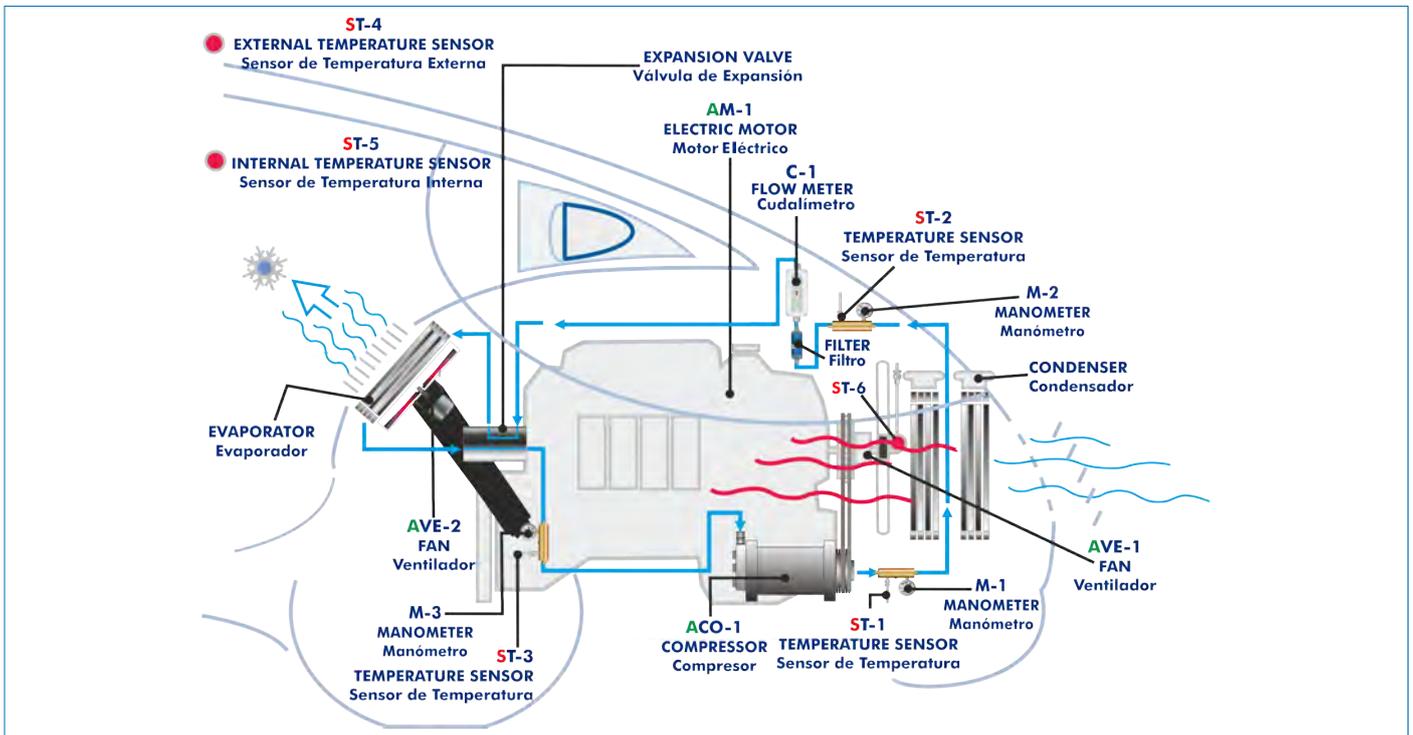


Electronic console

## 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

Automobile air conditioning systems are used to cool the air inside the compartment of a vehicle. In most cases they work according to the recirculating principle, taking air to be cooled from the own compartment.

The objective of the Automobile Air Conditioning Trainer, "TAAU", designed by EDIBON is to introduce the student into the complex world of air conditioning systems, as well as to study and determine the optimum parameters for the operation of the unit in relation to the basic functions of a car.

## GENERAL DESCRIPTION

The Automobile Air Conditioning Trainer, "TAAU", consists, basically, of a compressor driven through a belt by a motor that simulates the engine of a car.

The number of revolutions of the engine and, therefore, the compressor, can be adjusted with a variable frequency drive.

The air supplied by the fans enters the cooling system through the condenser to undergo a refrigeration cycle through that system.

There is also an evaporator with fan, expansion valve, filter and storage tank.

Apart from the air conditions change, the unit has been designed to study the refrigeration circuit too by strategically locating temperature sensors, monometers and flowmeters, which enable the user to study the refrigeration cycle.

All the components of the system are typical elements employed in the car industry and are directed to the practice.

## SPECIFICATIONS

Bench-top unit.

Anodized aluminum structure and panels of painted steel.

Main metallic elements in stainless steel.

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

A condenser (radiator).

An evaporator.

Two refrigeration fans.

A filter.

A electric motor (to simulate the car's engine).

A variable frequency drive to adjust the number of revolutions of the motor between 300 and 1500 r.p.m.

A variable area compressor.

An expansion valve.

A storage tank.

A compartment made of methacrylate with ventilation windows.

A safety pressure switch that stops the compressor at 14 bars.

Six "J" type temperature sensors.

A low pressure manometer for the coolant to measure the pressure before the compressor.

A high pressure manometer for the coolant to measure the pressure after the compressor.

A high pressure manometer for the coolant to measure the pressure after the condenser.

Flow meter of the coolant, range: 5-60 l./h.

Electronic console:

Metallic box.

Temperature sensors connectors.

Digital display for the temperature sensors.

Digital display for the internal temperature.

Digital display for the electric motor speed.

Selector for the temperature sensors.

Compressor switch.

Switches and regulators for the fans flow (0-100%).

Switch and regulator for the electric motor speed (0-100%).

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.



TAAU detail

## EXERCISES AND PRACTICAL POSSIBILITIES

- 1.- Study of the typical elements of a refrigeration system.
- 2.- Simulation of the speed variation of a car.
- 3.- Cooling in function of the condenser's fan.
- 4.- Cooling in function of the compartment inlet.
- 5.- Energy balance in the evaporator and condenser.
- 6.- Determination of the performance of the system.
- 7.- Experimental determination of the air specific heat capacity.
- 8.- Optimum determination of the parameters that take part in an air conditioning process.

Additional practical possibilities:

- 9.- Calibration of sensors.

## REQUIRED SERVICES

- Electrical supply: three-phase, 380V./50 Hz. or 208V./60 Hz., 20 kW.

## RECOMMENDED ACCESSORIES (Not included)

For refilling R134a refrigerant and maintenance, we recommend:

- T/KIT1. Maintenance Kit, containing: vacuum pump, hoses and manometers.
- T/KIT2. Maintenance Kit, containing: leakage detector.
- R134a refrigerant ( to be acquired by the customer locally).

## DIMENSIONS AND WEIGHTS

TAAU:

Unit:

-Dimensions: 1000 x 600 x 500 mm. approx.  
(39.37 x 23.62 x 19.68 inches approx.)

-Weight: 70 Kg. approx.  
(154.32 pounds approx.)

Electronic console:

-Dimensions: 490 x 330 x 310 mm. approx.  
(19.29 x 12.99 x 12.2 inches approx.)

-Weight: 10 Kg. approx.  
(22 pounds approx.).

## AVAILABLE VERSIONS

Offered in this catalogue:

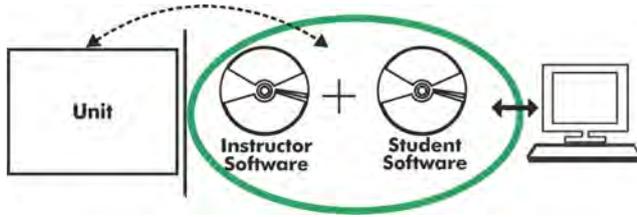
- TAAU. Automobile Air Conditioning Trainer.

Offered in other catalogue:

- TAAUC. Computer Controlled Automobile Air Conditioning Trainer.

## Optional

### TAAU/ICAI. Interactive Computer Aided Instruction Software System:



Without any 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 Workgroups, Tasks and Training sessions.**

**Creation and Integration of Practical Exercises and Multimedia Resources.**

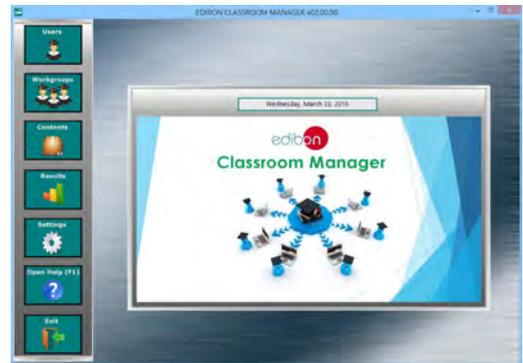
**Custom Design of Evaluation Methods.**

**Creation and assignment of Formulas & Equations.**

**Equation System Solver Engine.**

**Updatable Contents.**

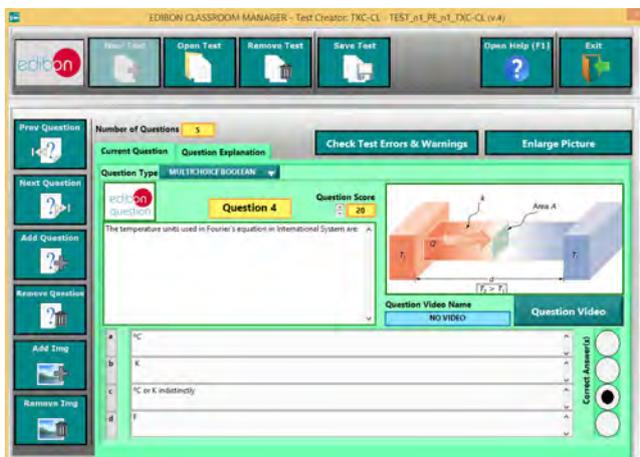
**Report generation, User Progression Monitoring and Statistics.**



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

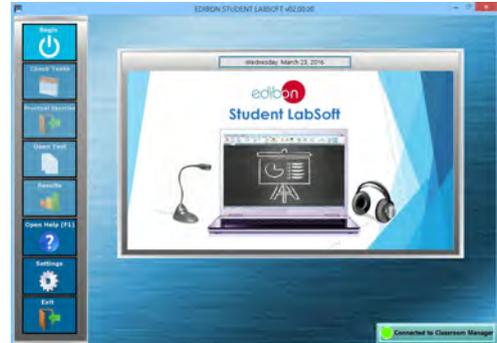
**-ESL-SOF. EDIBON Student Labsoft (Student Software).**

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.

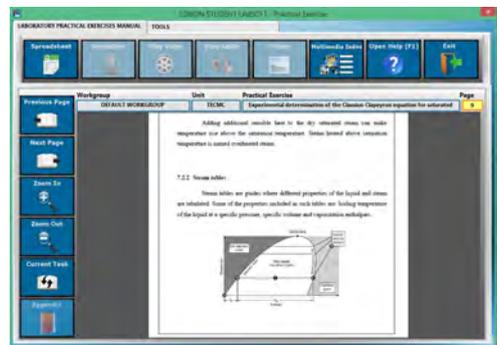
Innovative features:

- 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.**

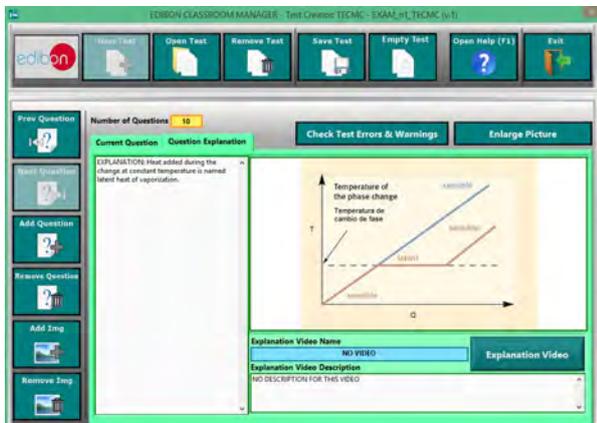
For more information see ICAI catalogue. Click on the following link:  
[www.edibon.com/products/catalogues/en/ICAI.pdf](http://www.edibon.com/products/catalogues/en/ICAI.pdf)



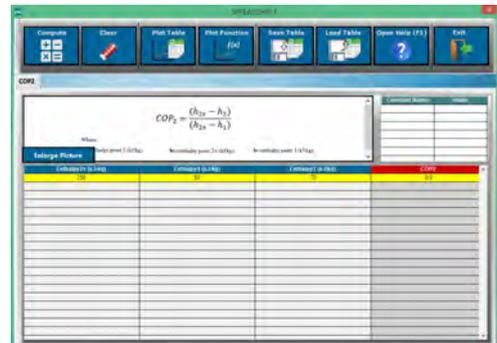
ESL-SOF. EDIBON Student LabSoft (Student Software)  
Application Main Screen



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:

