

AEROBIC WATER TREATMENT PILOT PLANT

Mod. FA/EV
Mod. FAa/EV

manual
automated



INTRODUCTION

The activated sludge pilot plant consists of an oxidation reactor, of a settler and of a final chlorination tank, according to the traditional diagram of single-stage sewage treatment process.

Biomass is oxidized in a reactor with agitator by the air blown by a compressor. The processed liquid is sent to the settler through an overflow.

The sludges settling on settler bottom are recycled by a recirculation pump into the oxidation tank.

The water flowing out of the settler is chlorinated and conveyed to a drain.

Process control, data acquisition and supervision are automatically carried out by a microprocessor controller and by a specific control and supervision software (only for mod. FAa/EV) that enables the remote control of various operational parameters.

TRAINING PROGRAM:

The process unit enables to develop and analyze the following issues:

- Purification efficiency versus the following parameters:
 - composition of water to be treated
 - residence time
 - organic load
 - pH in oxidation tank
 - concentration of dissolved oxygen
- Automatic PID control (only for mod. FAa/EV)
- Plant supervision (only for mod. FAa/EV)

TECHNICAL CHARACTERISTICS:

Mod. FA/EV

- Framework of AISI 304 stainless steel with castors
- Feed tank with capacity of 700 l
- Cylindrical oxidation reactor of transparent methacrylate, with capacity of 300 l, including an agitator of AISI 304 stainless steel with geared motor and air diffuser of AISI 316 sintered stainless steel
- Settler of transparent methacrylate, with capacity of 150 l
- Feed tank for hypochlorite solution, with capacity of 20 l
- Chlorination tank of transparent methacrylate, with capacity of 6 l
- Magnetic drive feed gear pump, with body of AISI 316 stainless steel, flow-rate 0 to 60 l/h
- Sludge recirculation magnetic drive gear pump, with body of AISI 316 stainless steel, flow rate 0 to 60 l/h
- Metering pump of sodium hypochlorite, flow rate of 0 to 1.5 l/h
- Diaphragm compressor with body of stainless steel, flow rate of 1.2 Nm³/h
- Board-type microprocessor-controlled pH-meter, with range of 2 to 12 pH and 4-20 mA output signal
- Board-type microprocessor-controlled dissolved oxygen meter, with range of 0 to 10 ppm and 4-20 mA output signal
- Flowmeter for measuring the feed flow rate of air to the reactor, with range of 0 to 1800 NI/h (only for mod. FA/EV)
- Electronic magnetic-induction transmitter of AISI 316 stainless steel for feed flow rate, with range of 0 to 60 l/h and 4 to 20 mA output signal
- Board-type electronic indicator of feed flow rate with range of 0 to 60 l/h
- Electronic magnetic-induction transmitter of stainless steel AISI 316 for sludge recirculation flow rate with range of 0 to 60 l/h and 4 to 20 mA output signal
- Board-type electronic indicator of sludge recirculation flow rate with range of 0 to 60 l/h
- Thermoresistance Pt 100 with sheath of AISI 316 stainless steel
- Board-type electronic temperature indicator
- Switchboard IP55, complying with EC conformity mark, including plant synoptic and ELCB
- Emergency pushbutton
- Plant synoptic
- Connecting lines and valves of AISI 304 and 316 stainless steel
- Max. feed: 1 kg/day of COD (1.7 g/l for a flow rate of 25 l/h)

Power supply: 230 Vac 50 Hz single-phase - 1 kVA
(Other voltage and frequency under request)

Dimensions: 2100 x 870 x 2400 mm

Weight: 280 kg

Mod. FAa/EV

Besides being provided with all the technical characteristics of mod. FA/EV, this model also includes the following additional equipment:

- Electronic transmitter of differential-pressure type in stainless steel AISI 316, for air flow rate, with range of 0 to 1500 NI/h and 4 to 20 mA output signal
- Calibrated diaphragm of AISI 304 stainless steel
- Pneumatic control valve of AISI 316 stainless steel for air flow rate, Cv = 0.32
- Electropneumatic converter (4 to 20 mA/0.2 to 1 bar)
- Digital microprocessor PID controller, with three control loops
- Supervision software for Windows: it enables to control ON-OFF signals, analog signals coming from PID controller, real-time trend and historical trend

REQUIRED

UTILITIES (PROVIDED BY THE CUSTOMER)

- Compressed air (female valve of ¼"): 0.5 Nm³/h @ 6 bar (only for mod. FAa/EV)
- Tap water (valve ½" hose connector)
- Water floor drain

ACCESSORIES (NOT INCLUDED)

- Personal Computer running Windows (only for mod. FAa/EV)

SUPPLIED WITH

**THEORETICAL – PRACTICAL –
EXPERIMENTAL HANDBOOK**



VARIATIONS OF THE PLANT UPON REQUEST:

This equipment can be modified upon specific request of the Customer.