edibon

Engineering and Technical Teaching Equipment

WGCM

MGCM

SGCM

BCM

SGCM/2

PGCM

INTRODUCTION

Mechanical transmission is any device that propagates power between two or more elements of a machine.

The most common mechanical transmissions are cables, chains, belts, gears, pulleys, friction wheels, friction discs, camshafts, etc.

Transmissions are used in a wide range of applications in industry. Every machine whose motion is generated by a motor needs to adapt its speed for the correct operation of the unit. The most common application is the transmission in cars.

Different types of transmissions are studied with EDIBON cutaway transmission models, making it possible to clearly observe all their components.

These units keep their mechanical functionality.

All the units are attached to a base plate with handles for an easy transport. Every unit is manually activated.

GENERAL DESCRIPTION

The Cutaway Models of Transmission of Motion Units, "CMTM", of EDIBON are made up of industrial elements and designed in such a way that their application components can be observed by the user, keeping their mechanical functional capacity. The models include adjustable legs, handles for easy transport and an aluminum case.

The Cutaway Models of Transmission of Motion Units, "CMTM", of EDIBON are:

WGCM. Unit to Study a Worm Gear Cutaway Model:

It is a worm gear with shafts perpendicular to each other. It consists of a helical worm screw and a circular cogwheel. Some applications of this device are automatic doors or elevators systems, where motion in one direction and blocking the system by a limit switch are required. Besides, it is designed to transmit great stresses.

MGCM. Unit to Study a Mitre Gear Cutaway Model:

It is a mitre gear. It is made up of bevel gears that consist of two conical cogwheels. This device is used to transmit motion between two perpendicular shafts.

SGCM. Unit to Study a Spur Gear Cutaway Model:

It is a spur gear. This type of gear is the simplest one, normally used for low or medium speeds, since they are noisy if not well-formed.

SGCM/2. Unit to Study a Two-Stage Spur Gear Cutaway Model:

It is a two-stage spur gear. Two-stage gears are used when rotation transmission between shafts cannot be obtained with only one pair of gears.

PGCM. Unit to Study a Planetary Gear Cutaway Model:

It is a planetary gear. It consists of one or more external or planet gears that revolves about a central or sun gear. Planetary gears are normally used as reducers in gearboxes or as differentials.

BDCM. Unit to Study a Variable Speed Trapezoidal Belt Drive Cutaway Model:

It is a variable speed belt drive. Continuously variable gearboxes are the ideal transmission since they change the speed ratio continuously. For that reason they are considered an automatic transmission with infinite number of ratios. Variable speed belt drives are commonly used in motorcycles.

CGCM. Unit to Study a Control Gear Cutaway Model:

It is a control gear. Its function is to control the space between teeth.

DCCM. Unit to Study a Multiple-Disc Clutch Cutaway Model:

It is a multiple-disk clutch. Multiple-disk clutches allow for transmitting higher torques. Such clutches are used in the steering of chain tractors.

BCM. Unit to Study a Bearing Cutaway Model:

It is a pedestal bearing. Bearings are commonly used in industry; their function is to withstand a load while in contact with other body, having relative movement between them.

SPECIFICATIONS

Bench-top unit with adjustable legs.
Each set includes an aluminum transport case.
Anodized aluminum frame and panels made of painted steel.
Units attached to a base plate with handles to facilitate transport.

WGCM. Unit to Study a Worm Gear Cutaway Model:
> Housing material: cast iron/steel.
> External diameter of the worm screw: 8.40 mm.
> External diameter of the gear: 22.23 mm.

MGCM. Unit to Study a Mitre Gear Cutaway Model:
> Housing material: cast iron/steel.
> Diameter of the shaft: 8 mm.
> Gear ratio: 1:1.
> Required power: 0.026 Kw.

SGCM. Unit to Study a Spur Gear Cutaway Model:
> Housing material: cast iron/steel.
> Output cogwheel:
>> Number of teeth: 68.
> Drive pinion:
>> Number of teeth: 24.
> Allowed torque: 54 Nm.
> Allowed number of revolutions: 2800 min^{-1}.

SGCM/2. Unit to Study a Two-Stage Spur Gear Cutaway Model:
> Housing material: cast iron/steel.

PGCM. Unit to Study a Planetary Gear Cutaway Model:
> Housing material: cast iron/steel.
> One sun gear.
> Three planet gears: 21 teeth.
> Ring gear: 64 teeth.

BDCM. Unit to Study a Variable Speed Trapezoidal Belt Drive Cutaway Model:
> Housing material: cast iron/steel.
> Toothed belt made of rubber.

CGCM. Unit to Study a Control Gear Cutaway Model:
> Housing material: cast iron/steel.

DCCM. Unit to Study a Multiple-Disc Clutch Cutaway Model:
> Housing material: cast iron/steel.

BCM. Unit to Study a Bearing Cutaway Model:
> Housing material: cast iron/steel.

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

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EXERCISES AND PRACTICAL POSSIBILITIES

1.- Understanding the main types of transmissions.

2.- Identifying the main elements of different types of transmissions:

    Worm Gear.

    Mitre Gear.

    Spur Gear.

    Two-Stage Spur Gear.

    Planetary Gear.

    Variable Speed Belt Drive.

    Control Gear.

    Multiple-disk Clutch.

    Pedestal Bearing.

3.- Study of the operation of different types of transmission.

4.- Fault analysis and maintenance of different types of transmission.

DIMENSIONS AND WEIGHTS

WGCM:
- Dimensions: 350 x 300 x 140 mm approx. (13.78 x 11.81 x 5.51 inches approx.)
- Weight: 2.5 Kg approx. (5.51 pounds approx.)

MGCM:
- Dimensions: 350 x 300 x 120 mm approx. (13.78 x 11.81 x 4.72 inches approx.)
- Weight: 3 Kg approx. (6.61 pounds approx.)

SGCM:
- Dimensions: 350 x 300 x 200 mm approx. (13.78 x 11.81 x 7.87 inches approx.)
- Weight: 11 Kg approx. (24.25 pounds approx.)

SGCM/2 :
- Dimensions: 350 x 300 x 280 mm approx. (13.78 x 11.81 x 11.02 inches approx.)
- Weight: 20 Kg approx. (44.09 pounds approx.)

PGCM:
- Dimensions: 350 x 300 x 160 mm approx. (13.78 x 11.81 x 6.30 inches approx.)
- Weight: 5 Kg approx. (11 pounds approx.)

BDCM:
- Dimensions: 350 x 300 x 200 mm approx. (13.78 x 11.81 x 7.87 inches approx.)
- Weight: 8 Kg approx. (17.63 pounds approx.)

CGCM:
- Dimensions: 350 x 300 x 160 mm approx. (13.78 x 11.81 x 6.30 inches approx.)
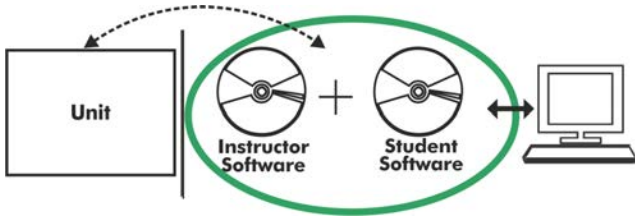- Weight: 10.5 Kg approx. (23.14 pounds approx.)

DCCM:
- Dimensions: 350 x 300 x 200 mm approx. (13.78 x 11.81 x 7.87 inches approx.)
- Weight: 6 Kg approx. (13.22 pounds approx.)

BCM:
- Dimensions: 350 x 300 x 200 mm approx. (13.78 x 11.81 x 7.87 inches approx.)
- Weight: 11.5 Kg approx. (25.35 pounds approx.)

CMTM/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.
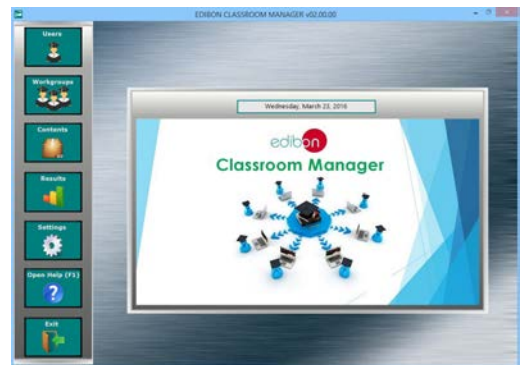
Instructor Software

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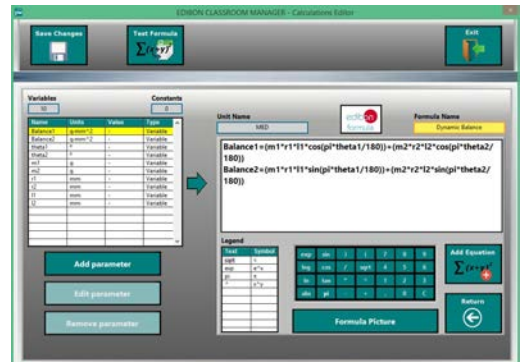
ECAL. EDIBON Calculations Program Package - Formula Editor Screen
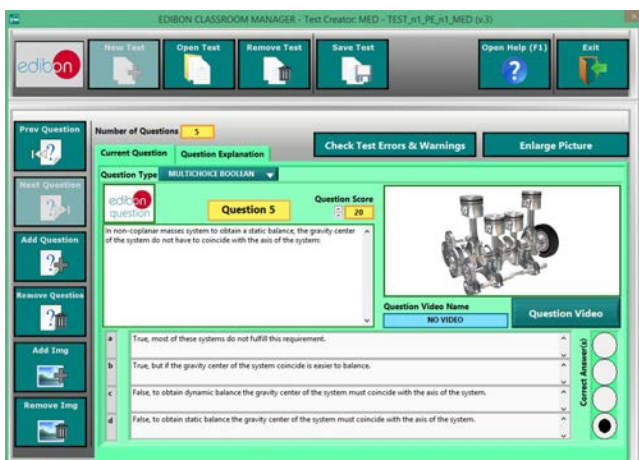
ETTE. EDIBON Training Test & Exam Program Package - Main Screen with Numeric Result Question

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.

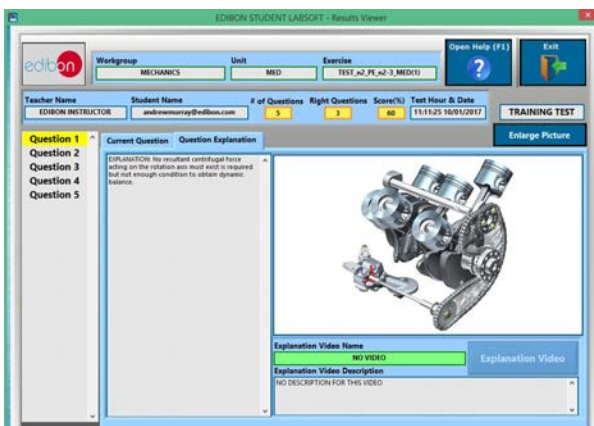For more information see ICAI catalogue. Click on the following link:

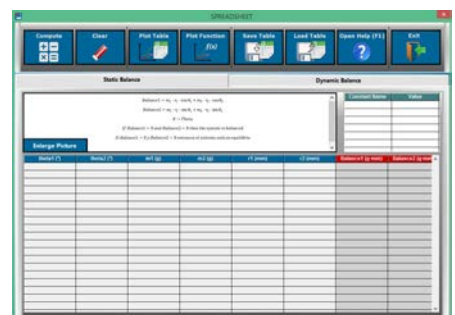www.edibon.com/en/files/expansion/ICAI/catalog

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

Available Student/Module Software:
- ESL-WGCM-SOF.   EDIBON Student Labsoft (Student Software) for Unit to Study a Worm Gear Cutaway Model.
- ESL-MGCM-SOF.   EDIBON Student Labsoft (Student Software) for Unit to Study a Mitre Gear Cutaway Model.
- ESL-SGCM-SOF.   EDIBON Student Labsoft (Student Software) for Unit to Study a Spur Gear Cutaway Model.
- ESL-SGCM/2-SOF.   EDIBON Student Labsoft (Student Software) for Unit to Study a Two-Stage Spur Gear Cutaway Model.
- ESL-PGCM-SOF.   EDIBON Student Labsoft (Student Software) for Unit to Study a Planetary Gear Cutaway Model.
- ESL-BDCM-SOF.   EDIBON Student Labsoft (Student Software) for Unit to Study a Variable Speed Trapezoidal Belt Drive Cutaway Model.
- ESL-CGCM-SOF.   EDIBON Student Labsoft (Student Software) for Unit to Study a Control Gear Cutaway Model.
- ESL-DCCM-SOF.   EDIBON Student Labsoft (Student Software) for Unit to Study a Multiple-Disc Clutch Cutaway Model.
- ESL-BCM-SOF.   EDIBON Student Labsoft (Student Software) for Unit to Study a Bearing Cutaway Model.

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

REPRESENTATIVE: