



Electronic console

INTRODUCTION

Mechanical drive systems and their applications are widely used in industry and engineering and found almost everywhere in our daily life. In this sense, it is essential to know the most important aspects when designing and making a mechanical system able to provide a set of individual elements with motion.

The Basic Unit of Mechanical Drive Systems, “MDSU”, has been designed to facilitate the understanding of a mechanical system as a whole, as well as the relation between the different elements that make it up, its construction, maintenance and the most significant variables when starting it, among them: the alignment of the transmission devices and the type of connection between them, the transmission systems used, such as belts and chains, etc.

GENERAL DESCRIPTION

The Basic Unit of Mechanical Drive Systems, “MDSU”, consists of a main frame where a series of accessories and elements are arranged, distributed in modules of different level, thought to introduce the user in the field of mechanical systems and their components. The elements are assembled to the main frame by quick release fittings that facilitate the assembly of elements in the configuration required by the user for the study. Apart from the main frame, a variable speed rotary motor is included. It will generate the initial motion along a shaft that will drive the rest of mechanical elements of the system, such as belts, gears, chains, etc.

The unit includes a brake to determine the torque generated by the motor directly or along the mechanical system designed by the student using basic components of any mechanical system. Finally, fundamental aspects of mechanical equipment maintenance will be studied, as well as the tools and products employed for that purpose.



ISO 9001: Quality Management (for Design, Manufacturing, Commercialization and After-sales service)



European Union Certificate (total safety)



Certificates ISO 14001 and ECO-Management and Audit Scheme (environmental management)



Certificate and Worlddidac Member

SPECIFICATIONS

Anodized aluminum frame and panels made of painted steel.

The unit includes wheels to facilitate its mobility.

Variable speed electric motor:

1/3 HP.

225/120 volt.

Prony brake.

Set couplings and shafts:

Shafts.

Jaw coupling.

Sleeve coupling.

Set pillow block bearings.

Set of belt drives:

V belt drive.

Set of sheaves (pulleys).

Sheaves and belt gauges.

Belt tensioning gauge.

Set of chain drives:

Sprockets.

Chains.

Chain connecting link.

Chain breaker.

Chain puller.

Gear drives set:

Spur gears.

Bushings.

Measurement devices:

Feeler gauge.

Dial indicator assembly.

Photo-reflective tachometer.

Combination square.

Level.

Tool box:

Screws.

T-Nuts.

Flat Washers.

Corner Brackets.

Shims.

Risers.

Straightedge.

Alignment tools.

Others.

Electronic console:

Metallic box.

Digital display for speed.

Motor speed controller.

START/STOP switch.

Emergency stop.

Main switch.

All components to be industrial grade.

The unit includes a mounting guide and tools.

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.



Optional Models and Accessories: (Not included)

MDSU/1. Belts, Chains, Alignment and Coupling Components for Power Drives.

The optional "MDSU/1" accessory consists of several pulleys commonly used in the industry. It includes some single-groove wedge pulleys with a split taper bushing, double-groove wedge pulleys with a quick disconnect bushings and some step-cone pulleys. Also includes a silent chain sprockets, a double-row roller chain sprockets, an idler sprocket and a set of chains corresponding to the sprockets.

The accessory also includes various items used to assemble components on the universal base and various items required to align shafts.

The accessory includes the following accessories: Grid Coupling, Step Cone Pulleys, Timing Belt Pulleys, Roller Chain, Variable Pitch Pulley, Pulley Idler, Wedge V-Belts, V-Belt, Bushings, Roller Chain Sprockets, Silent Chain Sprockets, Sprocket Idler, Flexible Sleeve Coupling, Silent Chain, Bushings, Gear Coupling, Flange Coupling, Chain Coupling, Wedge Pulleys, Universal Joint, Bushings, Dial Indicator Assembly, Flats Bar, Timing Belts, Rods, clamp, attachment, etc. Mounting Bracket, Riser Extensions, Screws, etc.

MDSU/2. Gears, Bearings, Gaskets and Seals for Power Drives.

The optional "MDSU/2" accessory permit to the student to know the gear drives, bearings, and seals and gaskets. With this optional accessory the student will know and work with the most commonly gear found in the industry, the principal types of bearings are used in a mechanisms and the gaskets and seals which some industrial devices have.

The accessory are divided in different components:

Gear drive: This component includes various accessories such as collars, sleeves, thrust bearings, and a mandrel to assemble the gears on the principal unit apart from these the devices has; Worms and worms gear, Gearboxes, Miter gears ,Helical gears.

Bearings: This component includes various accessories such as accessories used to install, remove, and lubricate bearings. Tapered, needle, and thrust roller bearings are supplied as well. This device includes sleeve, grooved sleeve, flange sleeve, and thrust plain bearings, apart from shielded, sealed, angular contact, and thrust ball bearings. Apart from: Ball bearings, Angular ball bearing, Plain bearing, Roller bearing, Bearing lubrication.

Seals and Gaskets: This component includes various accessories such as: Mechanical seals, Lip seals, O-rings, Gaskets.

Tool box component package.

MDSU/3. Clutch and Break devices for Power Drive.

The optional "MDSU/3" accessory permit to the student to know the clutches and brakes, ball screws, and linear bearings. With this optional accessory the student will know and work with the most commonly clutches and brakes which are installed in different industrial devices and the most used screws and linear bearing in the mechanical industry.

The accessory are divided in different components:

Clutches and brakes: This component consists of and electromagnetic clutch-brake with a torque limiter which includes a sprocket, and inertia load such as various accessories; Torque limiters, Electromagnetic clutch-brake and Roller ramp clutches.

Ball screws and linear bearings: This component includes various components to assemble a linear slide; Backlash measurement, Linear bearings, Ball nuts and ball screw, Lead and speed ratio, and Maintenance.

Tool box component package.

MDSU/4. Laser Alignment and Vibration Metering devices.

The "MDSU/4" accessory includes a Laser Alignment Device and a Vibration Metering Device.

The Laser Alignment Device has been designed to study topics like rough alignment, laser shaft alignment installation, soft foot correction, and laser shaft alignment operation and analysis. Laser alignment device avoid problems such as sagging indicators and reading resolution error. It includes measuring units, shaft v-brackets, locking chains, shims, carrying case and the accessories required for the alignment practical exercises.

The Vibration Metering device has been designed to study vibration metering. Vibration analysis is one of the key techniques used in the field of predictive maintenance to determine when to service one or more of a machine's components, either making a replacement or adjustment, before a failure actually occurs. It includes a portable vibration meter, a balancing disk that fixes to the shaft of a motor, and accessories. Data is acquired by software.

EXERCISES AND PRACTICAL POSSIBILITIES

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| <ol style="list-style-type: none"> 1.- Introduction to the mechanical training system. 2.- Study of safety procedure. 3.- Handling key and set screw fasteners. 4.- Speed and torque measurements. 5.- Efficiency study. 6.- Introduction to shafts and pillow block bearings. 7.- Techniques shaft alignment and flexible couplings. 8.- Techniques shaft alignment and rigid couplings. 9.- Motor soft foot study and correction. 10.-Introduction to belt drives. 11.-Introduction to the sheave and belt installation. 12.-Sheave alignment. 13.-Belt tensioning operation. 14.-Sheave and belt maintenance. 15.-Introduction to chain drives study. 16.-Introduction of the sprocket installation. 17.-Sprocket alignment study. 18.-Chain installation procedure. 19.-Chain tensioning procedure. 20.-Sprocket and chain maintenance. 21.-Introduction to gear drives. 22.-Spur gear installation study. 23.-Gear alignment. 24.-Backlash adjustment. 25.-Gears using split taper bushings mounting. 26.-Gear trains. <p>Additional practical possibilities (to be done with the Optional Model and Accessory MDSU/1):</p> <ol style="list-style-type: none"> 27.-Use of wedge and notched wedge V-Belts. 28.-Use of variable-speed Belt Drives. 29.-Multiple-Belt drives assembly. 30.-Multiple-Speed belt drives assembly. 31.-Silent chain drives assembly. 32.-Sprocket idlers study. 33.-Multiple-chain drives assembly. 34.-Synchronous belt drives study. | <ol style="list-style-type: none"> 35.-High torque synchronous belt drives assembly. 36.-Pulley Idlers. 37.-Alignment and Couplings of the system. <p>Additional practical possibilities (to be done with the Optional Model and Accessory MDSU/2):</p> <ol style="list-style-type: none"> 38.-Study and use of helical Gears. 39.-Study of worms and worm Gears. 40.-Study of miter Gears. 41.-Study and comprehension of gearboxes. 42.-Study and comprehension plain bearings. 43.-Study of ball Bearings. 44.-Study of the angular ball bearings. 45.-Study, use and comprehension of roller bearings. 46.-Difference of lubrication bearing and non-lubrication bearing. 47.-Use of Gaskets and Seals. 48.-Use of O-rings seals and gaskets. 49.-Comprehension of the use for lip Seals. 50.-Study of mechanical seals. <p>Additional practical possibilities (to be done with the Optional Model and Accessory MDSU/3):</p> <ol style="list-style-type: none"> 51.-Study of transmission power in a roller ramp clutches. 52.-Security systems, the torque limiters. 53.-Study of the theory of the electromagnetic Clutch-Brake. 54.-Study and comprehension of a ball nuts and ball screws. 55.-Study and useful of linear bearings. 56.-Study of backlash and measurement. 57.-Study and application of lead and speed ratio. <p>Additional practical possibilities (to be done with the Optional Model and Accessory MDSU/4):</p> <ol style="list-style-type: none"> 58.-Study of Vibration device. 59.-Analysis of the Vibration Resonant Frequency and Vibration Dampening. 60.-Acceleration and Velocity Measurement. 61.-Learning about a Vibration Meter Operation. 62.-Study of the principles and operation of laser alignment. 63.-Study of vertical and horizontal alignment. 64.-Soft foot analysis. |
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REQUIRED SERVICES

- Electrical supply: single-phase, 220V/50Hz or 110V/60Hz.

