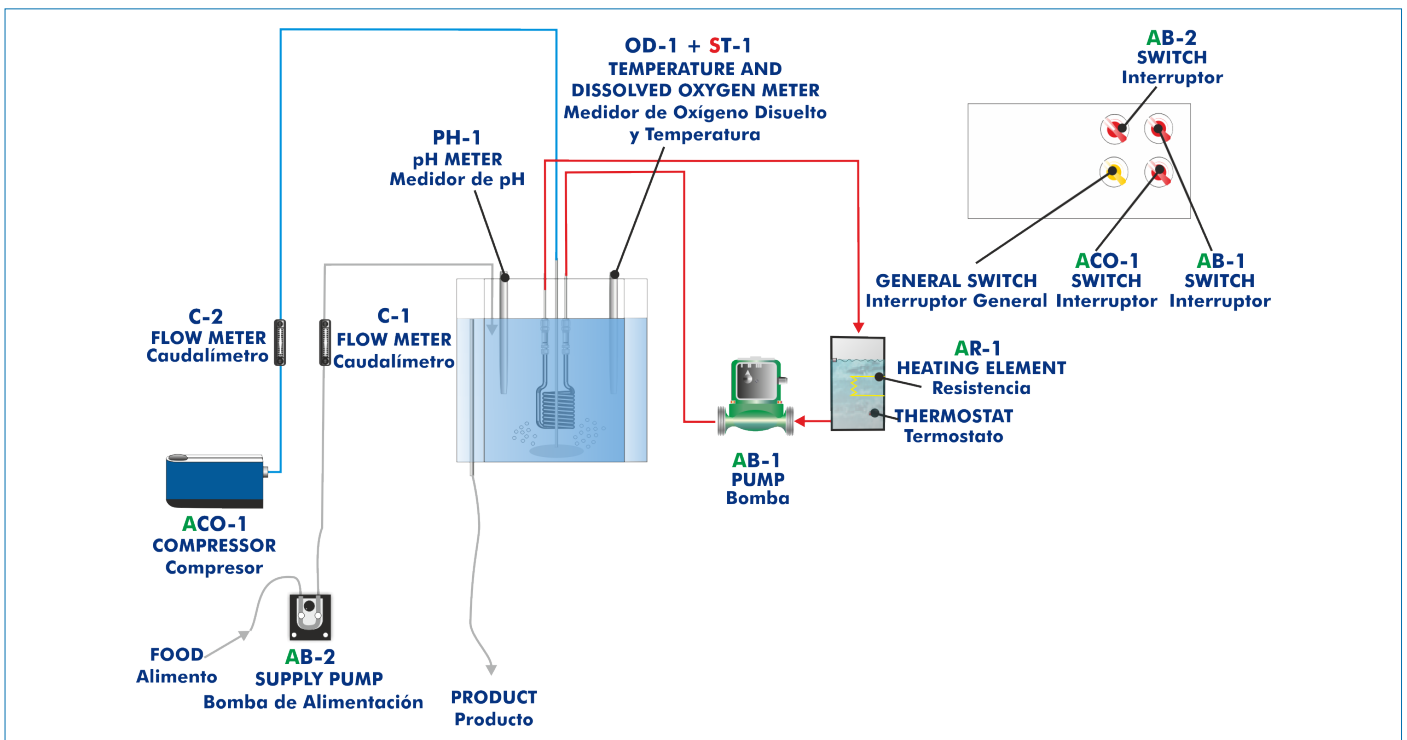




## PROCESS DIAGRAM AND UNIT ELEMENTS ALLOCATION



ISO 9001: Quality Management (for Design, Manufacturing, Commercialization and After-sales service)



European Union Certificate (total safety)



Certificates ISO 14001 and ECO-Management and Audit Scheme (environmental management)



"Worlddidac Quality Charter" and Platinum Member of Worlddidac

## INTRODUCTION

The first step to which residual water is subjected when entering a Sewage Farm is a pretreatment. Big solids, sand and grease are removed. Next, water undergoes the so-called primary treatment. Easily settled suspended solids and part of the organic matter are removed.

The rest of organic matter, dissolved and suspended, and the rest of solid particles that have not been removed in previous treatments are removed by the so-called "Aerobic Wastewater Treatment Biological Processes", which is the secondary treatment of the water line.

The "Aerobic Wastewater Treatment Biological Processes" can be defined as those processes carried out by a specific group of microorganisms that in presence of oxygen act on the dissolved, suspended and colloid organic and inorganic matter existing in wastewater. They transform that matter into gases and cells that can be easily separated by settling.

## GENERAL DESCRIPTION

The objective of the Aerobic Digester, "PDA", is to study and understand aerobic digestion processes and to analyze their main parameters. The unit consists of a 20 l capacity reactor vessel with a tubular membrane made of plastic inside to separate the sludge. Wastewater to be treated enters the vessels pumped by a peristaltic pump.

This unit includes a thermostatic bath to heat water up to 60 °C. That water is driven by a pump through a coil inside the reactor. A suitable temperature for the microorganisms population employed in the aerobic digestion will be obtained.

The greater amount of oxygen available in the environment in the aerobic digestion, the quicker the bacteria involved in the process will grow. Therefore, a compressor introduces a specific air flow into the reactor through a diffusion plate.

The aerobic reactor includes a portable temperature, pH and dissolved oxygen meter to monitor the digestion.

## SPECIFICATIONS

Bench-top unit.

Anodized aluminum frame and panels made of painted steel.

Main metallic elements made of stainless steel.

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

20 l reactor vessel with a tubular membrane inside.

Lid for the reactor with a manual valve and the respective holes.

Heating or cooling coil.

Thermostatic bath (up to 60 °C), 6 l capacity, 600 W.

Pump for hot water circulation of the thermostatic bath.

Air compressor, range: 0 – 5 l/min.

Diffusion plate for the air inlet.

Air flow meter, range: 0.4 – 5 l/min.

Peristaltic pump, range: 0 – 0.05 l/min.

Water flow meter, range: 0.004 – 0.05 l/min.

Membrane, muds separation.

Overflow for the outlet of filtered water.

Valve on the bottom for mud extraction.

Temperature, pH and dissolved oxygen meter to monitor the digestion.

Control panel, including:

- Switch for pump for the hot water circulation.

- Switch for peristaltic pump.

- Switch for air compressor.

- Main 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.



PDA detail

## EXERCISES AND PRACTICAL POSSIBILITIES

- 1.- Acclimation of biological samples.
- 2.- Study of the temperature effect on the effluent quality.
- 3.- Study of the detention time effect on the effluent quality.
- 4.- Study of the aeration effect on the effluent quality.
- 5.- Study of the pH effect on the effluent quality.
- 6.- Study of the mass load effect on the effluent quality.
- 7.- Study of the nutrients effect on the effluent quality.
- 8.- Study of the recirculation effect on the effluent quality.
- 9.- Establishing the stoichiometry of aerobic processes.
- 10.-Establishing the kinetics of aerobic processes.
- 11.-Gas/liquid mass transfer.
- 12.-Residence time distributions.
- 13.-Measurement of MLSS and COD changes as criteria of performance.

### REQUIRED SERVICES

- Electrical supply: single-phase 200 VAC – 240 VAC/50 Hz or 110 VAC – 127 VAC/60 Hz.

### DIMENSIONS AND WEIGHTS

- PDA:
- Dimensions: 800 x 600 x 700 mm approx.  
(31.50 x 23.62 x 27.56 inches approx.)
  - Weight: 55 Kg approx.  
(121 pounds approx.).

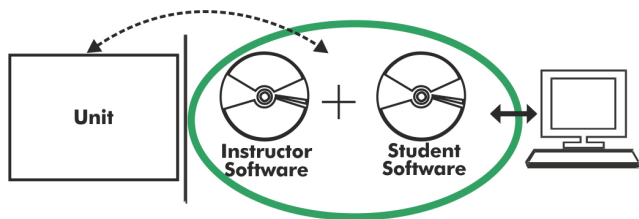
### ADDITIONAL RECOMMENDED ELEMENTS (Not included)

- Feed and product tanks (40 l approx.).

### SIMILAR UNITS AVAILABLE

- PDA. Aerobic Digester.
  - PDAC. Computer Controlled Aerobic Digester.
  - PDAN. Anaerobic Digester.
  - PDANC. Computer Controlled Anaerobic Digester.
- Offered in this catalog:
- Offered in other catalogs:

**PDA/ICAI. Interactive Computer Aided Instruction Software:**



With no physical connection between unit and computer, this complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM-SOF) totally integrated with the Student Software (EDIBON Student Labsoft -ESL-SOF). Both are interconnected so that the teacher knows at any moment what is the theoretical and practical knowledge of the students.

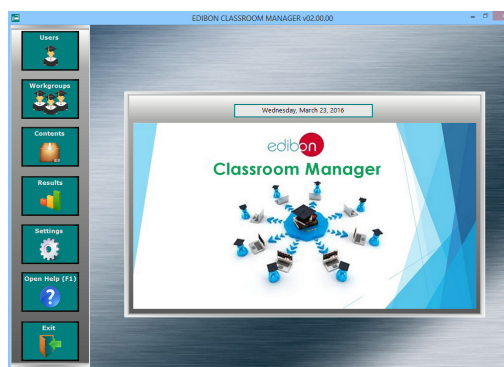
Instructor Software

**- ECM-SOF. EDIBON Classroom Manager (Instructor Software).**

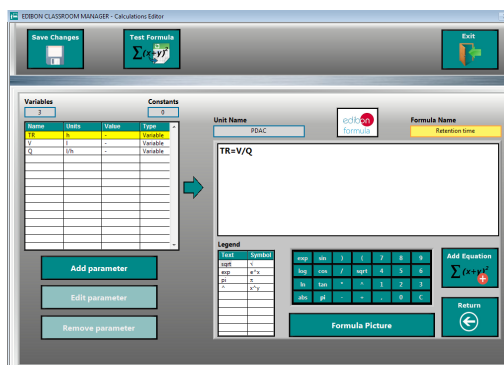
ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual students, workgroups, units, etc... so the teacher can know in real time the level of understanding of any student in the classroom.

Innovative features:

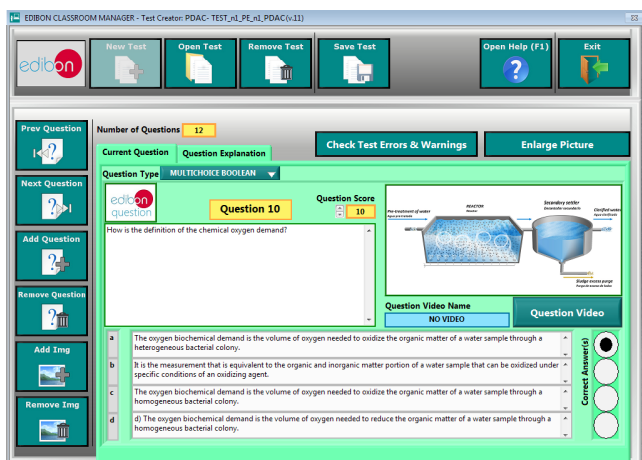
- User Data Base Management.
- Administration and assignment of Workgroup, Task and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.
- Updatable Contents.
- Report generation, User Progression Monitoring and Statistics.



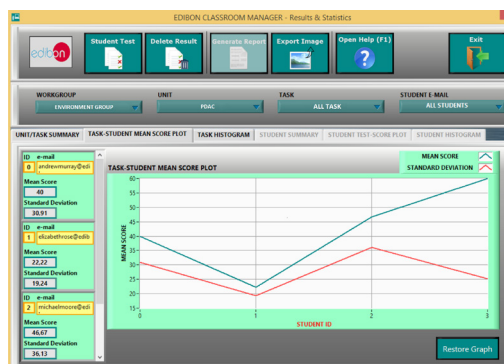
ECM-SOF. EDIBON Classroom Manager (Instructor Software) Application Main Screen



ECAL. EDIBON Calculations Program Package - Formula Editor Screen



ETTE. EDIBON Training Test & Exam Program Package - Main Screen with Numeric Result Question



ERS. EDIBON Results & Statistics Program Package - Student Scores Histogram

Optional  
Student Software

- ESL-SOF. EDIBON Student Labsoft (Student Software).

ESL-SOF is the application addressed to the Students that helps them to understand theoretical concepts by means of practical exercises and to prove their knowledge and progression by performing tests and calculations in addition to Multimedia Resources. Default planned tasks and an Open workgroup are provided by EDIBON to allow the students start working from the first session. Reports and statistics are available to know their progression at any time, as well as explanations for every exercise to reinforce the theoretically acquired technical knowledge.

Innovative features:

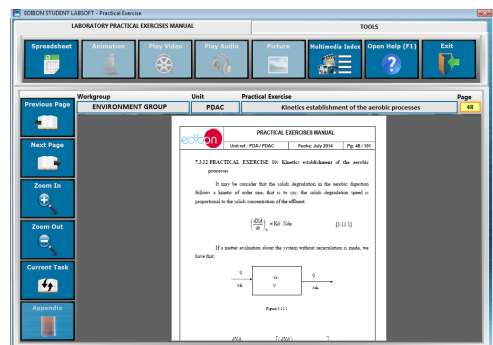
- Student Log-In & Self-Registration.
- Existing Tasks checking & Monitoring.
- Default contents & scheduled tasks available to be used from the first session.
- Practical Exercises accomplishment by following the Manual provided by EDIBON.
- Evaluation Methods to prove your knowledge and progression.
- Test self-correction.
- Calculations computing and plotting.
- Equation System Solver Engine.
- User Monitoring Learning & Printable Reports.
- Multimedia-Supported auxiliary resources.

For more information see ICAI catalogue. Click on the following link:

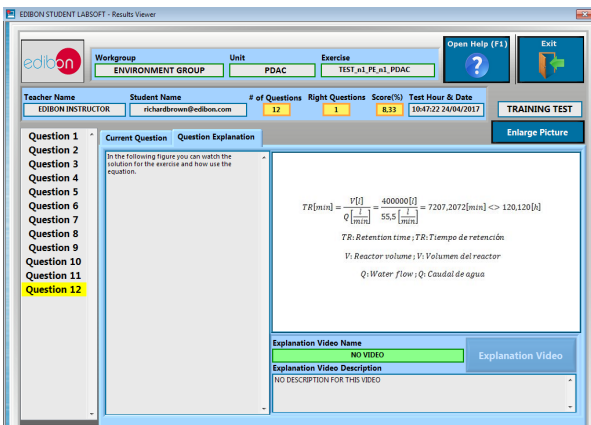
[www.edibon.com/en/files/expansion/ICAI/catalog](http://www.edibon.com/en/files/expansion/ICAI/catalog)



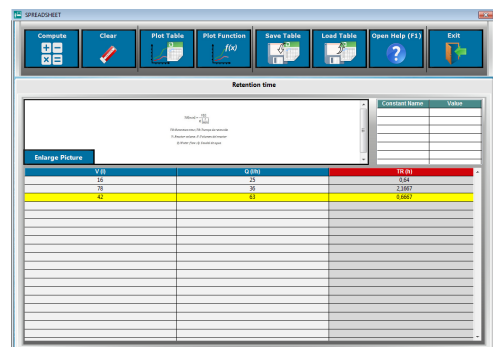
ESL-SOF. EDIBON Student LabSoft (Student Software)  
Application Main Screen



EPE. EDIBON Practical Exercise Program Package Main Screen



ERS. EDIBON Results & Statistics Program Package - Question Explanation



ECAL. EDIBON Calculations Program Package Main Screen

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



C/ Julio Cervera, 10-12-14. Móstoles Tecnológico.  
28935 MÓSTOLES. (Madrid). ESPAÑA - SPAIN.  
Tel.: 34-91-6199363 Fax: 34-91-6198647

E-mail: [edibon@edibon.com](mailto:edibon@edibon.com) Web: [www.edibon.com](http://www.edibon.com)

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REPRESENTATIVE:

