Unit to Study Gear Train Assembly

INTRODUCTION

A gear mesh is a mechanism used to transfer power from one component to another within a machine.

A gear train is a mechanism formed by several gear pairs engaged in such a way that the driven element of one of them drives the next one.

Gear trains are used when the transmission ratio to be achieved differs greatly from one, the transmission input and output axles are very far away from each other, or when a changeable transmission ratio is sought.

The clearest example in the industry is the gearbox of a vehicle, which has a pair of cogwheels for each gear.

The Unit to Study Gear Train Assembly, "MGTA", facilitates the knowledge and understanding of the transmissions, allowing the student to perform different gear train assemblies for the advanced mechanical transmission technique.

GENERAL DESCRIPTION

The Unit to Study Gear Train Assembly, "MGTA", allows to perform diverse assemblies of gearboxes. The student will essentially learn the practice of assembling gear components in transmissions and will be introduced to the technique of mechanical transmissions.

The unit allows to carry out exercises ensuring the learning of six simple forms of transmission in different combinations. With these six simple forms of transmission, different configurations can be performed putting into practice one's ideas.

For some of the possible configurations, the following will be used: endless screw, straight and helical gears, pulleys, a Norton gearbox and a reverse mechanism.

The steps to follow for an adequate learning are:

Proposal of tasks and understanding of the drawings.

Assembly and adjustment of the parts, gear calibration and check.

Performance of relevant calculations.

The unit will be driven by means of a steering wheel. A great accuracy will be achieved when adjusting the gears, thanks to the anodized aluminum frame couplings.

A case is provided to facilitate transportation and to ensure the protection of components needed for the assembly and learning.

EDIBON offers three transmission assembly kits: Unit to Study Simple Drives Assembly, "MSDA"; Unit to Study Combined Drives Assembly, "MCDA"; and Unit to Study Gear Train Assembly, "MGTA".

SPECIFICATIONS

Bench-top unit with adjustable legs.

Aluminum transportation case.

Anodized aluminum frame and panels made of painted steel.

Pulley gear.

Sliding-wheels gear.

Norton Gearbox.

Straight gears:

    Module m= 2, z= 16, 18, 20, 24, 30, 32, 36, 40, 45, 50, 60, 80.

    Module 1,5, z= 60, 70, 80, 90.

Endless screw gear:

    Endless screw: No. of teeth z = 6.

    Helical wheel: module m = 3.15; No. of teeth z = 62.

Inverter mechanism.

Tool set.

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

EXERCISES AND PRACTICAL POSSIBILITIES

1.- Know the important components of the transmissions.

2.- Know the following forms of transmission:

    Pulley gear.

    Sliding-wheels gear.

    Norton Gearbox.

    Inverter mechanism.

    Wheel shift gear.

    Tilting endless screw.

3.- Perform calculations in mechanical transmissions.

4.- Learn the practical assembly of the various possible configurations of mechanical transmissions, and learn to adjust and align.

5.- Understanding of technical diagrams and familiarization with them.

DIMENSIONS AND WEIGHTS

MGTA:

    - Dimensions of the assembled frame: 1100 x 550 x 500 mm approx. (43.30 x 21.65 x 19.68 inches approx.)

    - Case dimensions: 150 x 445 x 310 mm aprox. (5.90 x 17.52 x 12.20 inches approx.)

    - Toolbox: 311 x 168 x 130 mm aprox. (112.24 x 6.61 x 5.11 inches approx.)

    - Weight: 75 Kg aprox. (165 pounds approx.)

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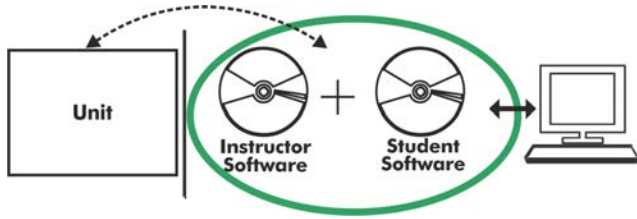
With no physical connection between unit and computer (PC), **this complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM-SOF) totally integrated with the Student Software (EDIBON Student Labsoft -ESL-SOF).** Both are interconnected so that the teacher knows at any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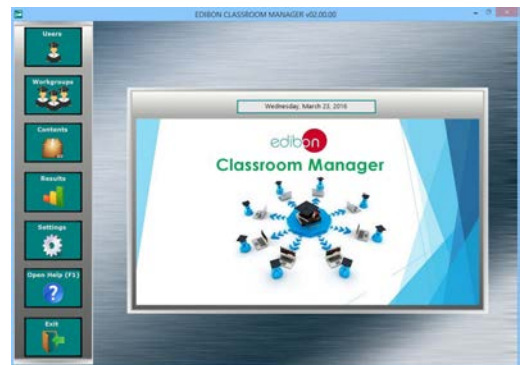
Instructor Software

### - 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
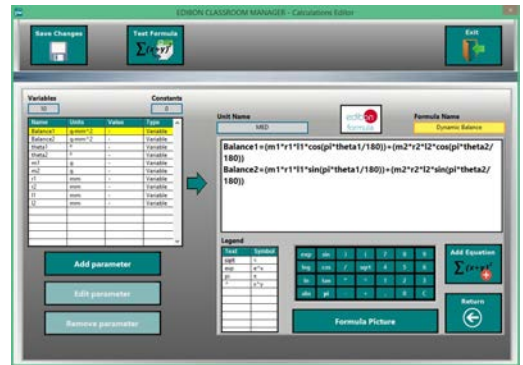
ECAL. EDIBON Calculations Program Package - Formula Editor
Screen
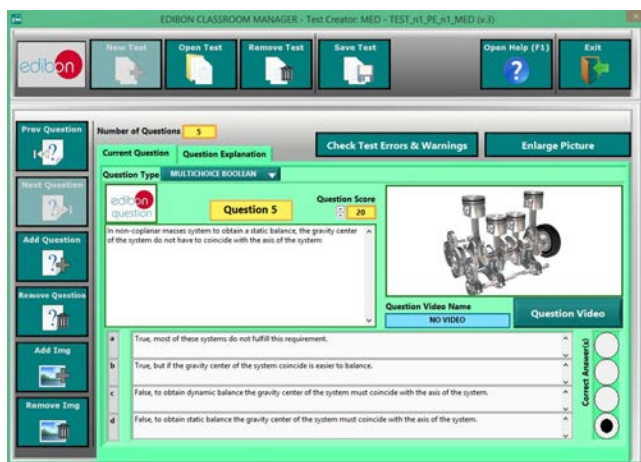
ETTE. EDIBON Training Test & Exam Program Package - Main Screen with
Numeric Result Question

ERS. EDIBON Results & Statistics Program Package - Student
Scores Histogram

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.**

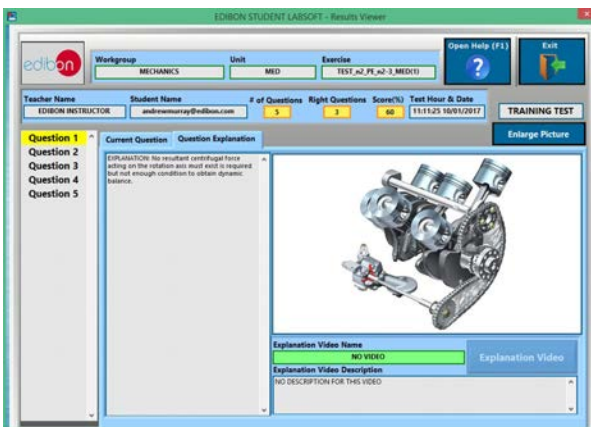For more information see **ICAI** catalogue. Click on the following link:

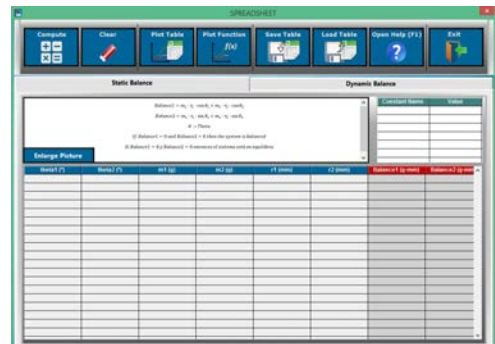www.edibon.com/en/files/expansion/ICAI/catalog

ESL-SOF. EDIBON Student LabSoft (Student Software)
Application Main Screen
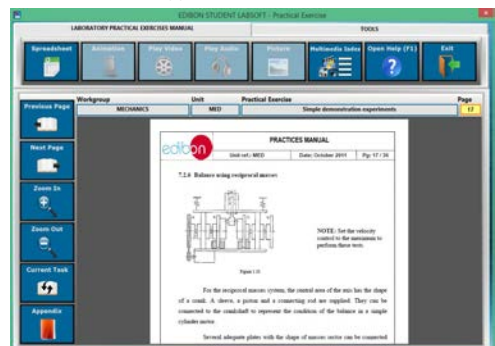
EPE. EDIBON Practical Exercise Program Package Main Screen

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: