Euler Buckling Modes Unit

MEBM

Engineering and Technical Teaching Equipment

www.edibon.com
PRODUCTS
7.- MECHANICS AND 14.-BIOMEDICAL ENGINEERING

INTRODUCTION

Buckling is a phenomenon called elastic instability that can occur in slender compressed elements, and is manifested by the occurrence of significant displacements transverse to the main compression direction.

In structural engineering, the phenomenon appears mainly in columns and columns, and results in the appearance of an additional bending in the column when it is subjected to axial forces of certain importance.

The Euler buckling cases define the possible forms of buckling in slender bodies (beams, members, etc.). Buckling occurs as a result of a longitudinal compressive force that causes the body or element to lose its stability. In the case of buckling, the element deforms.

The critical Euler load depends on the length of the member, the material, its cross-section and the support conditions at the ends.

The Euler Buckling Modes Unit, "MEBM", designed by EDIBON allows the visualization of the four Euler buckling cases of an elastic bar with the four forms of support and to study the relationship between the buckling length, critical load and the different forms of support.

GENERAL DESCRIPTION

With the Euler Buckling Modes Unit, "MEBM", the four Euler buckling cases are demonstrated, for which four elastic bars are fixed or supported in a frame and subjected to compression load with a system of weights.

The elastic bars can be free or supported by embedment or articulation and different weights can be placed on the upper supports in a staggered manner to apply the compression load until buckling starts and the axes of the bars are laterally deformed determining the critical buckling load.

The different supports of the elastic bars allow the study of:

Free - fixed end.

Pinned - pinned end.

Fixed - pinned end.

Fixed - fixed end.

The buckling length can be easily determined with the help of a grid located on the rear wall of the frame.

SPECIFICATIONS

Bench-top unit with adjustable legs.

Anodized aluminum frame and panels made of painted steel.

The "MEBM" unit is mainly composed of:

Support frame for the test bars.

Grid on the rear wall to facilitate the measurement of the buckling length.

Fixed and pinned end supports.

Four elastic bars:

Length: 180 mm.

Cross-section: 0.5 x 10 mm.

Material: Steel.

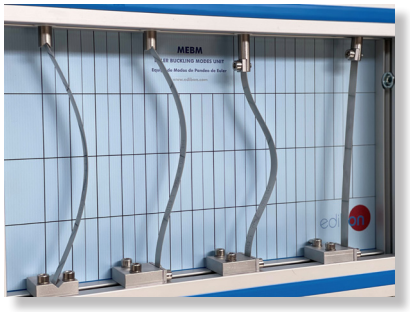
Weights:

Ten weights of 500 gr.

Five weights of 100 gr.

Four weights of 50 gr.

Storage case.



MEBM detail

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.- Representation of the Euler buckling cases:
Free - fixed end.
Pinned - pinned end.
Fixed - pinned end.
Fixed - fixed end.

2.- Study of the relationship between the buckling length and the critical buckling load.

3.- Study of the relationship between the critical buckling load and the various forms of support.

Additional practical possibilities:

4.- Study of the relationship between the buckling length and the different forms of support.

DIMENSIONS AND WEIGHTS

MEBM:
- Dimensions: 420 x 460 x 730 mm approx. (16.53 x 18.11 x 28.74 inches approx.).
- Weight: 5 Kg approx. (11 pounds approx.)

SIMILAR UNITS AVAILABLE

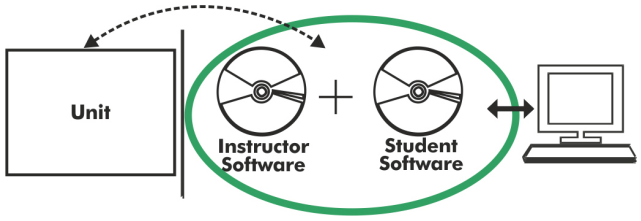
Offered in this catalog:

- MEBM. Euler Buckling Modes Unit.

Offered in other catalogs:

- MFLT. Strut Buckling Unit.
- MUP. Universal Buckling Unit.

MEBM/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.

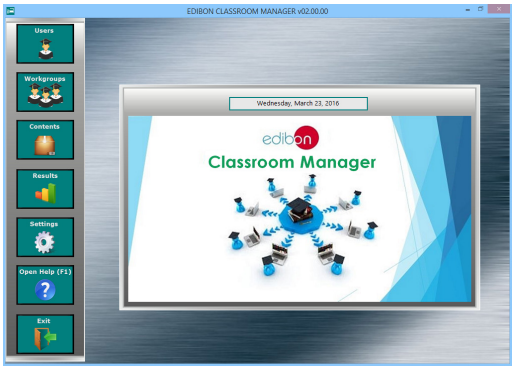
Instructor Software

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

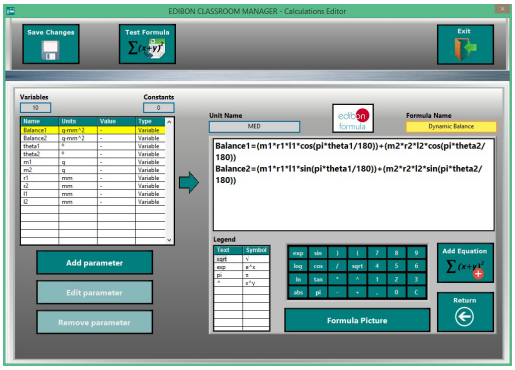
ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual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

Innovative features:

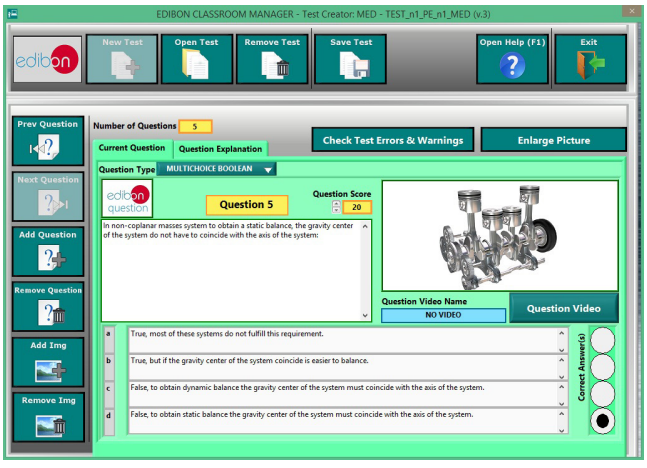
- **User Data Base Management.**
- **Administration and assignment of Workgroup, Task and Training sessions.**
- **Creation and Integration of Practical Exercises and Multimedia Resources.**
- **Custom Design of Evaluation Methods.**
- **Creation and assignment of Formulas & Equations.**
- **Equation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



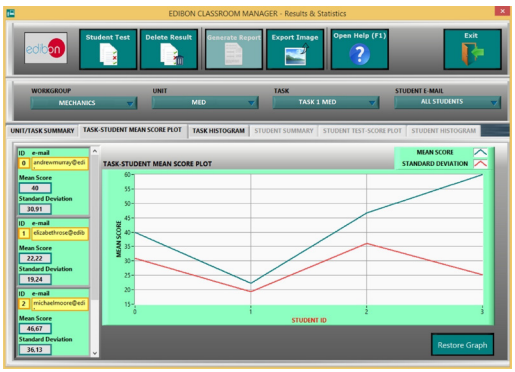
ECM-SOF. EDIBON Classroom Manager (Instructor Software) Application Main Screen



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.

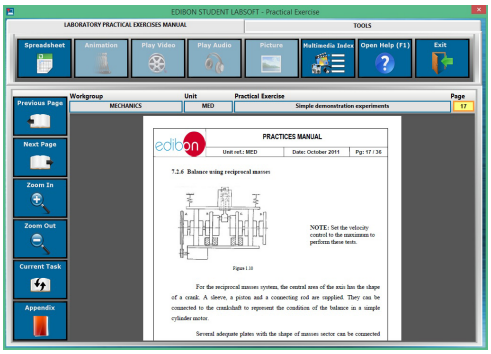
Innovative features:

- **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.**

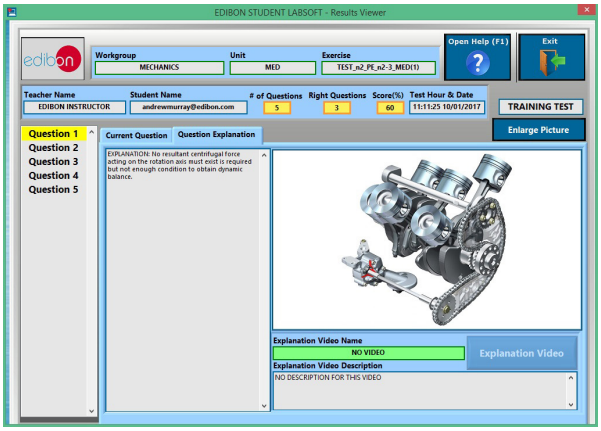
For more information see **ICAI** catalogue. Click on the following link:

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

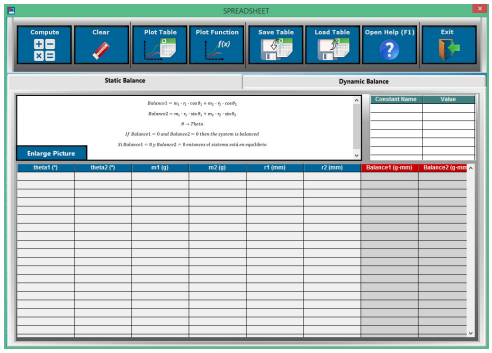
ESL-SOF. EDIBON Student LabSoft (Student Software) Application Main Screen



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: