



TAE/3000 AUTOMATED BIOLOGICAL TREATMENT

Description

The unit consists of various elements supported on a frame with feet or wheels. This aerobic treatment control unit works as follows: the effluent to be treated is prepared in a tank from a concentrated solution and water from the municipal network: a dosing pump, a solenoid valve and a stirrer are triggered by a level detector with 2 thresholds to prepare approximately 80L of synthetic effluents. A peristaltic pump is used to feed the anoxia reactor continuously or according to a timer.

This reactor is equipped with a 2-blade stirring system with variable speed and 2 probes (dissolved oxygen and pH/temperature). A dosing pump is coupled to the pH probe to allow automatic adjustment of the medium using a buffer solution, according to pH thresholds.

The overflow of this reactor flows into the aeration reactor. This basin is equipped with a stirring system (with 2 Rushton turbines) with variable speed, an air diffuser and a probe for dissolved oxygen. The air diffuser is coupled to a compressor which operates continuously or according to the dissolved O2 (thresholds control).

A pump is used to recycle the mixed liquor from the aeration basin towards the anoxia basin. It works continuously or according to a timer. Two levels of overflow allow the user to choose the volume of reactor. The overflow of the aeration basin flows into the settler equipped with a fixed slow speed stirrer (with scraping blades). The sludge is settling at the bottom of the tank and the clear overflow flows towards the treated water discharge outlet. A pump is used to recycle the sludge from the settler to the aeration basin or to the anoxia basin or to drain. It works continuously or according to a timer.

Experiments

Introduction

Recognize the elements of a biological treatment
Definition of the functions of the identified elements

Intermediary - Advanced

Treating a synthetic wastewater (urban effluents type) by biological route in long time ventilation or light load conditions.

Study of the purification with aerobic treatment:

- Treatment efficiency calculation (COD, BOD5).
- Optimization of operating parameters (aeration, extraction and recirculation of sludge).

Study of nitrogen treatment:

- Treatment of nitrogen in separated anoxic basin or by syncopating of aeration in the aerobic tank.
- Treatment efficiency calculation (COD, BOD5, nitrate).



PHOTO NOT CONTRACTUALLY BINDING

Educational goals

- Demonstrate the various stages of wastewater treatment through the reproduction of the activated sludge process in an automated system

Study of the sewage treatment process

- Strictly aerobic
- Aerobic and anoxic by aeration syncopating
- Aerobic and anoxic in separated basins

Conduct the process of wastewater treatment

- Called activated sludge treatment
- Process monitoring
- Search for optimal treatment parameters

Automation

- Alarm management
- pH and O₂ control
- Sludge recycling management
- Production of polluted water



Unit delivered with educational handbook and technical documentation.

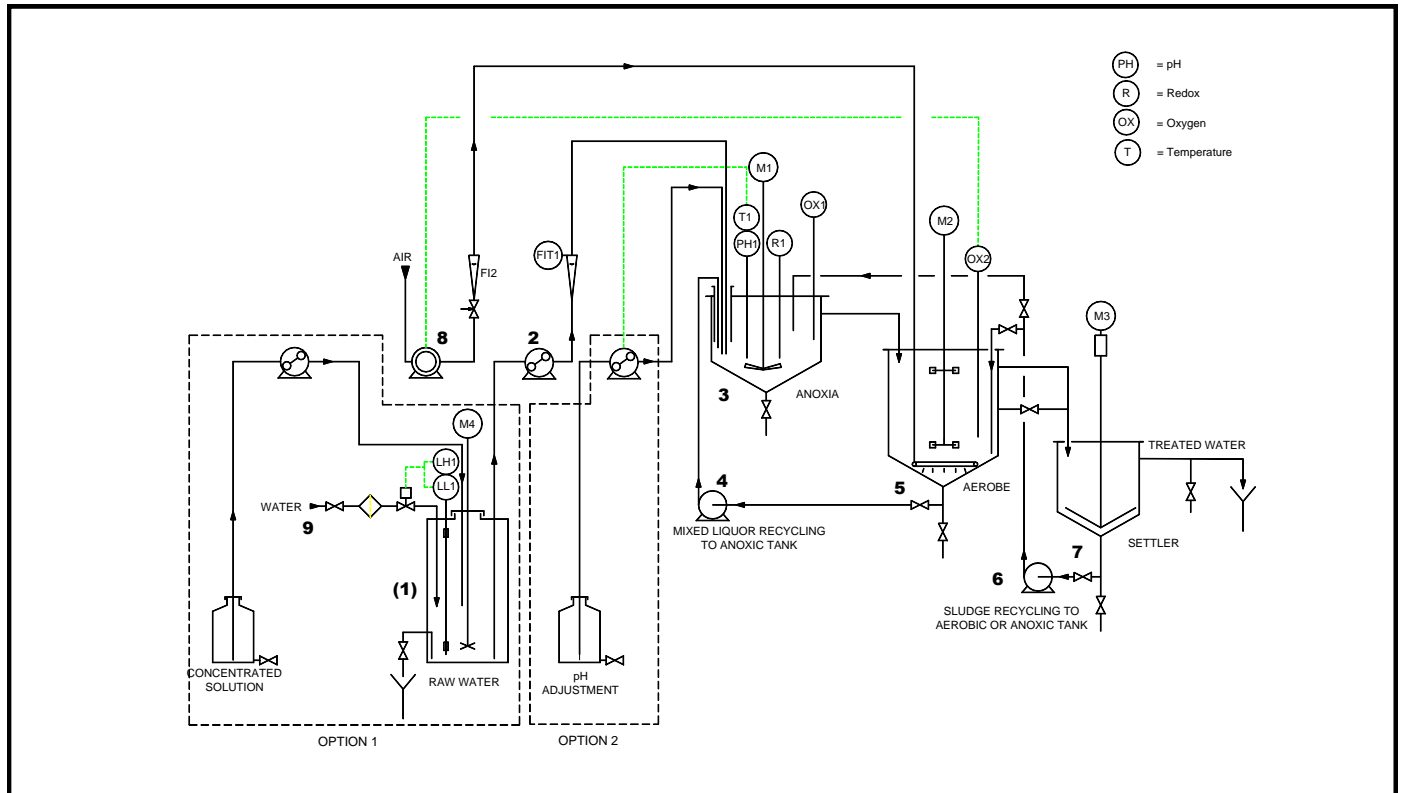


Possibility to customize the unit



Commissioning on site. Training on site





Instrumentation : Flow transmitter. Air flowmeter: 80 - 800 NL/h. pH probe, PVC can. Redox probe, PVC can. Dissolved oxygen probes, PVC can.

General specifications

- 1 Tank, 200L polyethylene, removable lid, draining valve and level detector.
- 2 Peristaltic feeding pump, On/Off integrated switch, variable speed, flow transmitter with 4-20 mA output.
- 3 Anoxic tank, 18 L, removable lid, three taps for measuring pH, dissolved oxygen and redox, a sampling hole, stirrer with three-blade stirring shaft, dip tube loading tee, draining valve.
- 4 Mixed liquor recycling pump, variable speed and draining valve.
- 5 Aerobic tank, 60 L, two hole for measuring dissolved oxygen, pH or redox, a sampling hole, stirring shaft Rushton turbines (height adjustable), dip tube loading tee, air diffuser, draining valve. Tank with two overflow levels.
- 6 Sludge recycling pump, variable speed, isolating valves for recycling from the settler to both tanks.
- 7 Settler, 30 L, stirrer with scraping-blade stirring shaft, draining valve, overflow exhaust with sampling valve.
- 8 Air circuitry : compressor, flowmeter and flowrate setting valve, air diffuser in aerobic tank.
- 9 Water supply : isolating valve, activated carbon filter for water dechlorination.

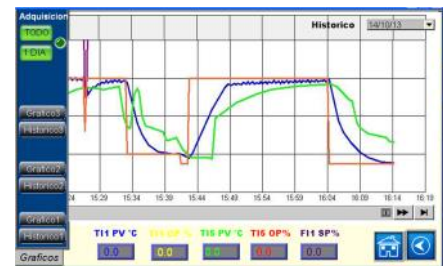
Control unit

Electrical cabinet

- General switch.
- Switch on and emergency circuit breaking.
- Controller monitoring center.

Automatization :

- PLC allowing to control the unit and management the alerts and thresholds.
- Touch screen 10"



Synoptic of the unit with measurements display, adjusting parameters. Curves in real time and historical. Data export (via USB port)

Overall dimensions - Utilities



100 - 240 V
1φ - 50/60 Hz

Water
500 L/h

Evacuation

Dim : 280 x 80 x 200cm - 250 kg
SS tubular framework 40 x 40mm

Options

- | | |
|--|------------------------|
| <p>1 Automated production of raw water:
200 L tank replaced with a tank of 100 L equipped with a stirrer and two level detectors controlling a solenoid valve for supplying tap water. Additional 5L bottle and metering pump to feed the tank with a concentrated solution of pollution.</p> | <p>Ref TAE/3000/O1</p> |
| <p>2 pH adjustment:
Metering pump and 5L bottle.
pH regulation by thresholds.</p> | <p>Ref TAE/3000/O2</p> |
| <p>3 Sludge blanket probe:
Probe placed in the settler.
Transmitter with control of the sludge recycling pump on alarm.</p> | <p>Ref TAE/3000/O3</p> |