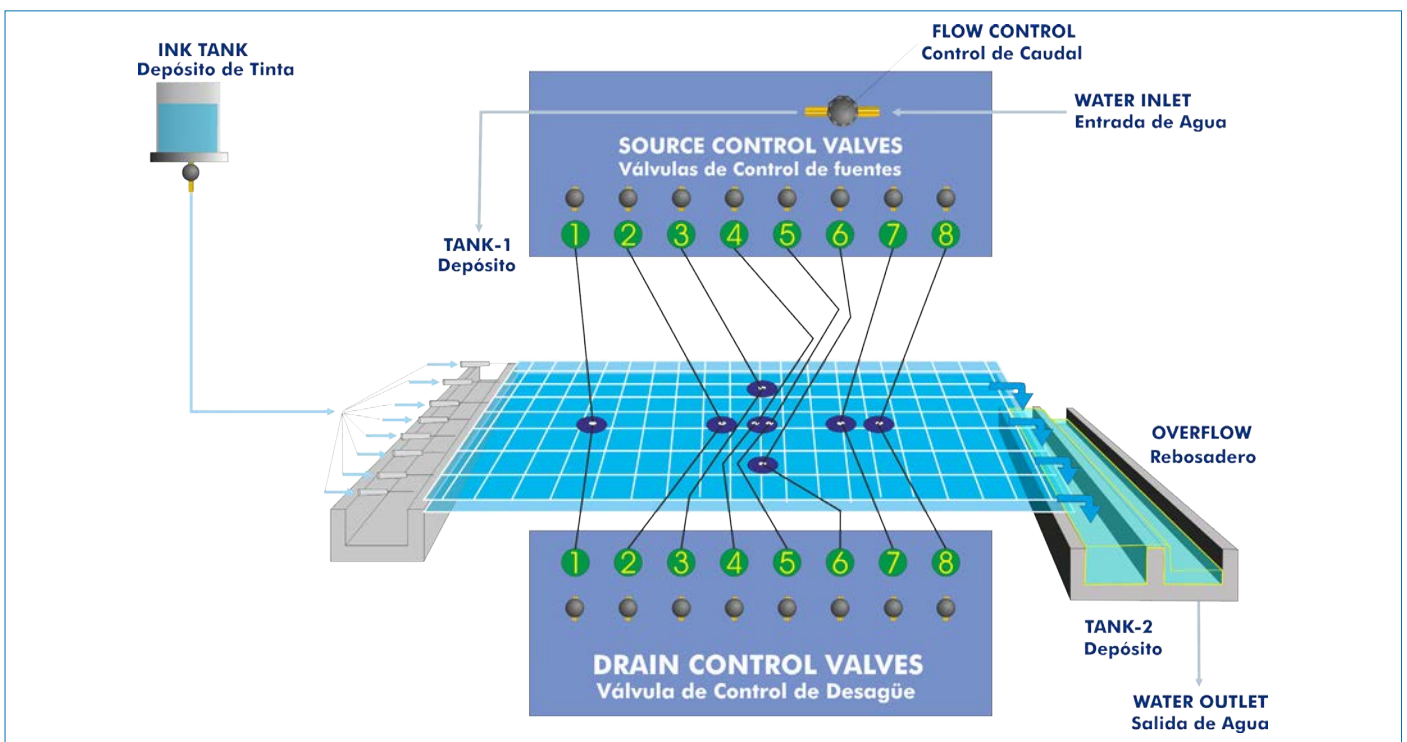




PROCESS DIAGRAM AND UNIT ELEMENTS ALLOCATION



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)



Certificate and Worlddidac Member

INTRODUCTION

Many design problems in the fluids flow area require an exact knowledge of the speed and pressure distribution, for example the flow over curved surfaces along the wings of an airplane, through the strokes in a pump, in a compressor or over the crest of a floodgate. Knowing the flow in two or three dimensions of a fluid offers a wider vision of many flow real situations.

To that end, the computer fluid dynamics allows for analyzing the flow around any body and the resistance exerted. Nevertheless, an experimental study with a model in the laboratory is still essential to obtain a clear and visual understanding.

GENERAL DESCRIPTION

The Laminar Flow Visualization and Analysis Unit, "LFA", allows a complete study of the two-dimensional problems associated with the laminar flow by the visualization of the different models of flow, which can be observed thanks to an efficient system of colored liquid injection.

It is an improved version of the Hele-Shaw apparatus.

It is a floor standing unit, with a wide work surface to an appropriate height. That wide work area (605 x 90 mm) includes eight sinks and eight sources.

The work section consists of two glass sheets, separated by space bars at a certain distance.

It has a fiberglass tank at the input and output of the work section and control valves. The glass sheets are separated by space bars, at a distance that can be adjusted as required, to obtain an exact study of the laminar flow around different hydrodynamic models. The bottom plate has a grid printed to make the flow visualization easier, with eight sinks placed along the central line of the glass sheet in a cross-shape.

It has a tank connected to a dye injection system, which consists of a system of needles placed at the input of glass sheet.

SPECIFICATIONS

Anodized aluminum frame and panels made of painted steel.

The unit includes wheels to facilitate its mobility.

Main metallic elements made of stainless steel.

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

Laminar flow visualization table.

Flow visualization area.

Eight sources and eight sinks.

Sinks and sources control valves.

Input control valves.

Dye tank.

Dye manifold.

Drain valve.

Grid to facilitate the visualization of the lines of flow.

The top glass sheet of the visualization area has handles to lift it easily for a correct operation or to install the different hydrodynamic models.

The central sink of the bottom plate, placed in the visualization area, has a doublet, that is to say, there is a sink and source in close proximity.

The control systems allow every sink and source or only some of them to be fed at the same time.

It is supplied with a dye injection system, for a better visualization of the flow lines. It consists of nineteen needles, placed between the glass sheets at the input. They are feed from a simple adapter. An appropriate quantity of dye is injected through each needle and the direction is clearly visualized.

It includes a set of hydrodynamic models:

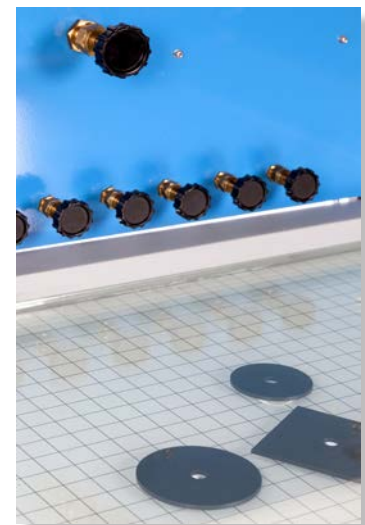
Three circular models: 40, 60 and 80 mm diameter.

Three square models: 40, 60 and 80 mm of length.

Wing shaped model.

The unit can be completely drained by opening the drain valves located on the base of the input and output tanks.

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



LFA detail

EXERCISES AND PRACTICAL POSSIBILITIES

Ideal flow around immersed bodies:

- 1.- Ideal flow around a cylinder.
- 2.- Ideal flow around a surface.
- 3.- Ideal flow around a bluff body.

Ideal flow in channels and edges:

- 4.- Ideal flow in a convergent channel.
- 5.- Ideal flow in a divergent channel.
- 6.- Ideal flow through a 90° bend.
- 7.- Ideal flow through a sudden contraction.
- 8.- Ideal flow through a sudden broadening.
- 9.- Replacement of a streamline by a solid boundary.

Ideal flow associated to sinks and sources:

- 10.- Formation of a Rankine half-body.
- 11.- Formation of a Rankine oval.
- 12.- Superposition of sinks and sources.

REQUIRED ACCESSORIES (Not included)

- FME00/B. Basic Hydraulic Feed System.

DIMENSIONS AND WEIGHTS

LFA:

Unit:

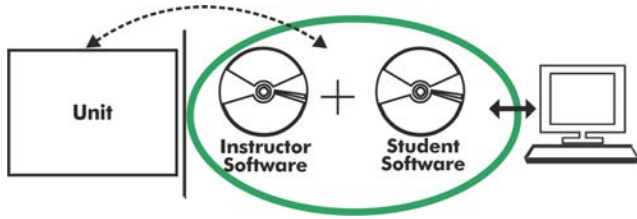
-Dimensions: 1600 x 1000 x 1250 mm approx.
(62.99 x 39.37 x 49.21 inches approx.)

-Weight: 60 Kg approx.
(132 pounds approx.)

Work area:

-Dimensions: 600 x 900 mm approx.
(23.62 x 35.43 inches approx.)

LFA/ICAI. Interactive Computer Aided Instruction Software System:



With no physical connection between unit and computer (PC), 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.

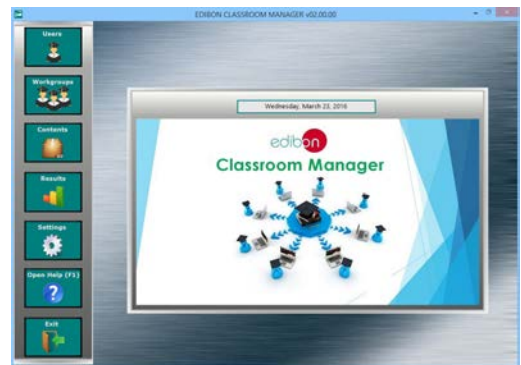
Instructor Software

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

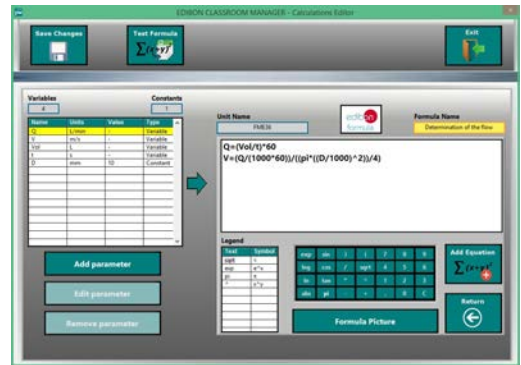
ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual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

Innovative features:

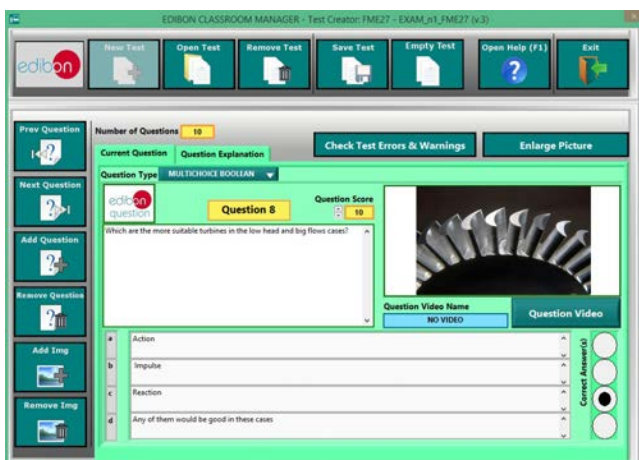
- User Data Base Management.
- Administration and assignment of Workgroup, Task and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.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

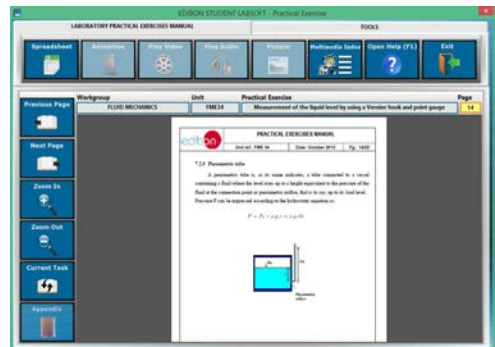
- Student Log-In & Self-Registration.
- Existing Tasks checking & Monitoring.
- Default contents & scheduled tasks available to be used from the first session.
- Practical Exercises accomplishment by following the Manual provided by EDIBON.
- Evaluation Methods to prove your knowledge and progression.
- 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:

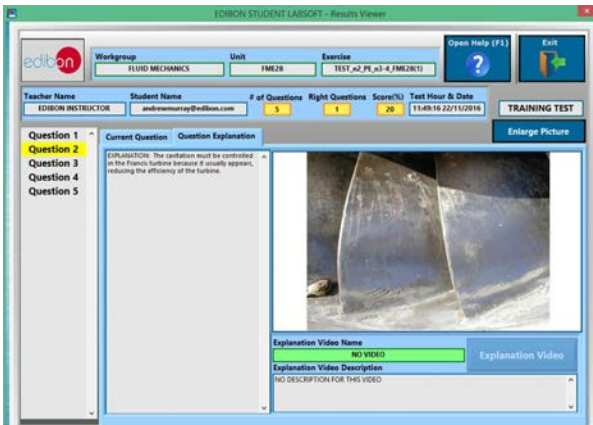
www.edibon.com/en/files/expansion/ICAI/catalog



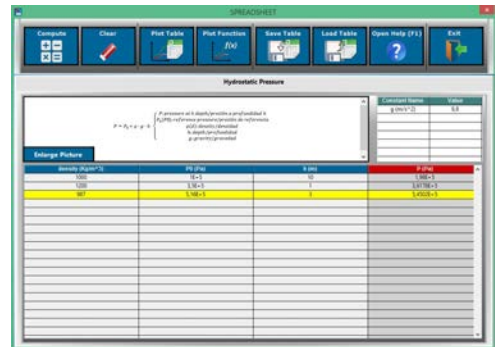
ESL-SOF. EDIBON Student LabSoft (Student Software) Application Main Screen



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.



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REPRESENTATIVE:

