

INTRODUCTION

Bending is a deformation found in some structural elements subjected to a bending moment in a direction perpendicular to its longitudinal axis, caused by the application of loads and by its own weight.

Its study is important since there are structural elements, such as beams, which are designed to work mainly under flexure. They are widely used in the construction sector to build walkways and bridges, to hold the frame of buildings, etc.

The Beam Deflection Unit, "MFV", enables the student to demonstrate the fundamentals of bending by studying the deflection produced in metallic flat bars, which simulate the behavior of beams, subjected to different loads.

GENERAL DESCRIPTION

The Beam Deflection Unit, "MFV" has been designed to enable the students to observe and study the following phenomena in simply supported beams and cantilever beams:

Relation between the deflections and the applied loads.

Effect of the length and the cross section on the beam behaviour. Ex: deflection load ratio.

The "MFV" unit consists of an aluminum and stainless steel structure to carry out experiment with metal beams up to a length of 1 m. Three beams with different cross section are supplied.

The structure makes it easy to study cantilevers holding the beam by one end, or beams simply supported on two points. The "MFV" unit gives us the possibility of modifying the position of the supporting and holding points.

It has a graduated ruler fixed on the structure that allows to obtain measures easily in different points of the beam.

The weights will be hung from hooks, in order to apply the load on any point in the beam.

SPECIFICATIONS

Bench-top unit.

Anodized aluminum frame and panels made of painted steel.

Main metallic elements made of stainless steel.

The "MFV" unit mainly consists of:

Metallic guide with a graduated ruler for positioning the different supports.

Two removable stainless steel supports.

Removable stainless steel cantilever support.

Dial gauge:

Range: 0 – 25 mm.

Accuracy: 0.01 mm.

It allows experimentation with beams up to 1000 mm length for their study.

Three test rectangular beams (made of stainless steel) with different cross sections and 1 m of length are supplied.

The unit allows test as:

Cantilever beam.

Beam fixed at one end and simply supported at the other end.

Simply supported beam.

Adjustable legs for balancing the unit.

Manuals: This unit is supplied with the following manuals: Required services, Assembly and Installation, Starting-up, Security, Maintenance and Practices manual.

Required elements (Not included):

- SET C. Steel Hook and Mass Set 3 kg. (2 units).



MFV detail

EXERCISES AND PRACTICAL POSSIBILITIES

- | | |
|---|---|
| 1.- Study of the characteristics of simply-supported and cantilever beams. | 10.- The effect of a cross-section in a cantilever with a load on one of its ends. |
| 2.- Determination of the relationship between applied load and deflection. | 11.- Beam supported by two points and subjected to a different momentum of uniform bending. |
| 3.- Beam supported on its two ends with a central loading point. | 12.- Study of bending, application of loads at different points with fixed or free ends. |
| 4.- Study of the variation of length in deflection. | |
| 5.- The effect the beam's length has on a centrally loaded beam supported by its two ends. | |
| 6.- The effect of the cross-section of deflection of beams. | |
| 7.- The effect the beam's section has on a centrally loaded beam supported on its two ends. | |
| 8.- Cantilever beam with a load on one of its ends. | |
| 9.- The effect the beam's length has on a cantilever with a load on one of its ends. | |

REQUIRED ELEMENTS (Not included)

- SET C. Steel Hook and Mass Set 3 kg. (2 units).

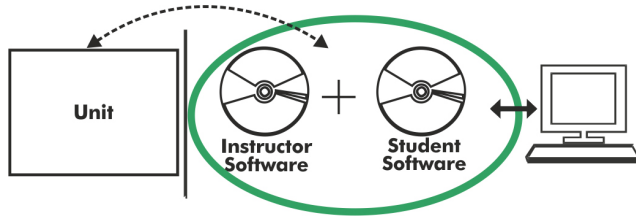
Each "C Type" set includes:

- 1 Weight of 1000 gr (2.20 pounds approx.)
- 2 Weights of 500 gr (1.10 pounds approx.)
- 2 Weights of 200 gr (0.44 pounds approx.)
- 6 Weights of 100 gr (0.22 pounds approx.)
- 1 Support hook of 500 gr (1.10 pounds approx.)

DIMENSIONS AND WEIGHTS

MFV:

- Dimensions: 1200 x 400 x 400 mm approx.
(47.24 x 15.74 x 15.74 inches approx.).
- Weight: 20 Kg approx.
(44 pounds approx.).

MFV/ICAI. Interactive Computer Aided Instruction Software:

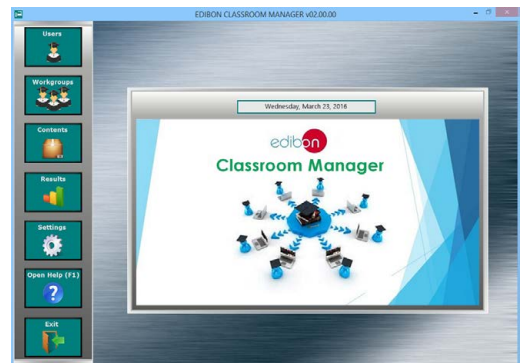
With no physical connection between unit and computer, this complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM-SOF) totally integrated with the Student Software (EDIBON Student Labsoft -ESL-SOF). Both are interconnected so that the teacher knows at any moment what is the theoretical and practical knowledge of the students.

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

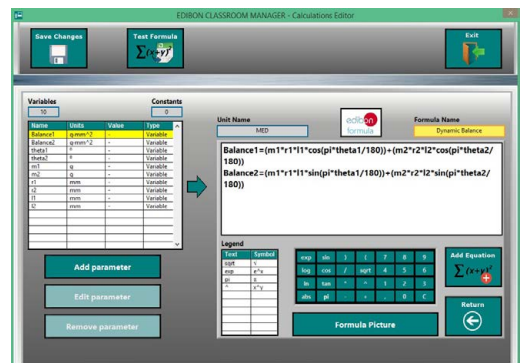
ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual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

Innovative features:

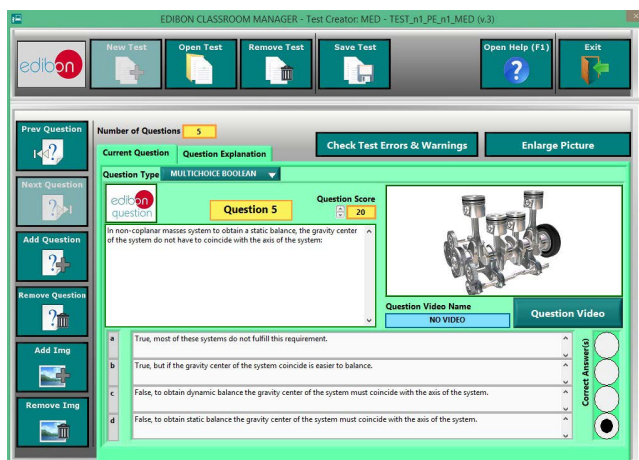
- User Data Base Management.
- Administration and assignment of Workgroup, Task and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.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

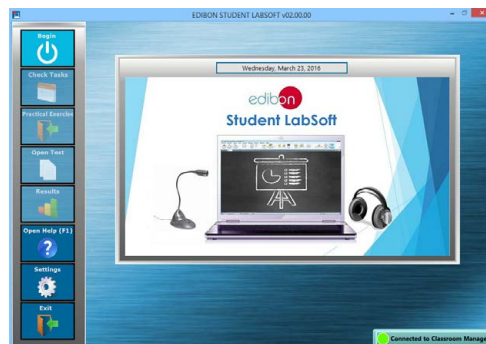
ESL-SOF is the application addressed to the Students that helps them to understand theoretical concepts by means of practical exercises and to prove their knowledge and progression by performing tests and calculations in addition to Multimedia Resources. Default planned tasks and an Open workgroup are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

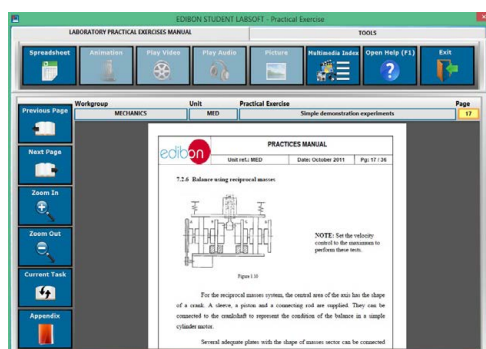
- **Student Log-In & Self-Registration.**
- **Existing Tasks checking & Monitoring.**
- **Default contents & scheduled tasks available to be used from the first session.**
- **Practical Exercises accomplishment by following the Manual provided by EDIBON.**
- **Evaluation Methods to prove your knowledge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

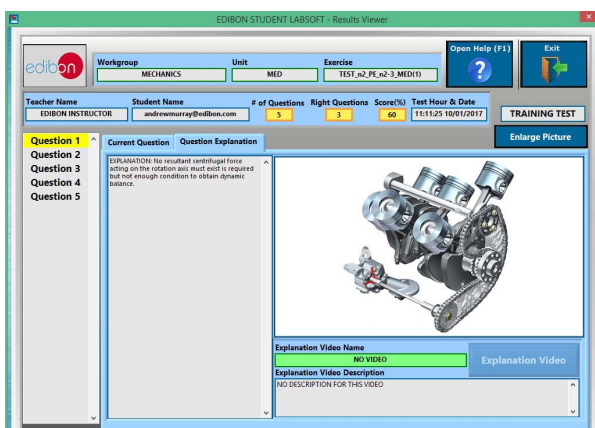
www.edibon.com/en/interactive-computer-aided-instruction-software



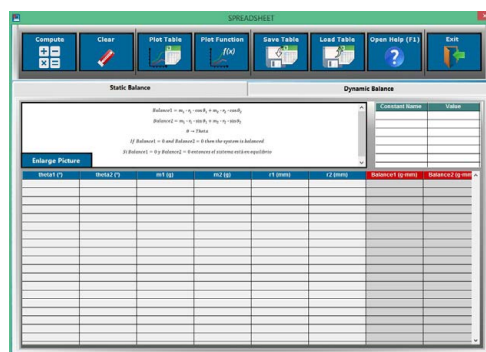
ESL-SOF. EDIBON Student LabSoft (Student Software)
Application Main Screen



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:

