Engineering and Technical Teaching Equipment

Automotive Engine Cooling Circuit Unit

AV-ECC

www.edibon.com
PRODUCTS
2.- ELECTRONICS



INTRODUCTION

Automotive electronics is the branch of mechatronics focused on the electrical and electronic equipment installed in cars. The importance of electronic systems in cars has been increasing year by year till reaching one of the main parts of the automobiles nowadays.

The electronic systems have replaced a lot of functions performed manually or by mechanical systems, like the fuel injection system, the control of emission gases, the safety system, the checking of the car liquids, the comfort system, the throttle control and a long etc.

The Automotive Engine Cooling Circuit Unit, "AV-ECC", has been designed by EDIBON to teach the electronic components, sensors and actuators related to the engine cooling systems used in the automotive field.

GENERAL DESCRIPTION

The Automotive Engine Cooling Circuit Unit, "AV-ECC", provides a practical solution to the introduction of the engine cooling systems electronics used in the automotive field nowadays.

The components included in the "AV-ECC" are focused on different functions, such as the heat exchangers operation, the coolant circuit, the temperature sensors, the electronic control unit, etc.

The "AV-ECC" unit is provided with a different set of practical exercises, through which the student will understand how the components used in the engine cooling systems work.

SPECIFICATIONS

The "AV-ECC" unit is mounted on a metallic frame.

The "AV-ECC" unit includes the following elements:



AV-ECC detail

- Power supply components:
  - Power supply:
    - Operating voltage: 12 VDC.
  - Car ignition switch.
- Control components:
  - Electronic control unit.
  - Control switch.
  - Tank level switch.
  - Power on indicator for the actuators.
  - Temperature sensors:
    - One temperature sensor in each circuit stage.
    - Temperature meter for the engine and the different circuit stages.
- Coolant circuits:
  - Circuit to cool the engine.
  - Circuit to heat the passenger cabin.
- Actuator components:
  - Simulated engine.
  - Engine cooling fan.
  - Passenger cabin fan.
  - Engine coolant pump.
  - Solenoid valve to activate the circuit to heat the passenger cabin.

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.- Function of the components of the main coolant circuit.

2.- Function of the components of the auxiliary circuit to heat the passenger cabin.

3.- Automatic activation of the engine cooling fan.

4.- Coolant temperature sensor signal from the engine.

- Several other exercises can be done and designed by the user.

REQUIRED SERVICES

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

DIMENSIONS AND WEIGHTS

AV-ECC:

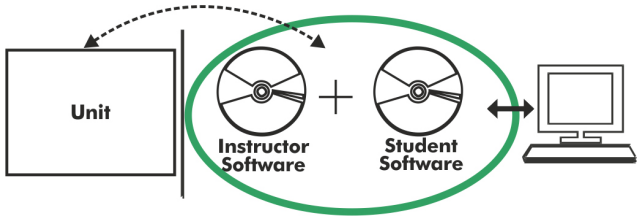
Unit:

- Dimensions: 1550 x 700 x 1500 mm approx.
  (61.02 x 27.55 x 59.05 inches approx.)
- Weight: 90 Kg approx.
  (198 pounds approx.)

Control-Interface Box:

- Dimensions: 640 x 320 x 330 mm approx.
  (25.19 x 12.59 x 12.99 inches approx.)
- Weight: 25 Kg approx.
  (55 pounds approx.)

AV-ECC/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).

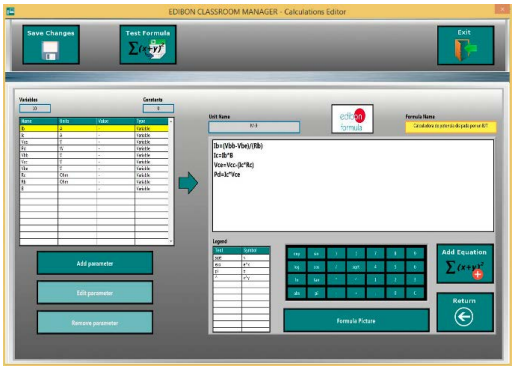
ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual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

Innovative features:

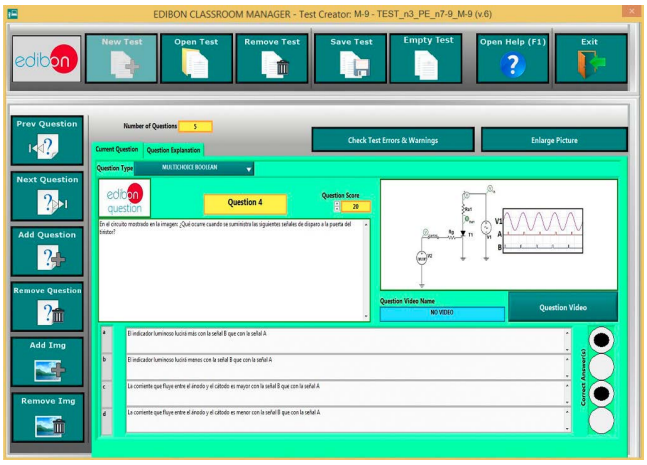
- **User Data Base Management.**
- **Administration and assignment of Workgroup, Task and Training sessions.**
- **Creation and Integration of Practical Exercises and Multimedia Resources.**
- **Custom Design of Evaluation Methods.**
- **Creation and assignment of Formulas & Equations.**
- **Equation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



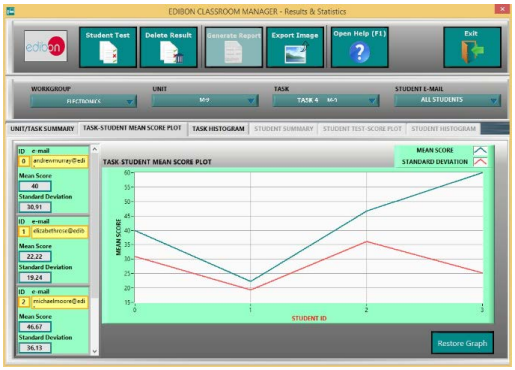
ECM-SOF. EDIBON Classroom Manager (Instructor Software) Application Main Screen



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

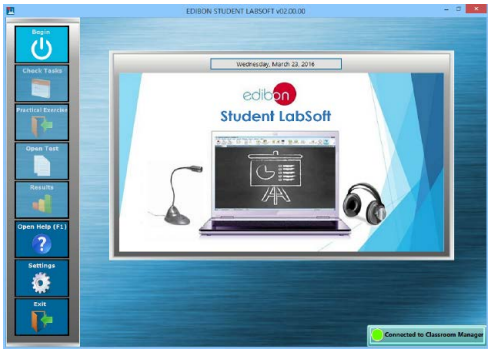
Student Software

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

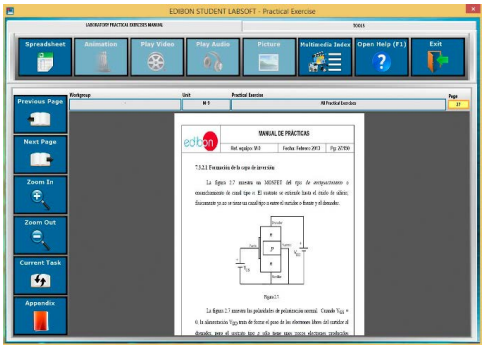
ESL-SOF is the application addressed to the Students that helps them to understand theoretical concepts by means of practical exercises and to prove their knowledge and progression by performing tests and calculations in addition to Multimedia Resources. Default planned tasks and an Open workgroup are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



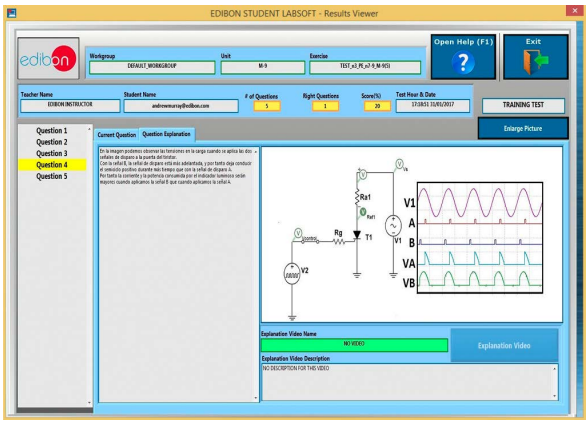
ESL-SOF. EDIBON Student LabSoft (Student Software) Application Main Screen



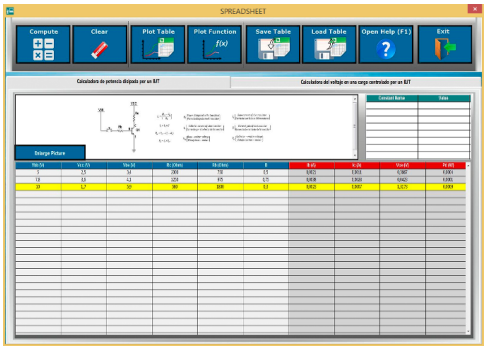
EPE. EDIBON Practical Exercise Program Package Main Screen

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

www.edibon.com/en/interactive-computer-aided-instruction-software



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. Móstoles Tecnológico.
28935 MÓSTOLES. (Madrid). ESPAÑA - SPAIN.
Tel.: 34-91-6199363 Fax: 34-91-6198647
E-mail: edibon@edibon.com Web: **www.edibon.com**

Edition: ED01/25
Date: June/2025

REPRESENTATIVE: