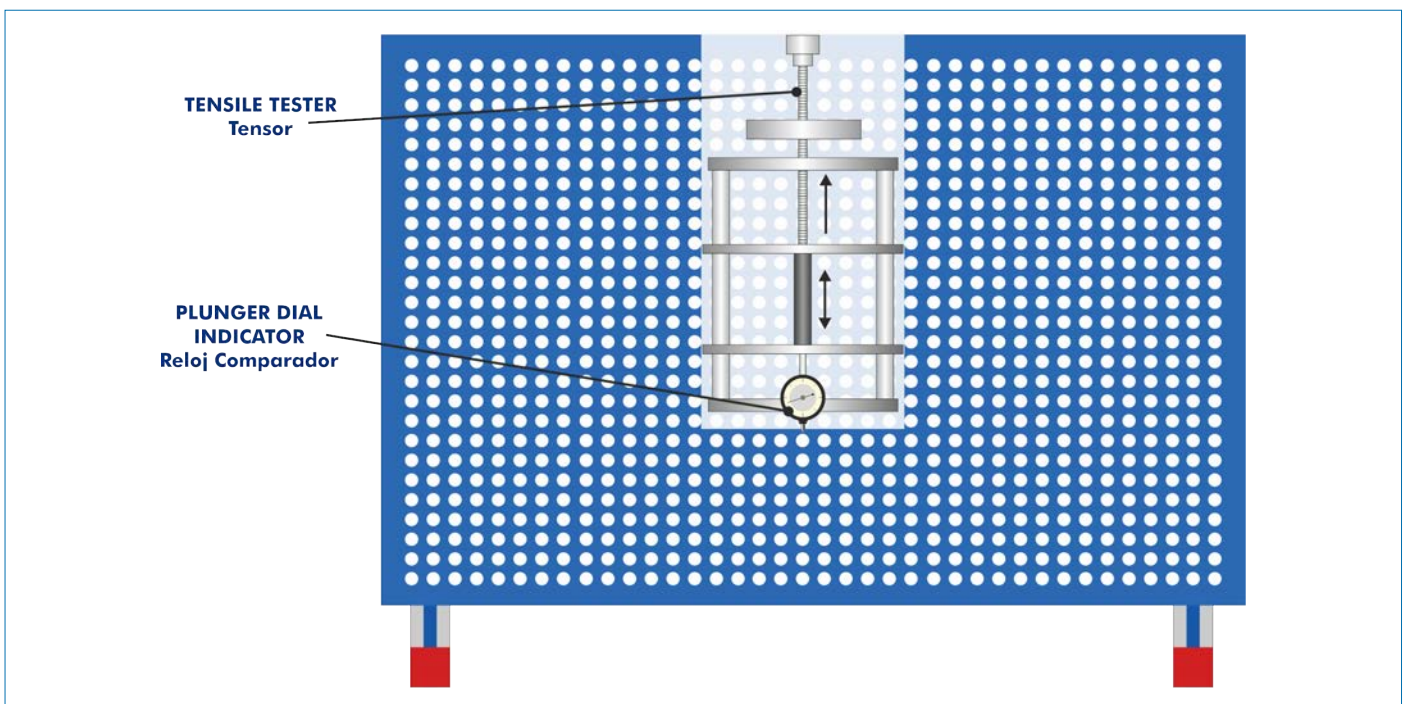


### PROCESS DIAGRAM AND UNIT ELEMENTS ALLOCATION



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

Strength of materials is a subject of mechanical engineering, industrial engineering and structural engineering that studies the strain in deformable solid models. Strength is defined as the capacity to withstand stresses or loads applied on a body without permanently breaking, deforming or damaging it.

The tests related to this discipline are based on obtaining a relation between the forces applied to a material, called loads, and the strains and displacements generated on that material.

One of the most typical experiments is the tensile test. It is a mechanical test to determine the strength of a material by subjecting it to stress. It is classified as a destructive test (the material suffers failure or significant damage in its structure) in which a specimen is subjected to a tensile load till the material is broken.

The Tensile Tester Unit, "MTTU", has been designed to study the tensile tests on specimens made of different material.

## GENERAL DESCRIPTION

With the Tensile Tester Unit, "MTTU", tensile test can be performed. A specimen made of different materials is subjected to an increasing axial tensile stress till failure. This unit allows the user to perform tensile tests with different materials, calculate the maximum tensile force, distinguish between the different regions of a stress-strain chart of a material subjected to tension, and obtain the yield point of the material.

The unit works with a specimen fitted between two bolts and protected by a PMMA protective cover. The bolts fix the material under study, fastening it by their ends.

Once the specimen is installed, a force is applied with the steering wheel till the material breaks. The backward movement of the springs when the specimen is broken is reduced by oil dampers installed between the movable and fixed parts.

During this process, the elongation of the material subjected to a specific tensile force can be measured. The measurement is obtained with the dial gauges and/or the digital caliper included.

The unit is supplied with a panel where the mechanism can be mounted for a more convenient operation.

## SPECIFICATIONS

Anodized aluminum frame and panels made of painted steel.

Main metallic elements made of stainless steel.

Case and protector for the specimens.

Structural panel of dimensions: 660 x 890 mm.

Two guide bars of stainless steel.

Protector for the specimen of PMMA.

Three springs.

Dial gauge, range: 0 - 20 mm; accuracy: 0.01 mm.

Caliper. Digital.

### Test specimens:

Twelve specimens made of S235JR steel (2 x 2 mm).

Twelve specimens made of aluminum, purity 99.5 % (2 x 2 mm).

Twelve specimens made of aluminum H-111, "Duralumin" (2 x 2 mm).

Twelve specimens made of PVC (5 x 3 mm).

Twelve specimens made of Nylon (2 x 2 mm).

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



MTTU detail

## EXERCISES AND PRACTICAL POSSIBILITIES

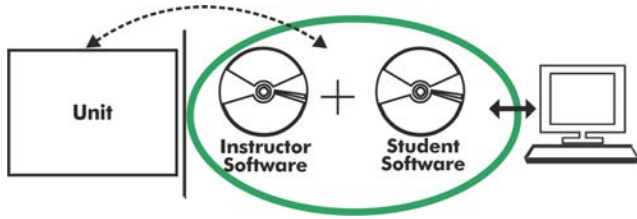
- |   |  |
|---|--|
| 1.- Determination of the stress withstood by a material.                    | Additional practical possibilities:  |
| 2.- Study of the behavior of a material in the plastic and elastic regions. | 5.- Study and representation of the stress-strain curve for different materials. |
| 3.- Determination of the yield strength.                                    | 6.- Determination of the elastic modulus or Young's modulus.                     |
| 4.- Determination of the ultimate tensile strength.                         |  |

## DIMENSIONS AND WEIGHTS

MTTU:

- Dimensions: 660 x 100 x 500 mm approx. (25.98 x 3.93 x 19.68 inches approx.)
- Weight: 20 Kg approx. (44 pounds approx.)

**MTTU/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.

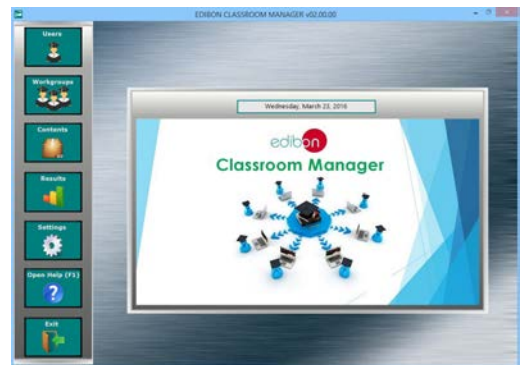
Instructor Software

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

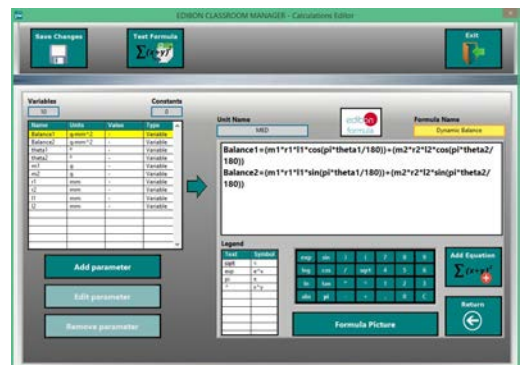
ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual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

Innovative features:

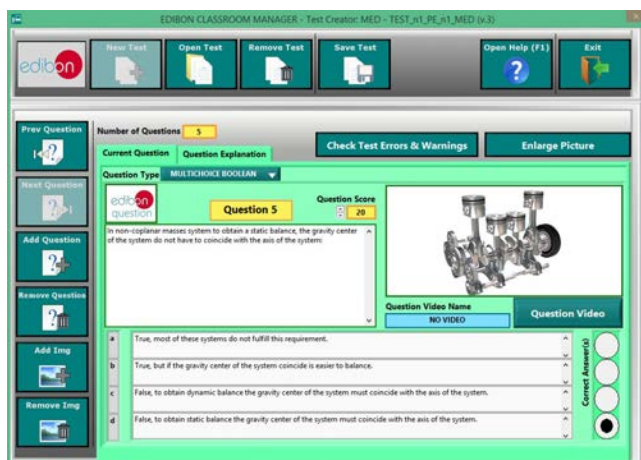
- User Data Base Management.
- Administration and assignment of Workgroup, Task and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.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

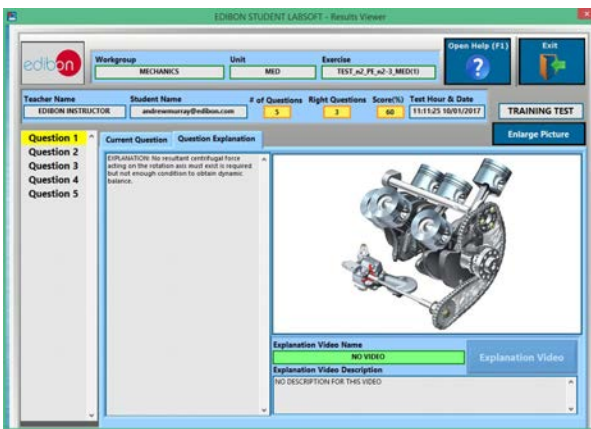
[www.edibon.com/en/files/expansion/ICAI/catalog](http://www.edibon.com/en/files/expansion/ICAI/catalog)



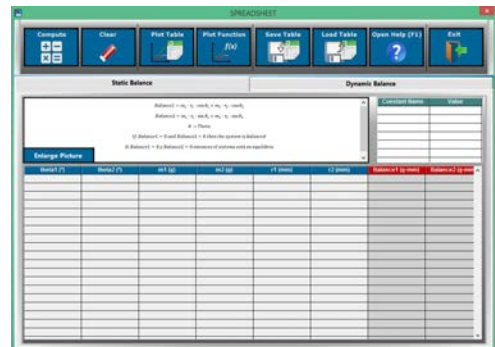
ESL-SOF. EDIBON Student LabSoft (Student Software)  
Application Main Screen



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.



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REPRESENTATIVE:

