edibon

Engineering and Technical Teaching Equipment

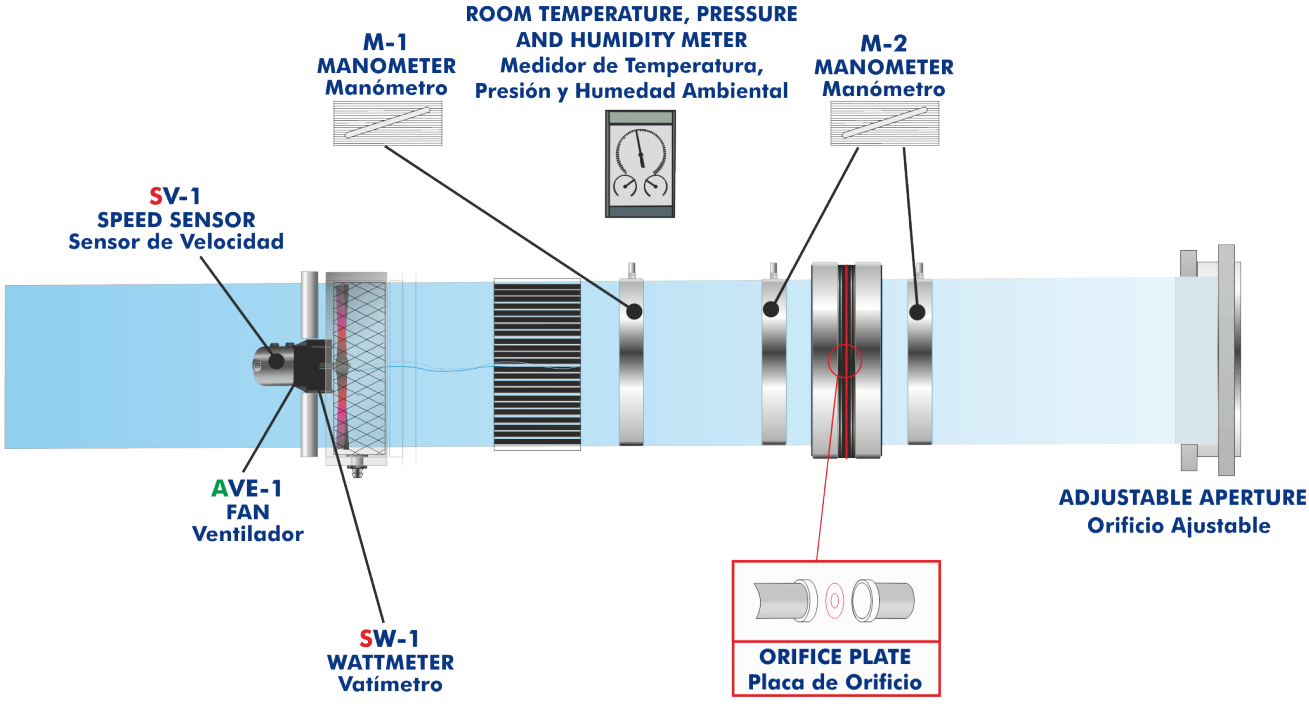
Axial Fan Teaching Unit

HVAB

www.edibon.com
↳PRODUCTS
↳8.- FLUID MECHANICS

Electronic console

PROCESS DIAGRAM AND UNIT ELEMENTS ALLOCATION



LRQA CERTIFIED ISO 9001
Certificate of Approval of the Quality Management System

CE
European Union Certificate
(total safety)

UL CSA
UL and CSA Regulations
(All our products are manufactured according to current UL and CSA regulations)

LRQA CERTIFIED ISO 14001
Certificate of Approval of the Environmental Management System

WQC worlddidac
Worlddidac Association Certificate of Membership

INTRODUCTION

Fans are mechanical instruments that allow moving great gas flows as a result of the generated pressure increase. There are two basic types of air moving devices: the centrifugal fan or blower and the axial flow fan. Generally, the axial fan is more suitable for higher flows at lower pressures than their centrifugal counterparts.

An axial fan is a type of fan where both motor and wings are mounted directly on the axle. When the axle and the wings rotate, it results in a current parallel with the axle.

Axial fans are used in fan aggregates and in connection with fan coils for cooling or heating. They are used in a wide variety of applications, ranging from small cooling fans for electronics to the giant fans used in wind tunnels.

GENERAL DESCRIPTION

The Axial Fan Teaching Unit, "HVAB", allows the observation, the study and the working process analysis of an axial-flow fan.

The main element of this unit is a variable speed centrifugal fan, which is measured through a speed sensor, and a wattmeter determines the power consumed by the fan. The main tube of the unit is transparent. The air flow can be regulated through an adjustable oriffice at the inlet of the duct. It also has an oriffice plate for the calculation of the air flow with a slanted tube manometer.

There are also humidity, pressure and temperature measurements to know the inlet air conditions.

The unit is supplied with an electronic console with a speed variator to modify the speed of the axial fan, a speed sensor connector, a digital display for the speed sensor, and a digital display for the fan power measurement.

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.

HVAB detail

The unit includes:

- Single stage axial fan with speed regulation, range: 0 – 7000 rpm.
- Transparent straight duct for suction and discharge:
  - Diameter: 115 mm.
  - Included an air flow rectifier and an orifice plate with air flow measurement.
- Adjustable aperture system to regulate the air flow rate.
- Speed sensor, range: 0 – 7000 rpm.
- Slanted tube manometer to measure the differential pressure and the air flow, range: 0 – 3 inch H_2O (0 – 76 mm H_2O).
- Slanted tube manometer to measure the static pressure, range: 0 – 3 inch H_2O (0 – 76 mm H_2O).
- Weather station, with room temperature, pressure and humidity measurement to know the conditions of the inlet air.

Electronic console:

- Metallic box.
- Speed variator to modify the speed of the axial fan.
- Speed sensor connector.
- Digital display for the speed sensor.
- Digital display for the wattmeter.
- Wattmeter.

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.- Calculation of the flow by means of the orifice plate.
2.- Calculation of the flow through a measurement of the static, dynamic and total pressure with an adjustable orifice.
3.- Measurement of machine performance in terms static and total pressure, and motor input power, as an inlet flow function.
4.- Introduction to the scaling similitude law.

Additional practical possibilities:

5.- Calculation of the characteristic curve of the axial fan at a constant speed according to the flow used by the adjustable aperture.
6.- Study of the axial fan regulation varying its turning speed.
7.- Study and comparison of the practical results and the results calculated by the students.

REQUIRED SERVICES

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

DIMENSIONS AND WEIGHTS

HVAB:

Unit:

- Dimensions: 1800 x 580 x 700 mm approx.
  (70.87 x 22.83 x 27.56 inches approx.)
- Weight: 55 Kg approx.
  (121.25 pounds approx.)

Electronic console:

- Dimensions: 490 x 330 x 310 mm approx.
  (19.29 x 12.99 x 12.20 inches approx.)
- Weight: 10 Kg approx.
  (22 pounds approx.)

SIMILAR UNITS AVAILABLE

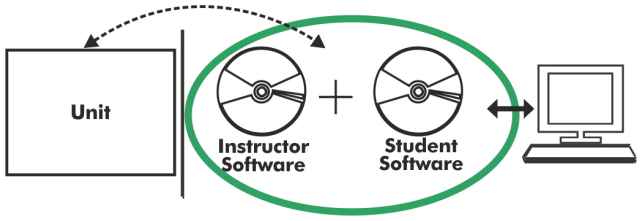
Offered in this catalog:

- HVAB. Axial Fan Teaching Unit.

Offered in other catalog:

- HVAC. Computer Controlled Axial Fan Teaching Unit.

HVAB/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.

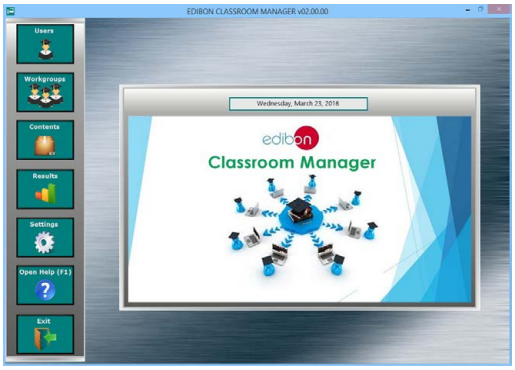
Instructor Software

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

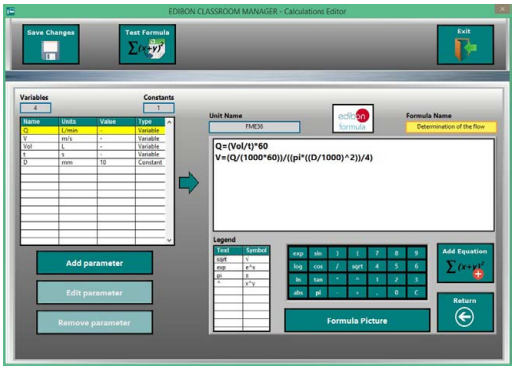
ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual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

Innovative features:

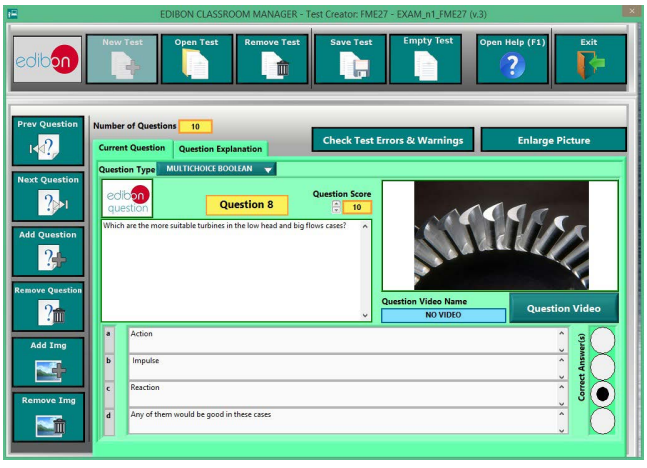
- **User Data Base Management.**
- **Administration and assignment of Workgroup, Task and Training sessions.**
- **Creation and Integration of Practical Exercises and Multimedia Resources.**
- **Custom Design of Evaluation Methods.**
- **Creation and assignment of Formulas & Equations.**
- **Equation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



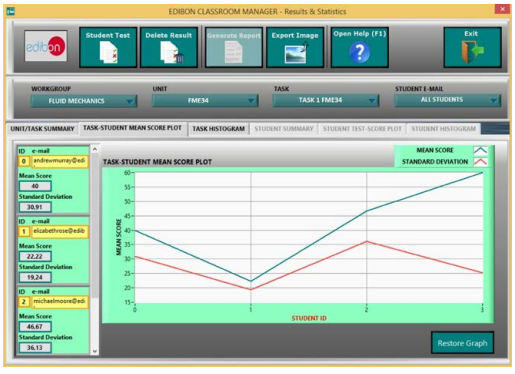
ECM-SOF. EDIBON Classroom Manager (Instructor Software) Application Main Screen



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).

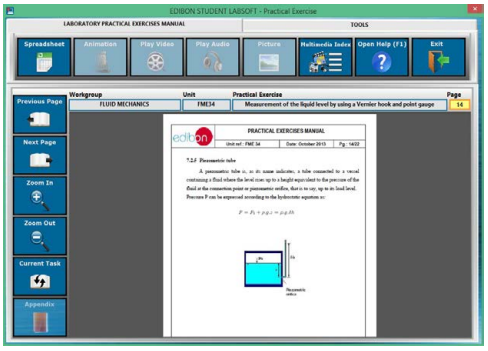
ESL-SOF is the application addressed to the Students that helps them to understand theoretical concepts by means of practical exercises and to prove their knowledge and progression by performing tests and calculations in addition to Multimedia Resources. Default planned tasks and an Open workgroup are 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:

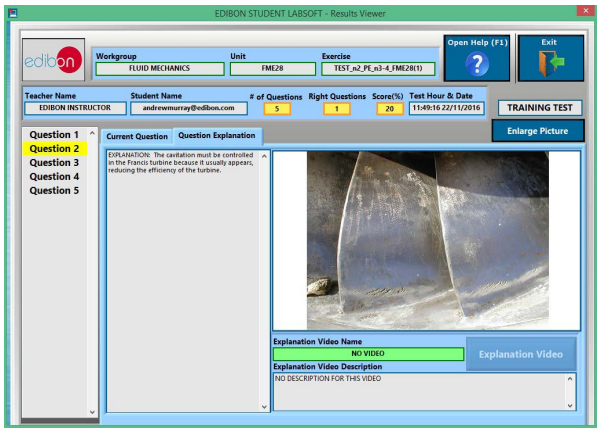
- **Student Log-In & Self-Registration.**
- **Existing Tasks checking & Monitoring.**
- **Default contents & scheduled tasks available to be used from the first session.**
- **Practical Exercises accomplishment by following the Manual provided by EDIBON.**
- **Evaluation Methods to prove your knowledge 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/interactive-computer-aided-instruction-software

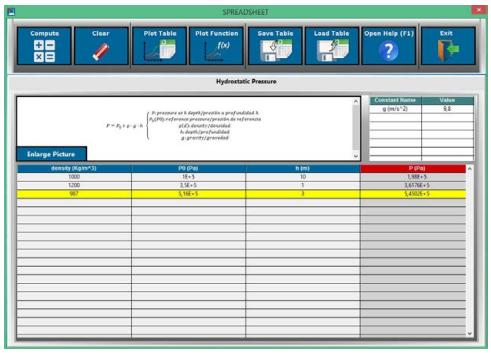
ESL-SOF. EDIBON Student LabSoft (Student Software) Application Main Screen



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: