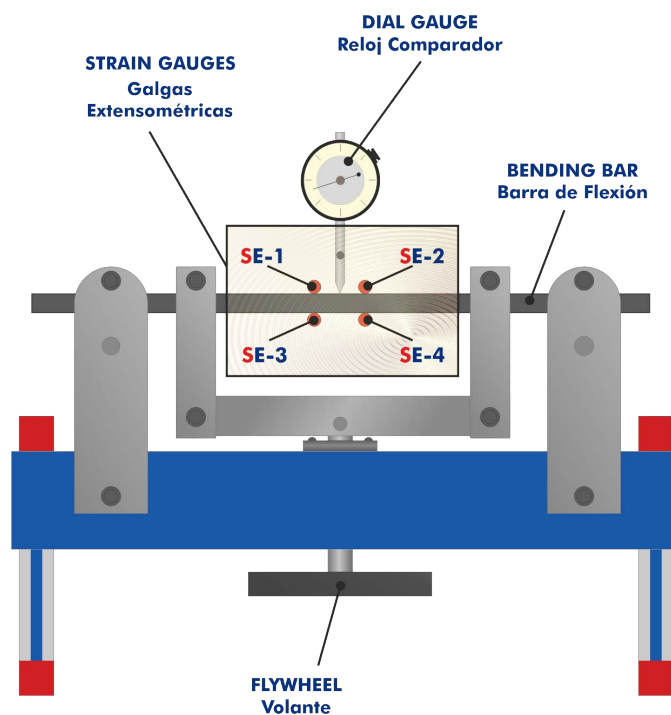




Electronic console

PROCESS DIAGRAM AND UNIT ELEMENTS ALLOCATION



INTRODUCTION

The gauge factor is the relation of the fractional variation of electric resistance and the fractional variation of the bar length when subjected to elongation.

The main application of the gauge factor study is the determination of the sensitivity to expansion of strain gauges. Deformation is measured with a dial gauge and, at the same time, strain is measured with the aid of a strain gauge full bridge configuration. As fundamental characteristic, the unknown k factor can be calculated from the measurements.

The Unit for Determining the Gauge Factor of Strain Gauges, "MFGE", allows to determine experimentally the gauge factor of strain gauges in function of the strain generated on the bar when it is subjected to pure bending.

GENERAL DESCRIPTION

The Unit for Determining the Gauge Factor of Strain Gauges, "MFGE", allows to determine the k factor of strain gauges.

The bar rests on two supports with ball bearings, so that it is possible to work with a load under pure bending.

To perform such determination two point loads must be applied to the bar, with the load application handwheel, connected to a cross-arm, through a spindle that, when rotating the handwheel, leads to the application of a force in two points of the bar with vertical direction downwards. This force causes a deformation on the bar.

There is a dial gauge, to measure the deformation generated. The dial gauge measures the maximum deformation, which is given in the center of the bar.

At the same time, the deformation generated on the surface of the bar is registered by two strain gauges in the compression side and other two strain gauges in the tension side, forming a full Wheatstone bridge. The strain value, expressed in volts, will be read in a console that amplifies the signal of the strain gauges.

The gauge factor (k) can be calculated from the displacement values obtained and the strain gauges measurements.

SPECIFICATIONS

Bench-top unit with adjustable legs.

Soldered and painted steel frame.

The "MFGE" unit mainly consists of:

Bending bar:

Material: stainless steel. Dimensions: 680 x 25 x 12 mm.

The bar is supported on ball bearings at two points, allowing to apply a purely bending stress.

It includes two strain gauges on the tension side and two strain gauges on the compression side in full bridge configuration:

Strain gauge measuring point: full bridge, 120 Ω .

Mechanical load application device. It includes a spindle, a cross-arm and a handwheel.

Dial gauge with adjustable dial for direct deflection measurement, range: 0 – 20 mm, graduations: 0.01 mm.

Electronic console:

Metallic box.

Connectors of the strain gauges.

Display of the strain measurement.

Switch to tare the strain gauges measurement.

Main switch.

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.



MFGE detail

EXERCISES AND PRACTICAL POSSIBILITIES

- | | |
|--|---|
| 1.- Fundamentals of measuring with strain gauges. | 6.- Determination of the bending moments generated when the bar is subjected to a load. |
| 2.- Displacement measurement with a dial gauge. | 7.- Determination of the angle of rotation generated when the bar is subjected to a load. |
| 3.- Determination of the k factor of strain gauges. | |
| 4.- Comparison of the experimental values obtained by strain gauges with theoretical values. | |
| 5.- Determination of the reactions generated when the bar is subjected to a load. | |

REQUIRED SERVICES

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

DIMENSIONS AND WEIGHTS

MFGE:

Unit:

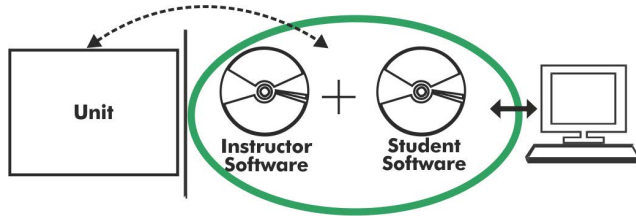
-Dimensions: 720 x 350 x 400 mm approx.
(28.35 x 13.77 x 15.75 inches approx.)

-Weight: 25 Kg approx.
(55.1 pounds approx.)

Electronic console:

-Dimensions: 300 x 190 x 130 mm approx.
(11.81 x 7.48 x 5.11 inches approx.)

-Weight: 2.5 Kg approx.
(5.51 pounds approx.)

MFGE/ICAI. Interactive Computer Aided Instruction Software:

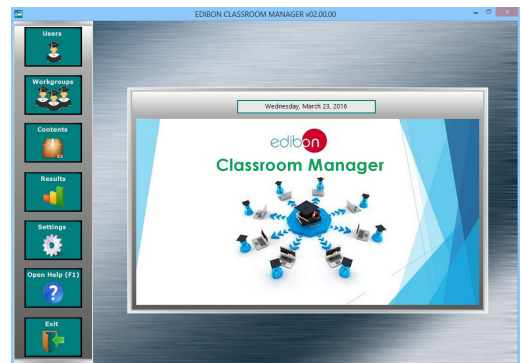
With no physical connection between unit and computer, this complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM-SOF) totally integrated with the Student Software (EDIBON Student Labsoft -ESL-SOF). Both are interconnected so that the teacher knows at any moment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

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

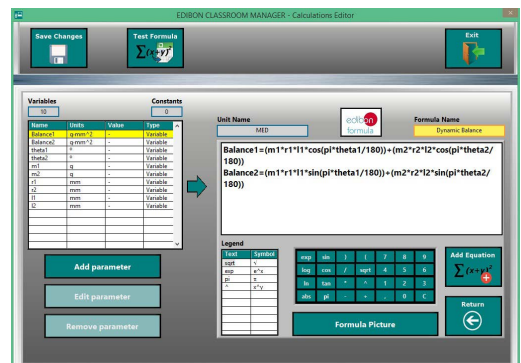
ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual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

Innovative features:

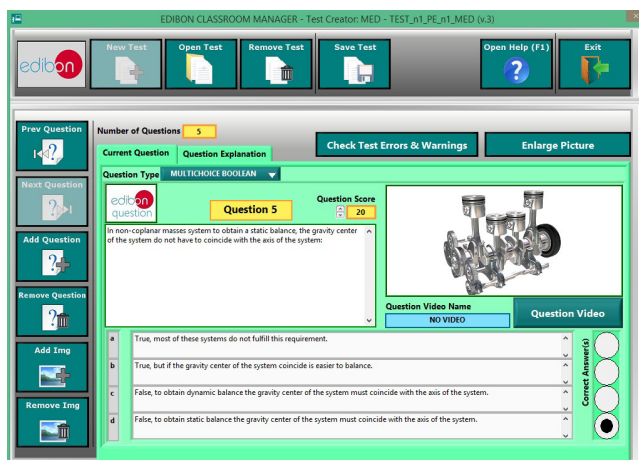
- User Data Base Management.
- Administration and assignment of Workgroup, Task and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.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

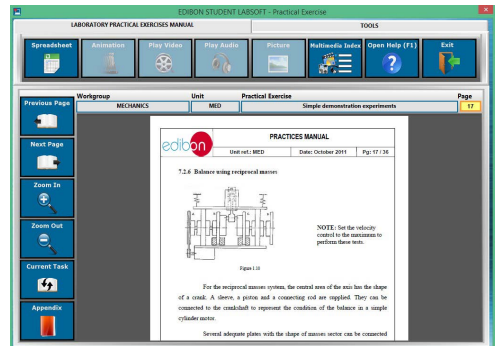
- Student Log-In & Self-Registration.
- Existing Tasks checking & Monitoring.
- Default contents & scheduled tasks available to be used from the first session.
- Practical Exercises accomplishment by following the Manual provided by EDIBON.
- Evaluation Methods to prove your knowledge and progression.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

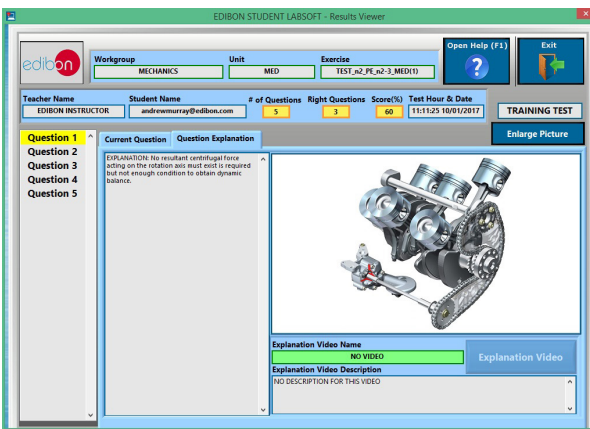
www.edibon.com/en/interactive-computer-aided-instruction-software



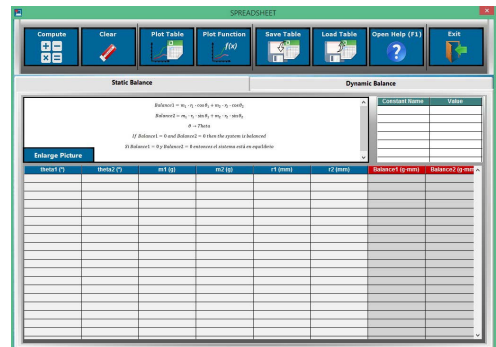
ESL-SOF. EDIBON Student LabSoft (Student Software)
Application Main Screen



EPE. EDIBON Practical Exercise Program Package Main Screen



ERS. EDIBON Results & Statistics Program Package - Question Explanation



ECAL. EDIBON Calculations Program Package Main Screen

BDAS. Data Acquisition System and Sensors:

For being used with mechanical units.

BDAS is designed to monitor the measurements of each mechanical unit from a computer.

* Specifications subject to change without previous notice, due to the convenience of improvement of the product.



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REPRESENTATIVE:

