



www.edibon.com
 ↳ Products
 ↳ Products range
 ↳ Units
 ↳ 13.-Environment

DESCRIPTION

The aim of this unit is to allow the survey and the comprehension of the anaerobic digestion process. Anaerobic Digestion (AD) is a biological process that happens naturally in which micro-organisms break down biodegradable material (organic matter) in environments with no oxygen. The unit PDAN, pumps the feedstock from a tank (not supplied) with a peristaltic pump, through a flowmeter, and finally gets the digester or reactor.

From the top of the digesters, a pipe brings the produced gas to the volumetric tank where its volume is measured.

The unit can work with both digesters in parallel.

The digesters are heated up by means of hot water coming from a thermostatic bath, passing through the jacket of the digester. Each digester have a close circuit of water from the bath with a regulation valve to control the flow.

To measure the volume of produced gas two volumetric tanks are used. These tanks measure the gas produced by the digester by water displacement.

The volumetric tank has two parts: the first one, the upper tank, is where the gas is collected and measured. The second one, smaller than the former and underneath it, is to collect the displaced water.



ISO 9000: Quality Management
 (for Design, Manufacturing,
 Commercialization and After-sales service)



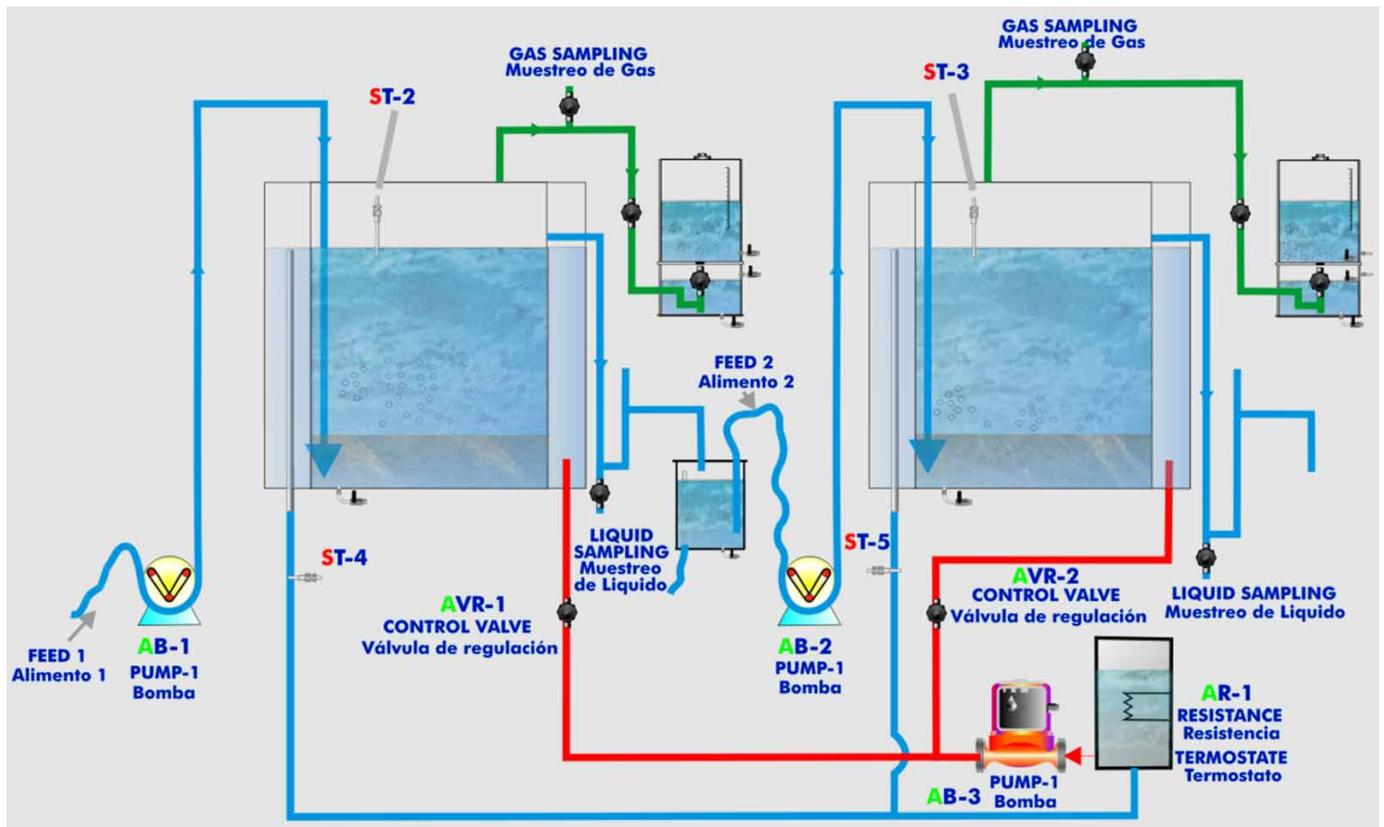
European Union Certificate
 (total safety)



**Certificates ISO 14000 and
 ECO-Management and Audit Scheme**
 (environmental management)

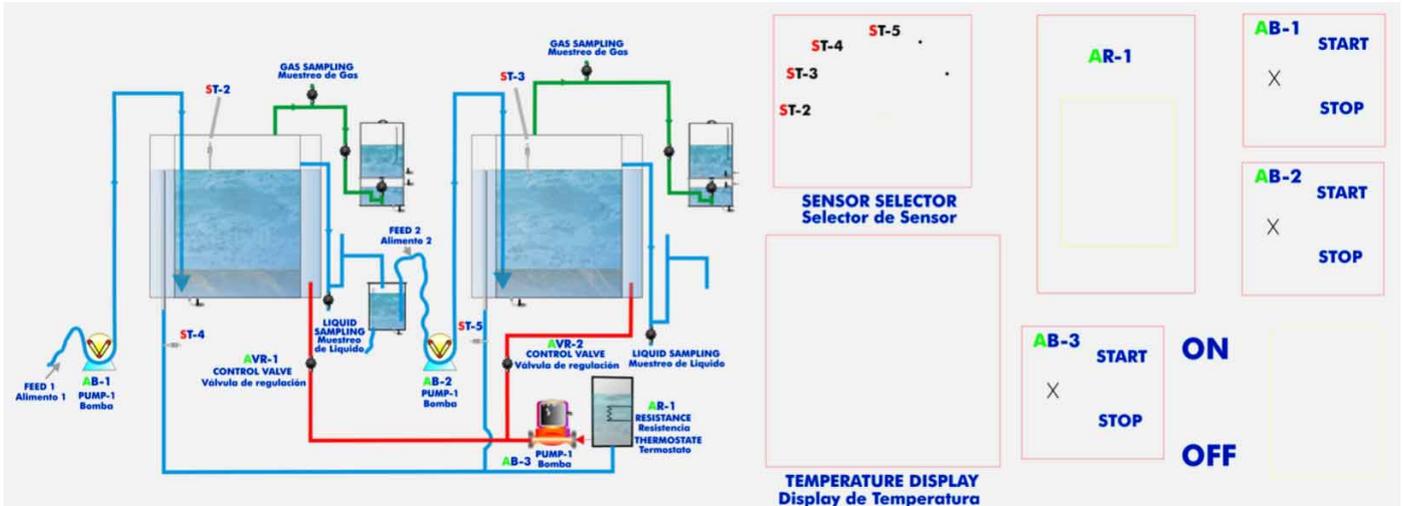


**Worlddidac Quality Charter
 Certificate**
 (Worlddidac Member)

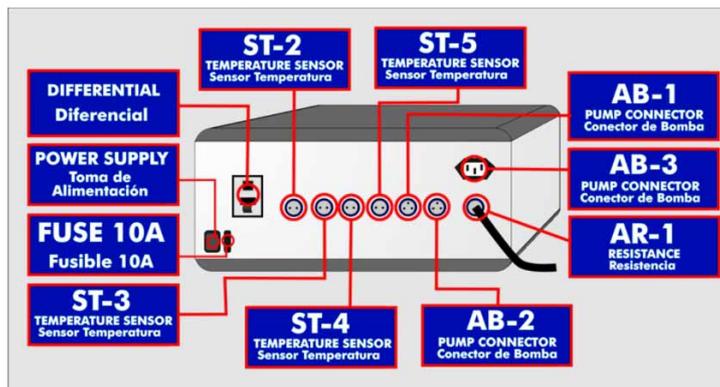


Note: ST=Temperature sensor.

