ANAEROBIC
WATER TREATMENT PILOT PLANT

Mod. BIO/EV manual
Mod. BIOa/EV automated

INTRODUCTION

This pilot plant consists of a reactor with built-in settler and floating head for hydraulic guard.
Sludges are fed and recycled by two gear pumps; a compressor will recycle gas from the top to the bottom of reactor keeping biomass stirred.
Biomass is heated by a heat exchanger included in the digester and connected with a diathermic-oil heating unit.
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. BIOa/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:
  - recycle ratio
  - residence time
  - digester temperature
  - organic load
  - pH and rH
- Automatic PID control (only for mod. BIOa/EV)
- Plant supervision (only for mod. BIOa/EV)

TECHNICAL CHARACTERISTICS:

Mod. BIO/EV

- Framework of AISI 304 stainless steel with castors
- Feed tank with capacity of 700 l
- Anaerobic digester of AISI 316 stainless steel, with capacity of 350 l, equipped with oil heating system including a heat exchanger of AISI 304 stainless steel
- Electronic thermostat for control of heating temperature
- Thermoresistance Pt 100 with sheath of AISI 316 stainless steel
- Magnetic drive feed gear pump; body of AISI 316 stainless steel; flow-rate 0 to 60 l/h
- Magnetic drive sludge recycle gear pump with body of stainless steel AISI 316, flow rate of 0 to 60 l/h
- Diaphragm compressor with body of stainless steel, flow rate of 1200 Nl/h
- Electronic magnetic-induction feed flow rate transmitter of AISI 316 stainless steel, 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 sludge recirculation flow rate transmitter of AISI 316 stainless steel, 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
- Microprocessor-controlled board-type pH-meter, with range of 2 to 12 pH, 4 to 20 mA output signal
- Microprocessor-controlled board-type rH-meter, with range of -1500 and +1500 mV, 4 to 20 mA output signal
- Pressure gauge with range of 0 to 50 mm H_2O
- Pressure switch for controlling pressure in the reactor
- Switchboard IP55, complying with EC conformity mark, including plant synoptic and ELCB
- Emergency pushbutton
- Connecting lines and valves of AISI 304 and 316 stainless steel

Power supply: 230 Vac 50 Hz single-phase - 1,5 kVA
(Other voltage and frequency on request)
Dimensions: 2300 x 1000 x 2020 mm
Weight: 290 kg

Mod. BIOa/EV

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

- Digital microprocessor PID controller with two 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)

- Tap water (valve with ½" hose connector)
- Water floor drain

ACCESSORIES (NOT INCLUDED)

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

SUPPLIED WITH

THEORETICAL – PRACTICAL – EXPERIMENTAL HANDBOOK

VARIATIONS OF THE PLANT UPON REQUEST:

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

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