

FMECA ID	System		Component ID	Component	Component Function
1	1	Monitoring system	1.01	Inlet monitor	Measures water quality
2	1	Monitoring system	1.01	Inlet monitor	Measures water quality
3	1	Monitoring system	1.01	Inlet monitor	Measures water quality
4	1	Monitoring system	1.02	Manual gate valve	Open/close water to inlet monitor
5	1	Monitoring system	1.02	Manual gate valve	Open/close water to inlet monitor
6	1	Monitoring system	1.02	Manual gate valve	Open/close water to inlet monitor
7	1	Monitoring system	1.02	Manual gate valve	Open/close water to inlet monitor
8	1	Monitoring system	1.03	Manual gate valve	Open/close water to scrubber water supply pump inlet
9	1	Monitoring system	1.03	Manual gate valve	Open/close water to scrubber water supply pump inlet
10	1	Monitoring system	1.03	Manual gate valve	Open/close water to scrubber water supply pump inlet
11	1	Monitoring system	1.03	Manual gate valve	Open/close water to scrubber water supply pump inlet
12	1	Monitoring system	1.04	Outlet monitor	Measures water quality
13	1	Monitoring system	1.04	Outlet monitor	Measures water quality
14	2	Monitoring system	2.04	Outlet monitor	Measures water quality
15	1	Monitoring system	1.05 1.06	Manual gate valve	Open/close water to water outlet
16	1	Monitoring system	1.05 1.06	Manual gate valve	Open/close water to water outlet
17	1	Monitoring system	1.05 1.06	Manual gate valve	Open/close water to water outlet
18	1	Monitoring system	1.05 1.06	Manual gate valve	Open/close water to water outlet
19	1	Monitoring system	1.07 1.08	Manual gate valve	Open/close water to outlet monitor
20	1	Monitoring system	1.07 1.08	Manual gate valve	Open/close water to outlet monitor
21	1	Monitoring system	1.07 1.08	Manual gate valve	Open/close water to outlet monitor
22	1	Monitoring system	1.07 1.08	Manual gate valve	Open/close water to outlet monitor
23	2	Scrubbing water supply pump inlet	2.01	Manual gate valve	Open/close seawater onboard
24	2	Scrubbing water supply pump inlet	2.01	Manual gate valve	Open/close seawater onboard
25	2	Scrubbing water supply pump inlet	2.01	Manual gate valve	Open/close seawater onboard
26	2	Scrubbing water supply pump inlet	2.01	Manual gate valve	Open/close seawater onboard
27	2	Scrubbing water supply pump inlet	2.02 2.06 2.10 2.14 2.18	Manual gate valve	Open/close water to pump
28	2	Scrubbing water supply pump inlet	2.02 2.06 2.10 2.14 2.18	Manual gate valve	Open/close water to pump
29	2	Scrubbing water supply pump inlet	2.02 2.06 2.10 2.14 2.18	Manual gate valve	Open/close water to pump
30	2	Scrubbing water supply pump inlet	2.02 2.06 2.10 2.14 2.18	Manual gate valve	Open/close water to pump
31	2	Scrubbing water supply pump inlet	2.03 2.07 2.11 2.15 2.19	Pump	Pump water to the tower
32	2	Scrubbing water supply pump inlet	2.03 2.07 2.11 2.15 2.19	Pump	Pump water to the tower
33	2	Scrubbing water supply pump inlet	2.03 2.07 2.11 2.15 2.19	Pump	Pump water to the tower
34	2	Scrubbing water supply pump inlet	2.03 2.07 2.11 2.15 2.19	Pump	Pump water to the tower
35	2	Scrubbing water supply pump inlet	2.04 2.08 2.12 2.16 2.20	Manual gate valve	Open/close water to tower

FMECA ID	System		Component ID	Component	Component Function
36	2	Scrubbing water supply pump inlet	2.04 2.08 2.12 2.16 2.20	Manual gate valve	Open/close water to tower
37	2	Scrubbing water supply pump inlet	2.04 2.08 2.12 2.16 2.20	Manual gate valve	Open/close water to tower
38	2	Scrubbing water supply pump inlet	2.04 2.08 2.12 2.16 2.20	Manual gate valve	Open/close water to tower
39	2	Scrubbing water supply pump inlet	2.05 2.09 2.13 2.17 2.21	Check valve	Provide water to the tower
40	2	Scrubbing water supply pump inlet	2.05 2.09 2.13 2.17 2.21	Check valve	Provide water to the tower
41	2	Scrubbing water supply pump inlet	2.05 2.09 2.13 2.17 2.21	Check valve	Provide water to the tower
42	2	Scrubbing water supply pump inlet	2.05 2.09 2.13 2.17 2.21	Check valve	Provide water to the tower
43	2	Scrubbing water supply pump inlet	2.22	Manual gate valve	Open/close water to tower
44	2	Scrubbing water supply pump inlet	2.22	Manual gate valve	Open/close water to tower
45	2	Scrubbing water supply pump inlet	2.22	Manual gate valve	Open/close water to tower
46	2	Scrubbing water supply pump inlet	2.22	Manual gate valve	Open/close water to tower
47	3	Scrubber system	3.01	Control valve	Control and open/close water to the venturi
48	3	Scrubber system	3.01	Control valve	Control and open/close water to the venturi
49	3	Scrubber system	3.01	Control valve	Control and open/close water to the venturi
50	3	Scrubber system	3.01	Control valve	Control and open/close water to the venturi
51	3	Scrubber system	3.01	Control valve	Control and open/close water to the venturi
52	3	Scrubber system	3.02	Control valve	Control and open/close water to the upper section in scrubber device
53	3	Scrubber system	3.02	Control valve	Control and open/close water to the upper section in scrubber device
54	3	Scrubber system	3.02	Control valve	Control and open/close water to the upper section in scrubber device
55	3	Scrubber system	3.02	Control valve	Control and open/close water to the upper section in scrubber device
56	3	Scrubber system	3.02	Control valve	Control and open/close water to the upper section in scrubber device
57	3	Scrubber system	3.03	Control valve	Control and open/close water to the lower section in scrubber device
58	3	Scrubber system	3.03	Control valve	Control and open/close water to the lower section in scrubber device
59	3	Scrubber system	3.03	Control valve	Control and open/close water to the lower section in scrubber device
60	3	Scrubber system	3.03	Control valve	Control and open/close water to the lower section in scrubber device
61	3	Scrubber system	3.03	Control valve	Control and open/close water to the lower section in scrubber device
62	3	Scrubber system	3.04	Scrubber device	Detain scrubbing process
63	3	Scrubber system	3.04	Scrubber device	Detain scrubbing process
64	3	Scrubber system	3.05	Injection nozzle	Disperse water
65	3	Scrubber system	3.05	Injection nozzle	Disperse water
66	3	Scrubber system	3.06	Injection nozzle	Disperse water
67	3	Scrubber system	3.06	Injection nozzle	Disperse water
68	3	Scrubber system	3.07	Injection nozzle	Disperse water
69	3	Scrubber system	3.07	Injection nozzle	Disperse water

FMECA ID	System		Component ID	Component	Component Function
70	3	Scrubber system	3.08	Steam cleaning	Cleans steam in the scrubber device
71	3	Scrubber system	3.09	Droplet separator	Remove water droplets from exhaust gas
72	3	Scrubber system	3.10	Packed bed	Remove particulates from exhaust gas
73	3	Scrubber system	3.11	Packed bed	Remove particulates from exhaust gas
74	3	Scrubber system	3.12	Venturi	Detain scrubbing process
75	3	Scrubber system	3.12	Venturi	Detain scrubbing process
76	3	Scrubber system	3.13	Injection nozzle	Disperse water
77	3	Scrubber system	3.13	Injection nozzle	Disperse water
78	3	Scrubber system	3.14	Injection nozzle	Disperse water
79	3	Scrubber system	3.14	Injection nozzle	Disperse water
80	3	Scrubber system	3.15	Drainpipe	Lead water to the residence tank
81	4	Water treatment system	4.01	Residence tank	Stores effluent
82	4	Water treatment system	4.01	Residence tank	Stores effluent
83	4	Water treatment system	4.02	Sludge tank	Stores disposal of effluent residues
84	4	Water treatment system	4.02	Sludge tank	Stores disposal of effluent residues
85	4	Water treatment system	4.03	Manual gate valve	Open/close water to pump
86	4	Water treatment system	4.03	Manual gate valve	Open/close water to pump
87	4	Water treatment system	4.03	Manual gate valve	Open/close water to pump
88	4	Water treatment system	4.03	Manual gate valve	Open/close water to pump
89	4	Water treatment system	4.04	Pump	Pump water to the residence tank
90	4	Water treatment system	4.04	Pump	Pump water to the residence tank
91	4	Water treatment system	4.04	Pump	Pump water to the residence tank
92	4	Water treatment system	4.04	Pump	Pump water to the residence tank
93	4	Water treatment system	4.05	Manual gate valve	Open/close water to residence tank
94	4	Water treatment system	4.05	Manual gate valve	Open/close water to residence tank
95	4	Water treatment system	4.05	Manual gate valve	Open/close water to residence tank
96	4	Water treatment system	4.05	Manual gate valve	Open/close water to residence tank
97	4	Water treatment system	4.06	Check valve	Provide water to the residence tank
98	4	Water treatment system	4.06	Check valve	Provide water to the residence tank
99	4	Water treatment system	4.06	Check valve	Provide water to the residence tank
100	4	Water treatment system	4.06	Check valve	Provide water to the residence tank
101	4	Water treatment system	4.07 4.14 4.21 4.28	Manual gate valve	Open/close water to pump
102	4	Water treatment system	4.07 4.14 4.21 4.28	Manual gate valve	Open/close water to pump
103	4	Water treatment system	4.07 4.14 4.21 4.28	Manual gate valve	Open/close water to pump

FMECA ID	System		Component ID	Component	Component Function
104	4	Water treatment system	4.07 4.14 4.21 4.28	Manual gate valve	Open/close water to pump
105	4	Water treatment system	4.08 4.15 4.22 4.29	Pump	Pump water to hydrocyclone
106	4	Water treatment system	4.08 4.15 4.22 4.29	Pump	Pump water to hydrocyclone
107	4	Water treatment system	4.08 4.15 4.22 4.29	Pump	Pump water to hydrocyclone
108	4	Water treatment system	4.08 4.15 4.22 4.29	Pump	Pump water to hydrocyclone
109	4	Water treatment system	4.09 4.16 4.23 4.30	Manual gate valve	Open/close water to hydrocyclone
110	4	Water treatment system	4.09 4.16 4.23 4.30	Manual gate valve	Open/close water to hydrocyclone
111	4	Water treatment system	4.09 4.16 4.23 4.30	Manual gate valve	Open/close water to hydrocyclone
112	4	Water treatment system	4.09 4.16 4.23 4.30	Manual gate valve	Open/close water to residence tank
113	4	Water treatment system	4.10 4.17 4.24 4.31	Hydrocyclone	Separate particles from the washwater
114	4	Water treatment system	4.10 4.17 4.24 4.31	Hydrocyclone	Separate particles from the washwater
115	4	Water treatment system	4.11 4.18 4.25 4.32	Manual gate valve	Open/close water to residence tank
116	4	Water treatment system	4.11 4.18 4.25 4.32	Manual gate valve	Open/close water to residence tank
117	4	Water treatment system	4.11 4.18 4.25 4.32	Manual gate valve	Open/close water to residence tank
118	4	Water treatment system	4.11 4.18 4.25 4.32	Manual gate valve	Open/close water to residence tank
119	4	Water treatment system	4.12 4.19 4.26 4.33	Check valve	Provide water to residence tank
120	4	Water treatment system	4.12 4.19 4.26 4.33	Check valve	Provide water to residence tank
121	4	Water treatment system	4.12 4.19 4.26 4.33	Check valve	Provide water to residence tank
122	4	Water treatment system	4.12 4.19 4.26 4.33	Check valve	Provide water to residence tank
123	4	Water treatment system	4.13 4.20 4.27 4.34	Control valve	Control and open/close water to the sludge tank
124	4	Water treatment system	4.13 4.20 4.27 4.34	Control valve	Control and open/close water to the sludge tank
125	4	Water treatment system	4.13 4.20 4.27 4.34	Control valve	Control and open/close water to the sludge tank
126	4	Water treatment system	4.13 4.20 4.27 4.34	Control valve	Control and open/close water to the sludge tank
127	4	Water treatment system	4.13 4.20 4.27 4.34	Control valve	Control and open/close water to the sludge tank
128	4	Water treatment system	4.35	Control valve	Control and open/close water to the residence tank
129	4	Water treatment system	4.35	Control valve	Control and open/close water to the residence tank
130	4	Water treatment system	4.35	Control valve	Control and open/close water to the residence tank
131	4	Water treatment system	4.35	Control valve	Control and open/close water to the residence tank
132	4	Water treatment system	4.35	Control valve	Control and open/close water to the residence tank
133	5	Scrubbing water supply pump outlet	5.01 5.04 5.07	Manual gate valve	Open/close scrubber water to pump
134	5	Scrubbing water supply pump outlet	5.01 5.04 5.07	Manual gate valve	Open/close scrubber water to pump
135	5	Scrubbing water supply pump outlet	5.01 5.04 5.07	Manual gate valve	Open/close scrubber water to pump
136	5	Scrubbing water supply pump outlet	5.01 5.04 5.07	Manual gate valve	Open/close scrubber water to pump
137	5	Scrubbing water supply pump outlet	5.02 5.05 5.08	Pump	Pump water to the outlet

FMECA ID	System		Component ID	Component	Component Function
138	5	Scrubbing water supply pump outlet	5.02 5.05 5.08	Pump	Pump water to the outlet
139	5	Scrubbing water supply pump outlet	5.02 5.05 5.08	Pump	Pump water to the outlet
140	5	Scrubbing water supply pump outlet	5.02 5.05 5.08	Pump	Pump water to the outlet
141	5	Scrubbing water supply pump outlet	5.03 5.06 5.09	Manual gate valve	Open/close scrubber water to outlet
142	5	Scrubbing water supply pump outlet	5.03 5.06 5.09	Manual gate valve	Open/close scrubber water to outlet
143	5	Scrubbing water supply pump outlet	5.03 5.06 5.09	Manual gate valve	Open/close scrubber water to outlet
144	5	Scrubbing water supply pump outlet	5.03 5.06 5.09	Manual gate valve	Open/close scrubber water to outlet
145	6	Water outlet	6.01	Check valve	Provide water to the outlet
146	6	Water outlet	6.01	Check valve	Provide water to the outlet
147	6	Water outlet	6.01	Check valve	Provide water to the outlet
148	6	Water outlet	6.01	Check valve	Provide water to the outlet
149	6	Water outlet	6.02	Control valve	Control and open/close water to outlet
150	6	Water outlet	6.02	Control valve	Control and open/close water to outlet
151	6	Water outlet	6.02	Control valve	Control and open/close water to outlet
152	6	Water outlet	6.02	Control valve	Control and open/close water to outlet
153	6	Water outlet	6.02	Control valve	Control and open/close water to outlet

FMECA ID	Failure Mode	Failure Cause
1	Fail to function on demand	Electronic failure, sensing element, blockage/plugged, faulty signal, instrument failure, no signal
2	Abnormal output	Sensing element, out of adjustment
3	Spurious operation	Electronic failure, sensing element, blockage/plugged, faulty signal, instrument failure, no signal
4	Plugged/choked	Corrosion, fouling
5	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
6	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
7	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
8	Plugged/choked	Corrosion, fouling
9	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
10	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
11	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
12	Fail to function on demand	Electronic failure, sensing element, blockage/plugged, faulty signal, instrument failure, no signal
13	Abnormal output	Sensing element, out of adjustment
14	Spurious operation	Electronic failure, sensing element, blockage/plugged, faulty signal, instrument failure, no signal
15	Plugged/choked	Corrosion, fouling
16	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
17	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
18	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
19	Plugged/choked	Corrosion, fouling
20	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
21	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
22	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
23	Plugged/choked	Corrosion, fouling
24	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
25	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
26	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
27	Plugged/choked	Corrosion, fouling
28	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
29	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
30	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
31	Spurious stop	Control unit, instrument, pressure, temperature, monitoring, seals
32	External leakage	Bearing, casing, filters, oil, seals
33	Fail to start on demand	Control unit, instrument, thrust bearing
34	Vibration	Impeller, vibrations, radial bearing
35	Plugged/choked	Corrosion, fouling

FMECA ID	Failure Mode	Failure Cause
36	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
37	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
38	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
39	Plugged/choked	Corrosion, fouling
40	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
41	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
42	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
43	Plugged/choked	Corrosion, fouling
44	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
45	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
46	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
47	Plugged/choked	Corrosion, fouling
48	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
49	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
50	Fail to control	Blockage/plugged, control failure, corrosion, deformation, instrument, mechanical, wear
51	Fail to open on demand	Blockage/plugged, control failure, corrosion, deformation, instrument, mechanical, wear
52	Plugged/choked	Corrosion, fouling
53	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
54	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
55	Fail to control	Blockage/plugged, control failure, corrosion, deformation, instrument, mechanical, wear
56	Fail to open on demand	Blockage/plugged, control failure, corrosion, deformation, instrument, mechanical, wear
57	Plugged/choked	Corrosion, fouling
58	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
59	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
60	Fail to control	Blockage/plugged, control failure, corrosion, deformation, instrument, mechanical, wear
61	Fail to open on demand	Blockage/plugged, control failure, corrosion, deformation, instrument, mechanical, wear
62	External leakage	Corrosion, high pressures
63	Structural deficiency	Body/shell, support
64	Plugged/choked	Corrosion, fouling, wear
65	Fall down	Corrosion, fouling, high pressures, looseness, wear
66	Plugged/choked	Corrosion, fouling, wear
67	Fall down	Corrosion, fouling, high pressures, looseness, wear
68	Plugged/choked	Corrosion, fouling, wear
69	Fall down	Corrosion, fouling, high pressures, looseness, wear

FMECA ID	Failure Mode	Failure Cause
70	Plugged/choked	Corrosion, fouling, wear
71	Plugged/choked	Corrosion, fouling, wear, bad cleaning, too many deposits
72	Plugged/choked	Corrosion, fouling, wear, debris, too large particulate
73	Plugged/choked	Corrosion, fouling, wear, debris, too large particulate
74	External leakage	Corrosion, high pressures
75	Structural deficiency	Body/shell, support
76	Plugged/choked	Corrosion, fouling, wear
77	Fall down	Corrosion, fouling, high pressures, looseness, wear
78	Plugged/choked	Corrosion, fouling, wear
79	Fall down	Corrosion, fouling, high pressures, looseness, wear
80	Plugged/choked	Falling of nozzles, downstream valve closed
81	Structural deficiency	Corrosion, lack of maintenance
82	External leakage	Corrosion, lack of maintenance
83	Structural deficiency	Corrosion, lack of maintenance
84	External leakage	Corrosion, lack of maintenance
85	Plugged/choked	Corrosion, fouling
86	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
87	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
88	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
89	Spurious stop	Control unit, instrument, pressure, temperature, monitoring, seals
90	External leakage	Bearing, casing, filters, oil, seals
91	Fail to start on demand	Control unit, instrument, thrust bearing
92	Vibration	Impeller, vibrations, radial bearing
93	Plugged/choked	Corrosion, fouling
94	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
95	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
96	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
97	Plugged/choked	Corrosion, fouling
98	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
99	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
100	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
101	Plugged/choked	Corrosion, fouling
102	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
103	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure

FMECA ID	Failure Mode	Failure Cause
104	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
105	Spurious stop	Control unit, instrument, pressure, temperature, monitoring, seals
106	External leakage	Bearing, casing, filters, oil, seals
107	Fail to start on demand	Control unit, instrument, thrust bearing
108	Vibration	Impeller, vibrations, radial bearing
109	Plugged/choked	Corrosion, fouling
110	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
111	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
112	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
113	Plugged/choked	Corrosion, fouling, wear
114	Structural deficiency	Corrosion, strains, wear
115	Plugged/choked	Corrosion, fouling
116	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
117	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
118	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
119	Plugged/choked	Corrosion, fouling
120	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
121	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
122	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
123	Plugged/choked	Corrosion, fouling
124	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
125	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
126	Fail to control	Blockage/plugged, control failure, corrosion, deformation, instrument, mechanical, wear
127	Fail to open on demand	Blockage/plugged, control failure, corrosion, deformation, instrument, mechanical, wear
128	Plugged/choked	Corrosion, fouling
129	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
130	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
131	Fail to control	Blockage/plugged, control failure, corrosion, deformation, instrument, mechanical, wear
132	Fail to open on demand	Blockage/plugged, control failure, corrosion, deformation, instrument, mechanical, wear
133	Plugged/choked	Corrosion, fouling
134	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
135	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
136	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
137	Spurious stop	Control unit, instrument, pressure, temperature, monitoring, seals

FMECA ID	Failure Mode	Failure Cause
138	External leakage	Bearing, casing, filters, oil, seals
139	Fail to start on demand	Control unit, instrument, thrust bearing
140	Vibration	Impeller, vibrations, radial bearing
141	Plugged/choked	Corrosion, fouling
142	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
143	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
144	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
145	Plugged/choked	Corrosion, fouling
146	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
147	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
148	Fail to open on demand	Blockage/plugged, corrosion, deformation, instrument, mechanical, wear
149	Plugged/choked	Corrosion, fouling
150	External leakage	Corrosion, leakage, looseness, material failure, mechanical failure
151	Fail to close on demand	Blockage/plugged, instrument failure, mechanical failure
152	Fail to control	Blockage/plugged, control failure, corrosion, deformation, instrument, mechanical, wear
153	Fail to open on demand	Blockage/plugged, control failure, corrosion, deformation, instrument, mechanical, wear

FMECA ID	Local Failure Effect	Global Failure Effect
1	pH, PAH, turbidity and temperature not recorded	Out of compliance
2	pH, PAH, turbidity and temperature measures are wrong	Can not demonstrate compliance
3	pH, PAH, turbidity and temperature measures are wrong	Can not demonstrate compliance
4	Lowered flow of water, water is not monitored and is led directly to scrubbing water supply pump inlet	Potential out of compliance
5	Water is not monitored, water released to ambient space	Potential out of compliance
6	Water entering the monitoring system	Can not perform maintenance
7	Water is not monitored and is led directly to scrubbing water supply pump inlet	Potential out of compliance
8	Lowered flow of water, stagnateing water in inlet monitor, wrong reading	Can not demonstrate compliance
9	Water released to ambient space	Leakage of water onboard
10	Water entering the monitoring system	Can not perform maintenance
11	Blockage in inlet monitor, stagnathing water, wrong reading	Potential out of compliance
12	pH, PAH, turbidity and temperature not recorded	Out of compliance
13	pH, PAH, turbidity and temperature measures are wrong	Can not demonstrate compliance
14	pH, PAH, turbidity and temperature measures are wrong	Can not demonstrate compliance
15	Lowered flow of water, water is not led to water outlet, blockage in outlet monitor	Can not demonstrate compliance
16	Water released to ambient space	Leakage of water onboard
17	Water is led spontaneously out from outlet monitor	Can not perform maintenance
18	Blockage in oulet monitor	Potential out of compliance
19	Lowered flow of water, water is not monitored and is led directly to water outlet	Potential out of compliance
20	Water is not monitored, water released to ambient space	Potential out of compliance
21	Water entering the monitoring system	Can not perform maintenance
22	Water is not monitored and is led directly to water outlet	Potential out of compliance
23	Lowered flow of water, water is not injected om bord	Out of compliance
24	Water released to ambient space	Leakage of water onboard
25	Water is led spontaneously onboard	Potential out of compliance
26	No water is injected onboard	Out of compliance
27	Lowered flow of water, water don't access the pump	Can not demonstrate compliance
28	Water released to ambient space	Leakage of water onboard
29	Water is led spontaneously to pump	Can not perform maintenance
30	Water don't access the pump	Potential out of compliance
31	Loss of pressure to reach tower, no water pumped to tower	Potential out of compliance
32	Water released to ambient space	Leakage of water onboard
33	No water pumped to tower	Out of compliance
34	Insufficient suction pressure, air in water	Out of compliance
35	Lowered flow of water, water don't access the tower, too high backpressure	Can not demonstrate compliance

FMECA ID	Local Failure Effect	Global Failure Effect
36	Water released to ambient space	Leakage of water onboard
37	Water is led spontaneously through	Can not perform maintenance
38	Water don't access the tower, too high backpressure	Potential out of compliance
39	Lowered flow of water, water don't access the tower, too high backpressure	Can not demonstrate compliance
40	Water released to ambient space	Leakage of water onboard
41	Water is led spontaneously through	Potential out of compliance
42	Water don't access the tower, too high backpressure	Potential out of compliance
43	Lowered flow of water, water don't access the tower	Out of compliance
44	Water released to ambient space	Leakage of water onboard
45	Water is led spontaneously through	Potential out of compliance
46	Water don't access the tower	Out of compliance
47	Lowered flow of water, lowered spraying efficiency from nozzle 3,13 and 3,14, water don't access the nozzles	Out of compliance
48	Water released to ambient space, lowered flow of water to nozzles	Leakage of water onboard
49	Water is led spontaneously through the valve	Can not perform maintenance
50	Wrong amount of water flow through the valve	Potential out of compliance
51	Water don't access the venturi	Out of compliance
52	Lowered flow of water, lowered spraying efficiency from nozzle 3,5, water don't access the nozzle	Out of compliance
53	Water released to ambient space, lowered flow of water to nozzle	Leakage of water onboard
54	Water is led spontaneously through the valve	Can not perform maintenance
55	Wrong amount of water flow through the valve	Potential out of compliance
56	Water don't access the scrubber device	Out of compliance
57	Lowered flow of water, lowered spraying efficiency from nozzle 3,6 and 3,7, water don't access the nozzles	Out of compliance
58	Water released to ambient space, lowered flow of water to nozzles	Leakage of water onboard
59	Water is led spontaneously through the valve	Can not perform maintenance
60	Wrong amount of water flow through the valve	Potential out of compliance
61	Water don't access the scrubber device	Out of compliance
62	Exhaust and water released to ambient space	Leakage of water onboard, out of compliance
63	Exhaust and water released to ambient space	Leakage of water onboard, out of compliance
64	Lowered spraying efficiency	Potentially out of compliance

FMECA ID	Local Failure Effect	Global Failure Effect
65	No water dispersion	Potentially out of compliance, damage or block valves or piping downstream
66	Lowered spraying efficiency	Potentially out of compliance
67	No water dispersion	Potentially out of compliance, damage or block valves or piping downstream
68	Lowered spraying efficiency	Potentially out of compliance
69	No water dispersion	Potentially out of compliance, damage or block valves or piping downstream
70	Too high backpressure	Potential out of compliance
71	Too high backpressure	Potential out of compliance
72	Too high backpressure	Potential out of compliance
73	Too high backpressure	Potential out of compliance
74	Exhaust and water released to ambient space	Leakage of water onboard
75	Exhaust and water released to ambient space	Leakage of water onboard
76	Lowered spraying efficiency, potentially out of compliance	Potentially out of compliance
77	Lowered spraying efficiency, potentially out of compliance. Damage or block valves or piping downstream	Potentially out of compliance, damage or block valves or piping downstream
78	Lowered spraying efficiency, potentially out of compliance	Potentially out of compliance
79	Lowered spraying efficiency, potentially out of compliance. Damage or block valves or piping downstream	Potentially out of compliance, damage or block valves or piping downstream
80	Flooding of tower	Too high backpressure on the engine, stability issues
81	Water released to ambient space	Leakage of acidic water onboard
82	Water released to ambient space	Leakage of acidic water onboard
83	Water released to ambient space	Leakage of water onboard
84	Water released to ambient space	Leakage of water onboard
85	Lowered flow of water, water don't access the pump	Can not demonstrate compliance
86	Water released to ambient space	Leakage of water onboard
87	Water is led spontaneously to pump	Can not perform maintenance
88	Water don't access the pump	Potential out of compliance
89	Loss of pressure to residaul tank, no water pumped to residence tank	Potential out of compliance
90	Water released to ambient space	Leakage of water onboard
91	No water pumped to residence tank	Out of compliance
92	Insufficient suction pressure, air in water	Out of compliance
93	Lowered flow of water, water don't access residence tank, too high backpressure	Can not demonstrate compliance
94	Water released to ambient space	Leakage of water onboard

FMECA ID	Local Failure Effect	Global Failure Effect
95	Water is led spontaneously through the valve	Can not perform maintenance
96	Water don't access the residence tank, too high backpressure	Potential out of compliance
97	Lowered flow of water, water don't access the residence tank, too high backpressure	Can not demonstrate compliance
98	Water released to ambient space	Leakage of water onboard
99	Water is led spontaneously through the valve	Potential out of compliance
100	Water don't access the residence tank, too high backpressure	Potential out of compliance
101	Lowered flow of water, water don't access the hydrocyclone	Can not demonstrate compliance
102	Water released to ambient space, lowered flow of water	Leakage of water onboard
103	Water is led spontaneously to pump	Can not perform maintenance
104	Water don't access the pump	Potential out of compliance
105	Loss of pressure to hydrocyclone, no water pumped to hydrocyclone	Potential out of compliance
106	Water released to ambient space	Leakage of water onboard
107	No water pumped to residence tank	Out of compliance
108	Insufficient suction pressure, air in water	Out of compliance
109	Lowered flow of water, water don't access residence tank, too high backpressure	Can not demonstrate compliance
110	Water released to ambient space	Leakage of water onboard
111	Water is led spontaneously through the valve	Can not perform maintenance
112	Water don't access the residence tank, too high backpressure	Potential out of compliance
113	Lowered flow of water, uncleaned water led to residence tank/sludge tank	Potential out of compliance
114	Lowered flow of water, water released to ambient space	Leakage of water onboard
115	Lowered flow of water, backpressure	Potential out of compliance
116	Water released to ambient space	Leakage of water onboard
117	Water is led spontaneously out from hydrocyclone	Can not perform maintenance
118	Backpressure	Potentially out of compliance
119	Lowered flow of water, water don't access the residence tank, backpressure	Can not demonstrate compliance
120	Water released to ambient space	Leakage of water onboard
121	Water is led spontaneously through the valve	Potential out of compliance
122	Water don't access the residence tanke, backpressure	Potential out of compliance
123	Lowered flow of water, water don't access the sludge tank	Potential out of compliance
124	Water released to ambient space, lowered flow of water to sludge tank	Leakage of water onboard
125	Water is led spontaneously through the valve, pressure loss in hydrocyclone	Can not perform maintenance
126	Wrong amount of water flow through the valve, pressure loss in the hydrocyclone	Potential out of compliance
127	Water don't access the sludge tank, backpressure	Out of compliance
128	Lowered flow of water, water don't access the residence tank	Potential out of compliance

FMECA ID	Local Failure Effect	Global Failure Effect
129	Water released to ambient space, lowered flow of water to residence tank	Leakage of water onboard
130	Water is led spontaneously through the valve, pressure loss in tower, flooding of residence tank	Can not perform maintenance
131	Wrong amount of water flow through the valve, pressure loss in tower, flooding of residence tank	Potential out of compliance
132	Water don't access the residence tank, backpressure	Out of compliance
133	Lowered flow of water, water don't access pump	Can not demonstrate compliance
134	Water released to ambient space, lowered flow of water	Leakage of water onboard
135	Water is led spontaneously to pump	Can not perform maintenance
136	Water don't access the pump	Potential out of compliance
137	Lowered pressure to water outlet, no water pumped to water outlet	Potential out of compliance
138	Water released to ambient space	Leakage of water onboard
139	No water pumped to water outlet	Out of compliance
140	Insufficient suction pressure, air in water	Out of compliance
141	Lowered flow of water, water don't access, too high backpressure	Can not demonstrate compliance
142	Water released to ambient space	Leakage of water onboard
143	Water is led spontaneously through the valve	Can not perform maintenance
144	Water don't access through, too high backpressure	Potential out of compliance
145	Lowered flow of water, water don't access, backpressure	Can not demonstrate compliance
146	Water released to ambient space	Leakage of water onboard
147	Water is led spontaneously through the valve	Potential out of compliance
148	Water don't flow through the valve, backpressure	Potential out of compliance
149	Lowered flow of water, water don't flow though the valve	Potential out of compliance
150	Water released to ambient space, lowered flow of water	Leakage of water onboard
151	Water is led spontaneously to the sea	Can not perform maintenance
152	Wrong amount of water flow through the valve	Potential out of compliance
153	No discharge of water, backpressure	Out of compliance

FMECA ID	Failure Detection	"Existing Safeguard"
1	Exhaust gas monitoring	Software update frequently, Calibration
2	Exhaust gas monitoring	Software update frequently, Calibration
3	Exhaust gas monitoring	Software update frequently, Calibration
4	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently
5	Exhaust gas monitoring, inspection	Calibration frequently
6	Exhaust gas monitoring, inspection	Calibration and cleaning frequently
7	Exhaust gas monitoring, inspection	Calibration and cleaning frequently
8	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently
9	Exhaust gas monitoring, inspection	Calibration frequently
10	Exhaust gas monitoring, inspection	Calibration and cleaning frequently
11	Exhaust gas monitoring, inspection	Calibration and cleaning frequently
12	Exhaust gas monitoring	Software update frequently, Calibration
13	Exhaust gas monitoring	Software update frequently, Calibration
14	Exhaust gas monitoring	Software update frequently, Calibration
15	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently, redundancy
16	Exhaust gas monitoring, inspection	Calibration frequently, redundancy
17	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
18	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
19	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently, redundancy
20	Exhaust gas monitoring, inspection	Calibration frequently, redundancy
21	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
22	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
23	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently
24	Exhaust gas monitoring, inspection	Calibration frequently
25	Exhaust gas monitoring, inspection	Calibration and cleaning frequently
26	Exhaust gas monitoring, inspection	Calibration and cleaning frequently
27	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently, redundancy
28	Exhaust gas monitoring, inspection	Calibration frequently, redundancy
29	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
30	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
31	Exhaust gas monitoring	Calibration and frequency analysis frequently, redundancy
32	Exhaust gas monitoring, inspection	Calibration and frequency analysis frequently, redundancy
33	Exhaust gas monitoring	Calibration and frequency analysis frequently, redundancy
34	Exhaust gas monitoring, strain gauge	Calibration and frequency analysis frequently, redundancy

FMECA ID	Failure Detection	"Existing Safeguard"
35	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently, redundancy
36	Exhaust gas monitoring, inspection	Calibration frequently, redundancy
37	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
38	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
39	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently, redundancy
40	Exhaust gas monitoring, inspection	Calibration frequently, redundancy
41	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
42	Exhaust gas monitoring, inspection, backpressure	Calibration and cleaning frequently, redundancy
43	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently
44	Exhaust gas monitoring, inspection	Calibration frequently
45	Exhaust gas monitoring, inspection	Calibration and cleaning frequently
46	Exhaust gas monitoring, inspection	Calibration and cleaning frequently
47	Exhaust gas monitoring, cleaning initiated	Cleaning frequently
48	Exhaust gas monitoring	Calibration frequently
49	Exhaust gas monitoring	Calibration and cleaning frequently
50	Exhaust gas monitoring	Calibration and cleaning frequently
51	Exhaust gas monitoring	Calibration and cleaning frequently
52	Exhaust gas monitoring, cleaning initiated	Cleaning frequently
53	Exhaust gas monitoring	Calibration frequently
54	Exhaust gas monitoring	Calibration and cleaning frequently
55	Exhaust gas monitoring	Calibration and cleaning frequently
56	Exhaust gas monitoring	Calibration and cleaning frequently
57	Exhaust gas monitoring, cleaning initiated	Cleaning frequently
58	Exhaust gas monitoring	Calibration frequently
59	Exhaust gas monitoring	Calibration and cleaning frequently
60	Exhaust gas monitoring	Calibration and cleaning frequently
61	Exhaust gas monitoring	Calibration and cleaning frequently
62	Inspection	Welding and assembly instructions
63	Inspection	Welding and assembly instructions
64	The exhaust monitoring system will detect the non-compliance, water flow is smaller, cleaning initiated	Cleaning frequently
65	Less water in scrubber device, blockage of drainpipe	Nozzle fixing
66	The exhaust monitoring system will detect the non-compliance, water flow is smaller, cleaning initiated	Cleaning frequently
67	Less water in scrubber device, blockage of drainpipe	Nozzle fixing
68	The exhaust monitoring system will detect the non-compliance, water flow is smaller, cleaning initiated	Cleaning frequently

FMECA ID	Failure Detection	"Existing Safeguard"
69	Less water in scrubber device, blockage of drainpipe	Nozzle fixing
70	Cleaning initiated	Cleaning frequently
71	Cleaning initiated	Cleaning frequently
72	Exhaust will bypass the scrubber, Increased energy consumption	Water flow should keep the packing bed clean
73	Exhaust will bypass the scrubber, Increased energy consumption	Water flow should keep the packing bed clean
74	Inspection	Welding and assembly instructions
75	Inspection	Welding and assembly instructions
76	Less water in scrubber device, cleaning initiated	Cleaning frequently
77	Less water in scrubber device, blockage of drainpipe	Nozzle fixing
78	Less water in scrubber device, cleaning initiated	Cleaning frequently
79	Less water in scrubber device, blockage of drainpipe	Nozzle fixing
80	Cleaning initiated, no water leaving scrubber device	Cleaning frequently
81	Inspection	Welding and assembly instructions
82	Inspection, increased water consumption	Welding and assembly instructions
83	Inspection	Welding and assembly instructions
84	Inspection, increased water consumption	Welding and assembly instructions
85	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently
86	Exhaust gas monitoring, inspection	Calibration frequently
87	Exhaust gas monitoring, inspection	Calibration and cleaning frequently
88	Exhaust gas monitoring, inspection	Calibration and cleaning frequently
89	Exhaust gas monitoring	Calibration and frequency analysis frequently
90	Exhaust gas monitoring, inspection	Calibration and frequency analysis frequently
91	Exhaust gas monitoring	Calibration and frequency analysis frequently
92	Exhaust gas monitoring, strain gauge	Calibration and frequency analysis frequently
93	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently
94	Exhaust gas monitoring, inspection	Calibration frequently
95	Exhaust gas monitoring, inspection	Calibration and cleaning frequently
96	Exhaust gas monitoring, inspection	Calibration and cleaning frequently
97	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently
98	Exhaust gas monitoring, inspection	Calibration frequently
99	Exhaust gas monitoring, inspection	Calibration and cleaning frequently
100	Exhaust gas monitoring, inspection, backpressure	Calibration and cleaning frequently
101	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently, redundancy
102	Exhaust gas monitoring, inspection	Calibration frequently, redundancy

FMECA ID	Failure Detection	"Existing Safeguard"
103	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
104	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
105	Exhaust gas monitoring	Calibration and frequency analysis frequently, redundancy
106	Exhaust gas monitoring, inspection	Calibration and frequency analysis frequently, redundancy
107	Exhaust gas monitoring	Calibration and frequency analysis frequently, redundancy
108	Exhaust gas monitoring, strain gauge	Calibration and frequency analysis frequently, redundancy
109	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently, redundancy
110	Exhaust gas monitoring, inspection	Calibration frequently, redundancy
111	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
112	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
113	Cleaning initiated	Cleaning frequently, redundancy
114	Cleaning initiated, inspection, reduced capacity	Welding and assembly instructions, redundancy
115	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently, redundancy
116	Exhaust gas monitoring, inspection	Calibration frequently, redundancy
117	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
118	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
119	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently, redundancy
120	Exhaust gas monitoring, inspection	Calibration frequently, redundancy
121	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
122	Exhaust gas monitoring, inspection, backpressure	Calibration and cleaning frequently, redundancy
123	Exhaust gas monitoring, cleaning initiated	Cleaning frequently, redundancy
124	Exhaust gas monitoring	Calibration frequently, redundancy
125	Exhaust gas monitoring	Calibration and cleaning frequently, redundancy
126	Exhaust gas monitoring	Calibration and cleaning frequently, redundancy
127	Exhaust gas monitoring	Calibration and cleaning frequently, redundancy
128	Exhaust gas monitoring, cleaning initiated	Cleaning frequently
129	Exhaust gas monitoring	Calibration frequently
130	Exhaust gas monitoring	Calibration and cleaning frequently
131	Exhaust gas monitoring	Calibration and cleaning frequently
132	Exhaust gas monitoring	Calibration and cleaning frequently

FMECA ID	Failure Detection	"Existing Safeguard"
133	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently, redundancy
134	Exhaust gas monitoring, inspection	Calibration frequently, redundancy
135	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
136	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
137	Exhaust gas monitoring	Calibration and frequency analysis frequently, redundancy
138	Exhaust gas monitoring, inspection	Calibration and frequency analysis frequently, redundancy
139	Exhaust gas monitoring	Calibration and frequency analysis frequently, redundancy
140	Exhaust gas monitoring, strain gauge	Calibration and frequency analysis frequently, redundancy
141	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently, redundancy
142	Exhaust gas monitoring, inspection	Calibration frequently, redundancy
143	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
144	Exhaust gas monitoring, inspection	Calibration and cleaning frequently, redundancy
145	Exhaust gas monitoring, cleaning initiated, inspection	Cleaning frequently
146	Exhaust gas monitoring, inspection	Calibration frequently
147	Exhaust gas monitoring, inspection	Calibration and cleaning frequently
148	Exhaust gas monitoring, inspection, backpressure	Calibration and cleaning frequently
149	Exhaust gas monitoring, cleaning initiated	Cleaning frequently
150	Exhaust gas monitoring	Calibration frequently
151	Exhaust gas monitoring	Calibration and cleaning frequently
152	Exhaust gas monitoring	Calibration and cleaning frequently
153	Exhaust gas monitoring	Calibration and cleaning frequently

FMECA ID	Consequence	Probability	Criticality		Action Items
1	3	3	6	M	Shorter interval between preventive maintenance
2	2	3	5	L	
3	2	3	5	L	
4	3	3	6	M	Ensure proper cleaning, shorter interval btw. preventive maintenance
5	3	2	5	L	
6	1	3	4	L	
7	3	3	6	M	Shorter interval between preventive maintenance
8	3	3	6	M	Ensure proper cleaning, shorter interval btw. preventive maintenance
9	2	2	4	L	
10	2	3	5	L	
11	3	3	6	M	Shorter interval between preventive maintenance
12	3	3	6	M	Shorter interval between preventive maintenance
13	2	3	5	L	
14	2	3	5	L	
15	3	3	6	M	Ensure proper cleaning, shorter intervals btw. preventive maintenance
16	3	2	5	L	
17	2	3	5	L	
18	3	3	6	M	Shorter interval between preventive maintenance
19	3	3	6	M	Ensure proper cleaning, shorter interval btw. preventive maintenance
20	3	2	5	L	
21	2	3	5	L	
22	3	3	6	M	Shorter interval between preventive maintenance
23	4	3	7	M	Ensure proper cleaning, shorter intervals btw. preventive maintenance
24	4	2	6	M	Ensure proper sealing, shorter intervals btw. Preventive maintenance
25	4	3	7	M	Shorter intervals between preventive maintenance
26	4	3	7	M	Shorter intervals between preventive maintenance
27	2	3	5	L	
28	3	2	5	L	
29	2	3	5	L	
30	2	3	5	L	