Front panel of the Electronic console



Back panel of the Electronic console



SPECIFICATIONS

Bench-top Unit.

Anodized aluminium structure and panels in painted steel.

Main metallic elements in stainless steel.

Diagram in the front panel with similar distribution to the elements in the real unit.

2 Packed reactors (anaerobic digesters) that may be operated in series or parallel flow arrangement. Each reactor has 5 litres capacity.

Reactor packing: 25mm diameter Bio-balls.

For each reactor: heating jacket with Control from a temperature sensor.

2 Feed peristaltic pumps (50 cc/min).

2 Volumetric tanks, for collecting and measurement of the volume of gas produced.

4 Temperature sensors, type J, range = -60°C to 200°C .

2 Water flow meters (0-50 cc/min).

Thermostatic bath, up to 90°C .

Water circulation pump for the thermostatic bath.

Buffer vessel (1 litre capacity).

Electronic console, including:

4 Temperature sensors connections.

Temperature sensors selector.

Temperature sensors display.

3 Pumps On/Off switches.

Heating resistance switch.

Cables and accessories, for normal operation.

Manuals:

This unit is supplied with the following manuals: Required Services, Assembly and Installation, Starting-up, Safety, Maintenance & Practices Manuals.

EXERCISES AND PRACTICAL POSSIBILITIES

- 1.- Stabilization process study.
- 2.- Effect of temperature in the purification.
- 3.- Effect of the effluent pH in the digestion.
- 4.- Survey of the feeding rate in the purification.
- 5.- Study of the effluent strength.
- 6.- Study of the relation between the nutrient concentration in the effluent and purification.
- 7.- Study of the effect of the hydraulic charge in the purification.
- 8.- Study of the influence of the inhibitors to the anaerobic digestion.
- 9.- Comparison between mesophilic and thermophilic anaerobic digestion.
- 10.- Determination of the optimal working temperature.
- 11.- Determination of the optimal feeding rate.
- 12.- Determination of the optimal solids/water ratio.
- 13.- Determination of the optimal degradable /non-degradable solids ratio.
- 14.- Demonstration of the multistage nature of anaerobic digestion.
- 15.- Kinematics determination.
- 16.- Carbon balance.
- 17.- Solids Balance.
- 18.- Biogas Balance.
- 19.- Study of the effect of pH.
- 20.- Influent nutrient concentration.
- 21.- Preparation, warming and acclimation of an anaerobic reactor.
- 22.- Effluent treatability studies, including solids, carbon and biogas balances for determining the purification (COD-BOD).
- 23.- Study of the effects on purification performance of:
 - Feed ratios.
 - Hydraulic loading.
 - Temperature.
 - Influent strength.
 - Nutrient deficiency.

REQUIRED SERVICES

-Electrical supply: single-phase, 220V./50Hz. or 110V./60Hz.

DIMENSIONS & WEIGHTS

PDAN:

Unit:

-Dimensions: 1000 x 800 x 1000 mm approx.

-Weight: 80 kg. approx.

Electronic console: -Dimensions: 300 x 230 x 135 mm. approx.

-Weight: 2 Kg. approx.

REQUIRED ACCESSORIES

-Feed and product tanks (approx. 40 litres). (Not included with the unit).

OPTIONAL ACCESSORIES

-For measurement of BOD, COD, alkalinity, suspended solids and total volatile acids. (Not included with the unit).

AVAILABLE VERSIONS

Offered in this catalogue:

- PDAN. **Anaerobic Digester.**

Offered in other catalogue:

- PDANC. **Computer Controlled Anaerobic Digester**, with SCADA and PID Control.

*Specifications subject to change without previous notice, due to the convenience of improvements of the product.



C/ Del Agua, 14. Polígono Industrial San José de Valderas.
28918 LEGANÉS. (Madrid). SPAIN.
Phone: 34-91-6199363 FAX: 34-91-6198647
E-mail: edibon@edibon.com WEB site: www.edibon.com

Issue: ED01/11
Date: September/2011

REPRESENTATIVE: