

TRAINING PROGRAMME FOR ETP OPERATORS IN TEXTILE INDUSTRY

Promotion of Sustainability in the Textile and Garment Industry in Asia - FABRIC

Maintaining und using ETP records

GIZ FABRIC – ETP Operator Course



Contents

- Overview of ETP record keeping
- Common ETP records
- Reviewing ETP records

Overview of ETP record keeping

Overview of ETP record keeping

Monitoring and keeping ETP records **essential for efficient ETP operation**

- Benefits of maintaining good records
 - **positive impression** about ETP with visitor, evaluator or enforcement personnel
 - Allowing **performance review** at various levels for **fine-tuning ETP operation**
- Responsibility of ETP operator
 - Keeping records (except lab records)
 - Assisting manager in processing and reviewing data.



Overview of ETP record keeping

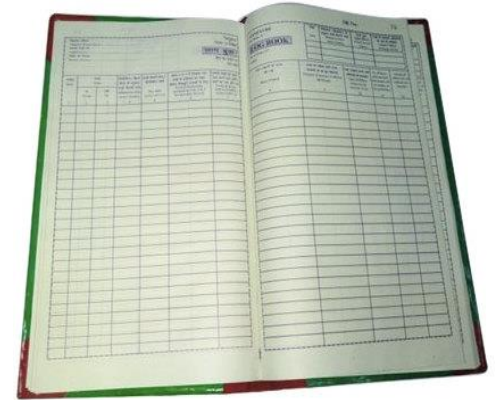
Continuous observation of parameters with impact on ETP performance

Type of record	Item to be recorded
ETP operational aspects	<ul style="list-style-type: none">• Operation times of various equipment & flow rates
Performance parameters critical for ETP process	<ul style="list-style-type: none">• Chemical dosing, sludge generated, dewatered,• pH, temperature, MLSS, RAS/WAS, nutrient dosing
Laboratory records	<ul style="list-style-type: none">• Effluent quality at various stages of treatment
Inventory records	<ul style="list-style-type: none">• Details of stock, spares & procurement
Maintenance records	<ul style="list-style-type: none">• Preventive maintenance done, repairs, trouble shooting
Expenditure records	<ul style="list-style-type: none">• Cost of treatment (fixed, variable)

Overview of ETP record keeping

Maintaining log sheets

- Log sheets often **printed** and as properly bound **booklet**.
 - If ready made-booklet, need to carefully decide type of data and information to be collected
- Ensure **sufficient space** for **legibly recording data** and information
 - If in operator's own handwriting, increase credibility and proof
 - Entering of data in computer or smartphones suitable for easier compilation and processing



Overview of ETP record keeping

Good practices in recording data and information

- In operational ETP avoid recording straightaway when taking over shift
 - **First conduct walk around** ETP, **complete basic checks** and take necessary **immediate actions**
 - Keep pocket book ready to note **number and time of switching on/off units** (e.g. pumps, mixers or blowers)
 - Note need of **chemical charging**
 - Note observations from **checks during second round**
 - Example: Break-down of any motor or treatment unit



Common ETP records

Common ETP records

Operational records

- Operation time of all ETP equipment with **starting and switching off times**
 - If continuous operation during a shift to noted by shift operator
 - **Any power failure** during shift e.g. in remarks column.
 - For filter press include **filter feed pump time** (filtration cycle)
- **Flow rates** at inlet and outlet points, ideally with shift-wise readings
- For **multiple units** (e.g. pumps, blowers) assign **specific reference number** to each unit and note data for the same
 - Example: running time of pump#01 in aeration tank 1



Common ETP records

Performance records

- Record on **daily basis** in form of **weekly register** as per **monitoring plan**
- Examples
 - Screenings removed from screens in kg per day
 - Dosing of chemicals in primary treatment => to be recorded independently
 - Dosage of ferrous sulphate, lime and polyelectrolyte calculated as quantity used per day and ppm
 - Sludge removed from primary treatment in m³ as well as kg/d (dry wt)
 - Quantity of dewatered sludge



Common ETP records

Performance records

■ Examples

- Performance parameters of aeration tank and clarifier
 - If more than one aeration tank, values to be recorded separately
- **pH** and **temperature of inlet** to aeration tank once a day.
- **Sludge volume** and **DO values** once every shift or once a day depending on ETP capacity.
- **Percentage of Return Activated Sludge (RAS)** and **Wasted Activated Sludge (WAS)** as daily values.
- **Addition of nutrients** on daily or weekly basis



Common ETP records

Performance records – Model logsheet

Date:

Signature of ETP Manager:

Raw effluent Pumps				Eq. effluent pumps				RAS pump				Eq. T Blower				Aeration Tank blower			
No.	ON	OFF	Total time	No.	ON	OFF	Total time	No.	ON	OFF	Total time	No.	ON	OFF	Total time	No.	ON	OFF	Total time
1				1				1				1				1			
2				2				2				2				2			
3				3				3				3				3			

Total Operation time (hrs)		Chemical usage			Dewatering operation		Spot check values		Nutrients added with qty & Time (kg)	
Unit	Time	Chemical	mg/l dosage	Usage (kg)	Inlet solids %		Dissolved Oxygen (mg/l)			
Flash Mixer		Ferrous sulphate			Cake solids %		Temperature		DAP	Urea
Flocculator		Lime			Cycle Time (hrs)		pH at Eq.T			
Primary Clarifier		Polyelectrolyte			Sludge taken to SDB	m ³	pH at AT inlet		Total energy consumed, kWh	
Mechanical screen		Colour removal			Sludge disposed off	kg	SV (30)			
Sec.Clarifier		Others (specify)			Screenings removed	kg	SVI			

Operational problems/Remarks: [Details of problem, area, action taken, problem solved or not, Details of any visitors. Details of any shutdown/power failure etc.](#)

Common ETP records

Laboratory records

- Usually **maintained by ETP chemist**, but possibly filled by operator in absence of chemist.
- Main **analytical records** concerning effluent at different stages such as (a) equalized effluent, (b) chemically treated effluent, (c) aeration tank sample, (d) treated effluent and (e) sludge.
- Records on **quality checks of chemicals** used in treatment (e.g. available CaOH in lime, Fe in ferrous sulphate etc.).
- To be tabulated in excel sheets to plot performance curves, efficiency trends etc.
- Also to record parameters tested outside

Common ETP records

Maintenance records

- Usually maintained on monthly basis by operator in charge of maintenance
- Date, time and location of oiling and greasing done
 - in line with approved **preventive maintenance** chart and plan
- **Repairs and trouble shooting done** in ETP indicating area, repair details, item(s) out of order.



Common ETP records

Inventory records

- Usually also maintained on monthly basis by operator in charge of maintenance
- Showing spares kept in stock, with dates when consumed and replenished.
 - Look out for spares repeatedly or consumed more often than usual



Common ETP records

Expenditure records

- To be maintained on monthly basis
- Presented also as **operating cost per month** or **cost per m3 of effluent treated**
 - **Energy cost** as kWh of power and cost in Taka
 - **Cost of chemicals** shown as consumption per ton and unit cost for each chemicals.
 - **Labor cost** separately covering salary and labor cost
 - Other costs such as consumables, laboratory tests, statutory fee, sludge disposal, maintenance



Reviewing and using ETP records

Reviewing and using ETP records

Reviewing and using ETP records

- ETP in-charge to review **data on operational conditions** and **laboratory records once every day**
 - To decide necessary adjustments in ETP operation
- One **weekly** basis, **ETP in-charge and operators to jointly review** data obtained during week
 - To decide on modulation in operation and maintenance
- Once a week, ETP in-charge to prepare **list of maintenance work** and **list of spares** purchased
 - Use for identifying and analyzing possible reasons for frequent complaints from specific area(s) or units.



Reviewing and using ETP records

- **Once a month**, ETP in-charge to meet with supervisor
 - for **briefing on major events** during month
 - present the **calculations** and data on
 - **total flow to ETP** (e.g. m³ of effluent treated)
 - **operation and maintenance cost** giving break-up for power, labor, chemicals, sludge treatment, maintenance and administration
 - **problems encountered** and **measures taken** as well as areas needing replacement or improvement (e.g. alert on possible upcoming investments)
 - **Details of visitors** and their feed back



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