FMECA ID	Consequence	Probability	Criticality		Action Items
31	3	4	7	M	Ensure proper freq. analysis, shorter intervals between preventive maintenance
32	3	2	5	L	
33	3	3	6	M	Ensure proper freq. analysis, shorter intervals between preventive maintenance
34	3	3	6	M	Ensure proper freq. analysis, shorter intervals between preventive maintenance
35	2	3	5	L	
36	3	2	5	L	
37	2	3	5	L	
38	2	3	5	L	
39	2	3	5	L	
40	3	2	5	L	
41	2	3	5	L	
42	2	3	5	L	
43	3	3	6	M	Ensure proper cleaning, shorter intervals btw. preventive maintenance
44	3	2	5	L	
45	3	3	6	M	Shorter interval between preventive maintenance
46	3	3	6	M	Shorter interval between preventive maintenance
47	3	3	6	M	Ensure proper freq. analysis, shorter intervals between preventive maintenance
48	3	2	5	L	
49	3	3	6	M	Shorter interval between preventive maintenance
50	3	3	6	M	Shorter interval between preventive maintenance
51	3	3	6	M	Shorter interval between preventive maintenance
52	3	3	6	M	Ensure proper cleaning, shorter intervals btw. preventive maintenance
53	3	2	5	L	
54	3	3	6	M	Shorter interval between preventive maintenance
55	3	3	6	M	Shorter interval between preventive maintenance
56	3	3	6	M	Shorter interval between preventive maintenance
57	3	3	6	M	Ensure proper cleaning, shorter intervals btw. preventive maintenance
58	3	2	5	L	
59	3	3	6	M	Shorter interval between preventive maintenance
60	3	3	6	M	Shorter interval between preventive maintenance

FMECA ID	Consequence	Probability	Criticality		Action Items
61	3	3	6	M	Shorter interval between preventive maintenance
62	5	2	7	M	Regular inspection to be added to the operational manual
63	5	2	7	M	Regular inspection to be added to the operational manual
64	5	3	8	H	Ensure proper cleaning, shorter intervals btw. preventive maintenance
65	4	2	6	M	Ensure proper nozzle structure, shorter intervals between preventive maintenance
66	5	3	8	H	Ensure proper cleaning, shorter intervals btw. preventive maintenance
67	4	2	6	M	Ensure proper nozzle structure, shorter intervals between preventive maintenance
68	5	3	8	H	Ensure proper cleaning, shorter intervals btw. preventive maintenance
69	4	2	6	M	Ensure proper nozzle structure, shorter intervals between preventive maintenance
70	3	3	6	M	Ensure proper cleaning, shorter intervals btw. preventive maintenance
71	3	3	6	M	Ensure proper cleaning, shorter intervals btw. preventive maintenance
72	3	3	6	M	Ensure proper cleaning, shorter intervals btw. preventive maintenance
73	3	3	6	M	Ensure proper cleaning, shorter intervals btw. preventive maintenance
74	5	2	7	M	Regular inspection to be added to the operational manual
75	5	2	7	M	Regular inspection to be added to the operational manual
76	4	3	7	M	Ensure proper cleaning, shorter intervals btw. preventive maintenance
77	4	2	6	M	Ensure proper nozzle structure, shorter intervals between preventive maintenance
78	4	3	7	M	Ensure proper cleaning, shorter intervals btw. preventive maintenance
79	4	2	6	M	Ensure proper nozzle structure, shorter intervals between preventive maintenance
80	5	3	8	H	Ensure proper cleaning, shorter intervals btw. preventive maintenance, add a sensor
81	4	2	6	M	Visual inspection of the tank to be added in the operating manual
82	4	2	6	M	Visual inspection of the tank to be added in the operating manual
83	2	2	4	L	
84	3	2	5	L	
85	2	3	5	L	
86	3	2	5	L	
87	2	3	5	L	
88	2	3	5	L	
89	3	4	7	M	Ensure proper freq. analysis, shorter intervals between preventive maintenance
90	3	2	5	L	

FMECA ID	Consequence	Probability	Criticality		Action Items
91	3	3	6	M	Ensure proper freq. analysis, shorter intervals between preventive maintenance
92	3	3	6	M	Ensure proper freq. analysis, shorter intervals between preventive maintenance
93	2	3	5	L	
94	3	2	5	L	
95	2	3	5	L	
96	2	3	5	L	
97	2	3	5	L	
98	3	2	5	L	
99	2	3	5	L	
100	2	3	5	L	
101	2	3	5	L	
102	3	2	5	L	
103	2	3	5	L	
104	2	3	5	L	
105	3	4	7	M	Ensure proper freq. analysis, shorter intervals between preventive maintenance
106	3	2	5	L	
107	3	3	6	M	Ensure proper freq. analysis, shorter intervals between preventive maintenance
108	3	3	6	M	Ensure proper freq. analysis, shorter intervals between preventive maintenance
109	2	3	5	L	
110	3	2	5	L	
111	2	3	5	L	
112	2	3	5	L	
113	4	3	7	M	Ensure proper cleaning, shorter intervals btw. preventive maintenance
114	4	2	6	M	Regular inspection to be added to the operational manual
115	2	3	5	L	
116	3	2	5	L	
117	2	3	5	L	
118	2	3	5	L	
119	2	3	5	L	
120	3	2	5	L	

FMECA ID	Consequence	Probability	Criticality		Action Items
121	2	3	5	L	
122	2	3	5	L	
123	2	3	5	L	
124	3	2	5	L	
125	3	3	6	M	Shorter intervals between preventive maintenance
126	2	3	5	L	
127	2	3	5	L	
128	3	3	6	M	Ensure proper cleaning, shorter intervals btw. preventive maintenance
129	3	2	5	L	
130	3	3	6	M	Shorter intervals between preventive maintenance
131	3	3	6	M	Shorter intervals between preventive maintenance
132	3	3	6	M	Shorter intervals between preventive maintenance
133	2	3	5	L	
134	3	2	5	L	
135	2	3	5	L	
136	2	3	5	L	
137	3	4	7	M	Ensure proper freq. analysis, shorter intervals between preventive maintenance
138	3	2	5	L	
139	3	3	6	M	Ensure proper freq. analysis, shorter intervals between preventive maintenance
140	3	3	6	M	Ensure proper freq. analysis, shorter intervals between preventive maintenance
141	2	3	5	L	
142	3	2	5	L	
143	2	3	5	L	
144	2	3	5	L	
145	2	3	5	L	
146	3	2	5	L	
147	2	3	5	L	
148	2	3	5	L	
149	3	3	6	M	Ensure proper cleaning, shorter intervals btw. preventive maintenance
150	3	2	5	L	
151	3	3	6	M	Shorter intervals between preventive maintenance
152	3	3	6	M	Shorter intervals between preventive maintenance
153	3	3	6	M	Shorter intervals between preventive maintenance