

ENDURANCE TECHNOLOGIES LTD, L8/3 PLANT

ETA-PLANT FAILURE MODE AND EFFECTS ANALYSIS (PROCESS FMEA)

Sr.No.	Process Function/ Requirement	Potential Failure mode	Potential threat(s) of failure	Severity	Potential Cause(s)/ Mechanism(s) of failure	Current Process controls/ prevention	Occurrence	Current Process controls/ detection	Detection	Recommended action	Responsibility
1	EFFLUENT COLLECTION TANK	1. Electricity Failure 2. Tank Over flow 3. Effluent transferring Motor Malfunction, Pump/Choke up/ Broken 4. Mixing of Rain Water in effluent. 5. Inlet effluent parameter beyond design basis. 6. Seepage of tank in to ground.	1. Overflow 2. Land Pollution 3. Treated water quality standard deteriorate	H	1. Operators negligence 2. PM of Motor not done as per schedule.	1. Daily monitoring by operator & weekly cleaning of football 2. Standby pump in ready condition 4. Transfer to additional collection tank. 5. Analysis inlet Effluent parameter as per scheduled.	Monthly	1. Visual & manual 2. Record maintained in Logbook	Daily	1. PM as per procedure.	Supervisor, Operator & Maintenance team
2	NEUTRALISATION TANK	1. Dosing not proper 2. Dosing chemicals non availability 3. Conc. Of solution not as per standard dosing. 4. mixing air stoppage	1. Physico chemical Parameters disturbed 2. Coagulation and flocculation not being done	H	1. Operator Negligence. 2. Mechanical failure	1. Daily monitoring by operator	Daily	1. Visual & manual 2. Record maintained in Logbook	Daily	1. Trained operator 2. Auto Dosing set up required	Operator & maintenance team
3	PRIMARY TUBE SETTLER	1. Poor Settling. 2. operation of high feed. 3. timely sludge removal not done	1. Turbid appearance at filter feed tank which increased the load of Filters. 2. Overflow 3. Tube clog up lead to improper settling and sludge overflow	M	1. Operator Negligence	1. Daily monitoring by operator 2. Proper Cleaning	Daily	1. Visual & Manual	Daily	1. Trained operator	Operator
4	FILTER FEED TANK	1. Electricity Failure 2. Tank Over flow 3. Motor Malfunction, Pump/Choke up/ Broken 4. Mixing of rain water	Overflow, Land Pollution	H	1. Operators negligence 2. PM of Motor not done as per schedule.	1. Daily monitoring by operator & weekly cleaning of football 2. Standby pump in ready condition 4. Transfer to additional collection tank	Daily	1. Visual & manual 2. Record maintained in Logbook	Daily	1. PM as per procedure.	Operator & maintenance team
5	SAND FILTER	1. Bypass the filtration 2. Filter Chock up/Clogged 3. Leakage	1. Due to backwash not done 2. Media not changed 3. Valve ,Piping or vessel damages 4. TSS will increased	M	1. Backwash not done timely. 2. Operators negligence	1. Daily monitoring by operator 2. Timly backwash record maintained in logbook	Daily	1. Visual & Manual	Daily	1. Timely filter media replacement. 2. Trained operator	Operator & maintenance team
6	SAND FILTER	1. Water Quuality Deteriorate. 2. Filter Chock up/Clogged 3. Leakage	1. Due to backwash not done 2. Media not changed 3. Valve ,Piping or vessel damages 4. Clour and odour appear.	M	1. Backwash not done timely. 2. Operators negligence	1. Daily monitoring by operator 2. Timly backwash record maintained in logbook	Daily	1. Visual & Manual	Daily	1. Timely filter media replacement. 2. Trained operator	Operator & maintenance team
7	TREATED WATER TANK	1. Electricity Failure 2. Tank Over flow 3. Motor Malfunction, Pump/Choke up/ Broken 4. Treatment of effluent not done properly	1. Overflow 2. Land Pollution 3. Treated water quality standard deteriorate (consent violation)	H	1. Operators negligence 2. PM of Motor not done as per schedule.	1. Daily monitoring by operator & weekly cleaning of football 2. Standby pump in ready condition 4. Transfer to CETP 5. Analysis of treated Effluent parameter by MnFF Lab	Daily	1. Visual & manual	Daily	1. PM as per procedure.	Operator & maintenance team

ENDURANCE TECHNOLOGIES LTD, L6/3 PLANT

ETP PLANT FAILURE MODE AND EFFECTS ANALYSIS (PROCESS FMEA)

Sr.No.	Process Function/ Requirement	Potential Failure mode	Potential effect(s) of failure	Severity	Potential Cause(s)/ Mechanism(s) of failure	Current Process controls prevention	Occurrence	Current Process controls detection	Detection	Recommended action	Responsibility
8	SLUDGE DRYING BED	<ol style="list-style-type: none"> 1. Excess Feed 2. Ingress of Rain Water 3. Grit Chocking/ Bed media clogged 	<ol style="list-style-type: none"> 1. Overflow followed by land 2. Moisture Contain in dry sludge 	L	<ol style="list-style-type: none"> 1. Operators negligence 	<ol style="list-style-type: none"> 1. Daily monitoring by operator 2. Timely removal of dried sludge. 3. Timely disposed waste sludge to CHWTSDF 	Monthly	<ol style="list-style-type: none"> 1. Visual & manual 	Daily	<ol style="list-style-type: none"> 1. Closed monitoring while Sludge draining 2. Removal of Sludge on time. 	Operator

DURANCE TECHNOLOGIES LTD, L6/3 PL
EIP PLANT FAILURE MODE AND EFFECTS ANALYSIS (PROPOSED FMEA)

Sr.No	Process Function/ Requirement	Potential failure mode	Potential effects of failure	Severity	Potential Cause(s) / Mechanism(s) of failure	Current Process controls / prevention	Occurrence	Current Process controls detection	Frequency	Recommended action	Responsibility
1	EFFLUENT COLLECTION TANK	1. Electricity Failure 2. Tank Over flow 3. effluent transferring Motor Malfunction Pump/Choke up/ Broken 4. Mixing of Rain Water in effluent 5. Inlet effluent parameter beyond design basic 6. Spillage of tank in to ground	1. Overflow 2. Land Pollution 3. Treated water quality standard deteriorate	H	1. Operators negligence 2. PM of Motor not done as per schedule	1. Daily monitoring by operator weekly cleaning of footfall 2. Standby pump in ready condition 4. Transfer to additional collection tank 5. Analysis Inlet Effluent parameter as per scheduled	Monthly	1. Visual & manual 2. Record maintained in Logbook	Daily	1. PM as per procedure	Supervisor, Chemist, Operator & Maintenance team
2	AERATION TANK-1	1. Air blower failure 2. Level sensor malfunction 3. Diffuser blocked/clogged	1. bacterial Oxygen deficiency occurred 2. Active biomass deleterious 3. Overflow	H	1. PM not done as per procedure 2. Standby pump not available 3. Electricity failure	1. Daily monitoring by operator 2. Stand by pump is used alternate day	Daily	1. Visual & Manual	Daily	1. PM as per procedure 2. Trained operator	Operator & maintenance Team
3	AIRATION TANK-2	1. Air blower failure 2. Level sensor malfunction 3. Diffuser blocked/clogged	1. bacterial Oxygen deficiency occurred 2. Active biomass deleterious 3. Overflow	H	1. PM not done as per procedure 2. Standby pump not available 3. Electricity failure	1. Daily monitoring by operator 2. Stand by pump is used alternate day	Daily	1. Visual & Manual	Daily	1. PM as per procedure 2. Trained operator	Operator & maintenance Team
4	FILTRATION TANK	1. Electricity Failure 2. Tank Over flow 3. Motor Malfunction Pump/Choke up/ Broken 4. Mixing of rain water	Overflow Land Pollution	H	1. Operators negligence 2. PM of Motor not done as per schedule 3. Electricity failure	1. Daily monitoring by operator weekly cleaning of footfall 2. Standby pump in ready condition 4. Transfer to additional collection tank	Daily	1. Visual & manual 2. Record maintained in Logbook	Daily	1. PM as per procedure 2. Trained operator	Operator & maintenance team
5	SAND FILTER	1. Bypass the filtration 2. Filter Chock up/Clogged 3. Leakage	1. Due to backwash not done 2. Media not changed 3. Valve Piping or vessel damaged 4. TSS will increased	M	1. Backwash not done timely 2. Operators negligence	1. Daily monitoring by operator 2. Timly backwash record maintained in logbook	Daily	1. Visual & Manual	Daily	1. Timely filter media replacement 2. Trained operator	Operator & maintenance team
6	SAND FILTER	1. Water Quality Deteriorate 2. Filter Chock up/Clogged 3. Leakage	1. Media not changed 2. Media not changed 3. Valve Piping or vessel damages 4. Slur and odour sourear	M	1. Backwash not done timely 2. Operators negligence	1. Daily monitoring by operator 2. Timly backwash record maintained in logbook	Daily	1. Visual & Manual	Daily	1. Timely filter media replacement 2. Trained operator	Operator & maintenance team
7	TREATED WATER TANK	1. Electricity Failure 2. Tank Over flow 3. Motor Malfunction Pump/Choke up/ Broken 4. Treatment of effluent not done properly	1. Overflow 2. Land Pollution 3. Treated water quality standard deterioration (consent violation)	H	1. Operators negligence 2. PM of Motor not done as per schedule	1. Daily monitoring by operator weekly cleaning of footfall 2. Standby pump in ready condition 4. Transfer to CETP 5. Analysis of treated Effluent parameter by MoEF Lab	Daily	1. Visual & manual	Daily	1. PM as per procedure	Operator & maintenance team
8	SLUDGE DRYING BED	1. Excess Feed 2. Ingress of Rain Water 3. Grit Chocking/ Bed media clogged	1. Overflow followed by land 2. Moisture Contain in dry sludge	L	1. Operators negligence	1. Daily monitoring by operator 2. Timely removal of dried sludge 3. Timely disposed waste sludge to CHWTSDP	Monthly	1. Visual & manual	Daily	1. Closed monitoring while Sludge draining 2. Removal of Sludge on time	Operator