

Fact-sheet – Effluent Treatment Plant (ETP) – Operation & Maintenance manual



What is the objective?

The Effluent Treatment Plant (ETP) is a key operational control implemented by the factory to reduce the pollution load of its wastewater to the extent to meet the legal standards for the wastewater discharge. To achieve this objective, the factory should have a management system to:

- **Operate the ETP efficiently** with comprehensive guidance, procedure and necessary technical references;
- **Ensure the regular maintenance** required for the ETP effectiveness in the long run.

A key tool of this management system is the ETP operation and maintenance manual.



How to achieve this objective?

Step 1: Make sure you have the ETP operation and maintenance manual provided by the ETP manufacturer*. The content of the ETP operation and maintenance manual should cover:

- Description of the ETP process (technical information about the plant, its equipment and controls) ;
- Guidance regarding the day-to-day operation of equipment and systems for each treatment process ;
- Guidance regarding common problems;
- Recommended planning/schedule for inspection and maintenance (see on the right listing the daily control);
- Program for water sampling and/or water quality monitoring plan (see fact-sheet “Water quality testing”);
- Schedule of routine meter readings, tests, chemical use, etc.;
- Guidance for emergency situations and emergency plan (see fact-sheet “ETP Emergency preparedness”);

DAILY CONTROL

- Check the available quantity of reagent in the storage tanks;
- Check the dosing pumps and the dosage of the reagents;
- Clean the screening equipment at inlet;
- Clean the overflow channel of the purified water from the clarifier;

Step 2: Appoint the operator(s) in charge of the implementation of the instructions of the operation and maintenance manual; make sure they have the skills and competences to understand each requirement/procedure (see fact-sheet “ETP operator’s skills and responsibilities”).

Step 3: Develop templates or a log-book for the records of the regular maintenance operations with date and description of the maintenance and controls undertaken by the ETP operator(s).



- **Regularly check** if the ETP operator is reporting all the maintenance operations undertaken as per the templates provided ;
- **Compare** the frequency of the actions taken by the ETP operator (based on his or her operation records) with the recommended planning/schedule for inspection and maintenance operations indicated in the ETP operation and maintenance manual.

Two important remarks:

1) Don’t rely on an incomplete operation and maintenance manual and don’t assume the ETP operator can always “guess” what to do. If the manual is incomplete, ETP processes might not be well understood, important equipment might be left apart, the conditions of the tanks and pipes might deteriorate rapidly, etc. An incomplete manual leads to unefficient maintenance of the ETP, then additional risks and even costs when not maintained in a good working order.

2) The manual has to correspond to the ETP built on-site; compare the description of the ETP flow diagram/process chart in the manual with the ETP built on-site to make sure the manual is relevant to the characteristics and processes of the actual ETP. If the manual was not provided when the ETP was built, the factory should request an ETP engineer/manufacturer to come on-site to visit the ETP and establish the relevant manual to run efficiently this plant.

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Common non-compliances

No control of the screening system

The screening system is not effective because the screen is not well installed and no maintenance was undertaken to fix the problem:



Equipment corrosion

Due to a poor maintenance, the tanks and pipelines are rusted and this can lead to breaches in the equipment and wastewater leaking. In the picture below, there is a leak:



Unused equipment

The factory is supposed to use the sludge filter press to remove the water from the sludge but this equipment is not connected to the ETP and left apart in the treatment process (equipment rusted and abandoned on the side of the ETP):



Good practices

Example of a template used by a factory to record the ETP maintenance operations:

Date	Daily	Daily	Daily	Daily	Monthly	Monthly	Monthly	Monthly	Weekly	Weekly
	Dosing pump and dosing rate	PH TDS HARDNESS	Raw water pump	High pressure pump	All water tank	Micrown filter	Carbon pre filter	R.O. memerance	Electric controler and panel and sefty trips	Water supply line and valves
01.08.2017	OK Tested	6.5/300/50	OK Tested	RUNING HPP-1	OK Tested	OK Tested	OK Tested	OK Tested	OK Tested	OK Tested
02.08.2017	OK Tested	7.0/300/55	OK Tested	OK Tested				REPAIR		
03.08.2017	OK Tested	7.0/350/50	OK Tested	OK Tested				MEMRAINCE		
04.08.2017	REPAIR NRV	7.0/300/60	OK Tested	OK Tested				II HOUSING		
05.08.2017	OK Tested	7.0/350/65	GLAND & GRE	OK Tested						CLEANING TUBE SETTLER VALVES
06.08.2017	SUNDAY									
07.08.2017	OK Tested	7.0/300/50	OK Tested	OK Tested		Change Micron		REPAIR		
08.08.2017	OK Tested	7.5/300/50	OK Tested	OK Tested		Ftr Tank no.3		MEMRAINCE		
09.08.2017	OK Tested	7.0/350/60	OK Tested	RUNING HPP-1				II HOUSING	OK Tested	OK Tested