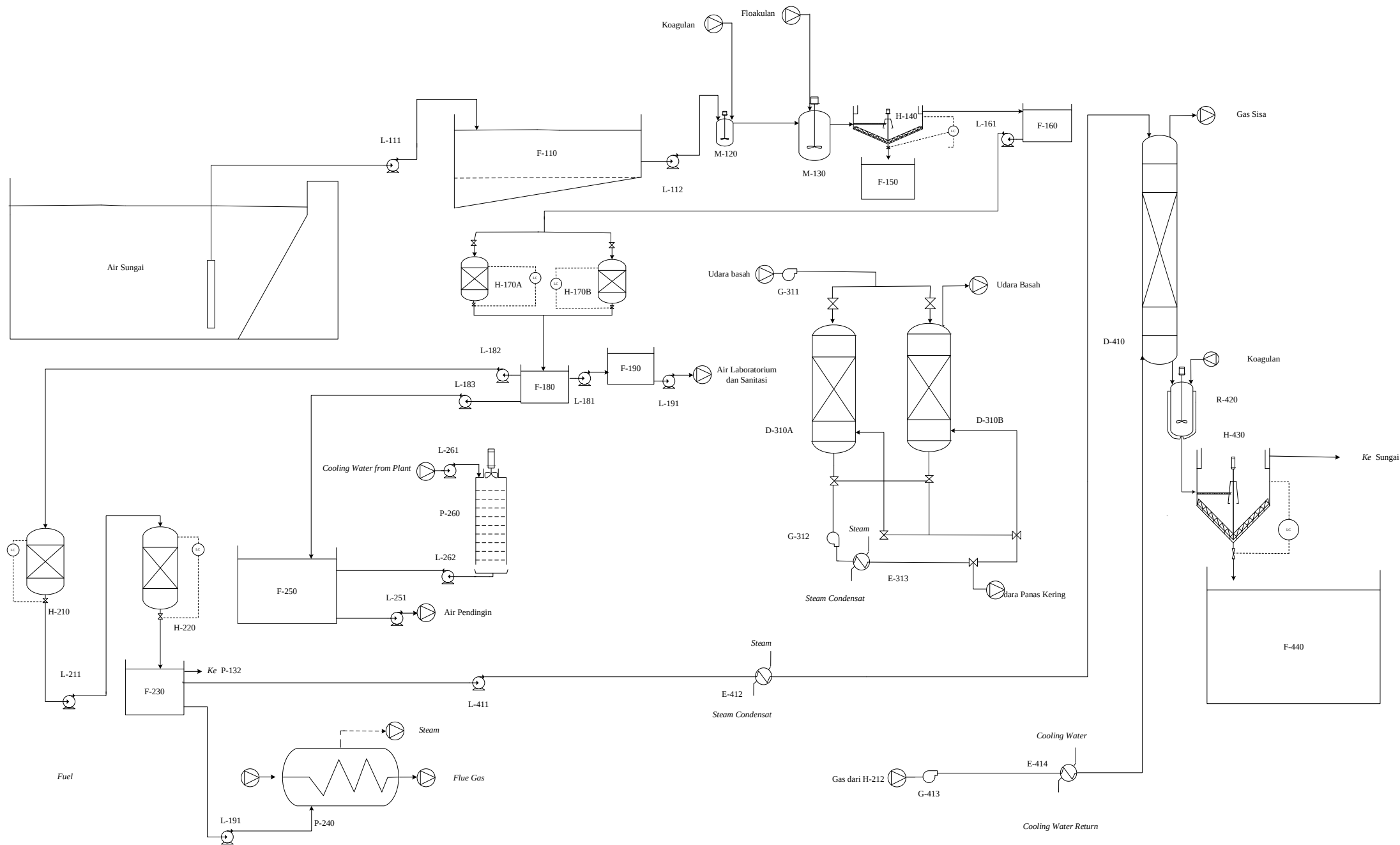
No	Ke	Nama
1	G-1310	Salang Peningkatan Salang
2	G-1311	Bell Converter-1
3	G-1312	Hopper-1
4	M-130	Melter
5	G-1301	Pump-1
6	G-1310	Salang Combustion Furnace
7	G-1311	Hopper-1
8	G-1312	Hopper-2
9	S-133	Steam heat boiler
10	G-1334	Hopper-3
11	L-135	Pump-2
12	R-140	Gas-Jet Converter Stages
13	E-141	Heat Exchanger-1
14	E-142	Heat Exchanger-2
15	E-143	Heat Exchanger-3
16	E-144	Heat Exchanger-4
17	G-145	Hopper-4
18	E-146	Hopper-5
19	E-219	Tanah Peningkatan FAME
20	L-213	Pump-3
21	R-220	Multi-Stage Falling Film Reactor
22	H-221	Column-1
23	L-222	Pump-4
24	E-226	Column
25	L-230	Pump-5
26	E-232	Column-2
27	G-233	Salang Napieran Kambusi
28	L-241	Bell Converter-2
29	E-242	Hopper-2
30	R-250	Continuous Stirred Tank Reactor
31	L-251	Screw Conveyor
32	L-252	Screw Conveyor
33	E-256	Binary Dryer
34	G-273	Hopper-5
35	L-272	Column-2
36	L-273	Screw Conding Conveyor
37	G-280	Salang Peningkatan Merit Ester Sulfat
38	D-310	Air Dryer
39	D-311	Hopper-6
40	E-312	Hopper-7
41	E-313	Hopper-8

PRA RANCANGAN PABRIK METHYL ESTER SULFONATE DARI FATTY ACID METHYL ESTER
DAN SULFUR TRIOKSIDA DENGAN METODE SULFONASI

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UTILITAS PRA RANCANGAN PABRIK METHYL ESTER SULFONATE DARI FATTY ACID METHYL ESTER DAN BELERANG DENGAN METODE SULFONASI



No	Kode	Nama
1.	F-110	Bak Penampungan Air Sungai
2.	L-111	Pompa-1
3.	L-112	Pompa-2
4.	M-120	Tangki Koagulasi
5.	M-130	Tangki Flokulasi
6.	H-140	Clarifier
7.	F-150	Bak Penampung Flok
8.	F-160	Bak Penampung Air Sementara-1
9.	L-161	Pompa-3
10.	H-170A/B	Sand Filter
11.	F-180	Bak Penampung Air Sementara-2
12.	L-181	Pompa-4
13.	L-182	Pompa-5
14.	L-183	Pompa-6
15.	F-190	Bak Penampung Air Sanitasi dan Laboratorium
16.	L-191	Pompa-7
17.	H-210	Cation Exchanger
18.	L-211	Pompa-8
19.	H-220	Anion Exchanger
20.	F-230	Bak Penampung Air Demineralisasi
21.	L-231	Pompa-9
22.	P-240	Boiler
23.	F-250	Bak Penampung Air Pendingin
24.	L-251	Pompa-10
25.	P-260	Cooling Tower
26.	L-261	Pompa-11
27.	L-262	Pompa-12
28.	D-310A/B	Air Dryer
29.	G-311	Blower-1
30.	G-312	Blower -2
31.	E-313	Heater -1
32.	D-410	Scrubber
33.	L-411	Pompa-13
34.	E-412	Heater -2
35.	G-413	Blower-3
36.	E-414	Cooler-1
37.	R-420	Neutralizer
38.	H-430	Clarifier
39.	F-440	Bak Penampung Limbah Padat

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