DIMENSIONS AND WEIGHTS

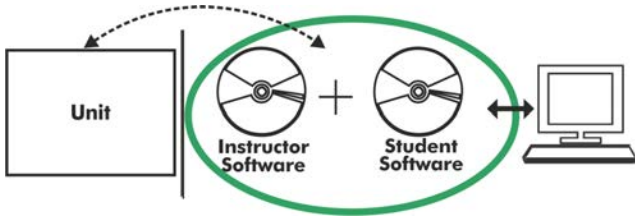
- MDSU:
- Unit:
- Dimensions: 1500 x 1000 x 2000 mm. approx.
(59.05 x 39.37 x 78.74 inches approx.)
 - Weight: 200 Kg. approx.
(440 pounds approx.).
- Electronic console:
- Dimensions: 310 x 220 x 180 mm. approx.
(12.20 x 8.26 x 7.08 inches approx.)
 - Weight: 6 Kg. approx.
(6.61 pounds approx.).

OPTIONAL MODELS AND ACCESSORIES (Not included)

- MDSU/1. Belts, Chains, Alignment and Coupling Components for Power Drives.
- MDSU/2. Gears, Bearings, Gaskets and Seals for Power Drives.
- MDSU/3. Clutch and Break devices for Power Drive.
- MDSU/4. Laser Alignment and Vibration Metering devices.

Optional

MDSU/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.

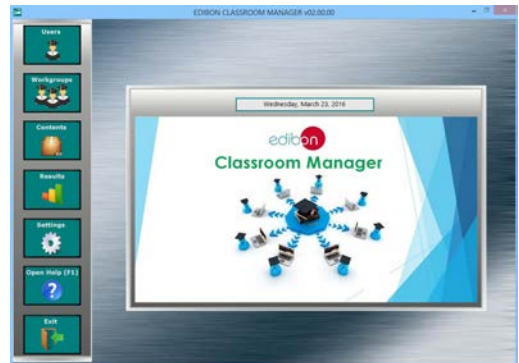
Instructor Software

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

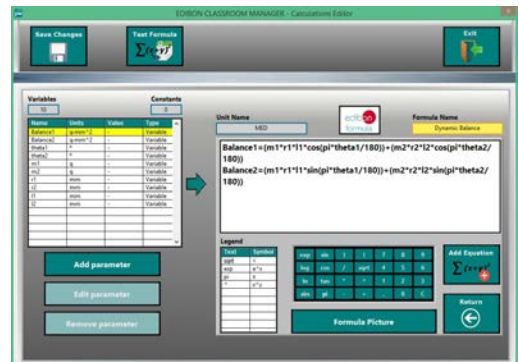
ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual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

Innovative features:

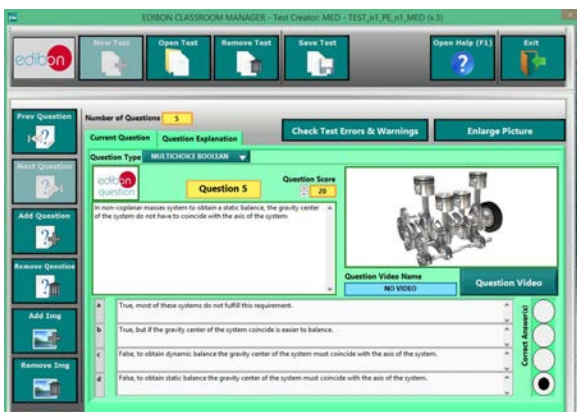
- User Data Base Management.
- Administration and assignment of Workgroup, Task and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.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

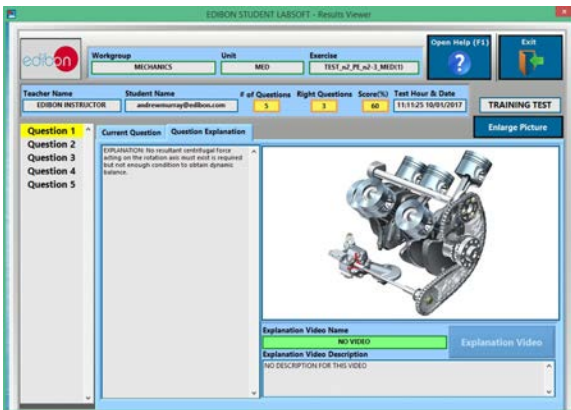
For more information see ICAI catalogue. Click on the following link:
www.edibon.com/en/files/expansion/ICAI/catalog



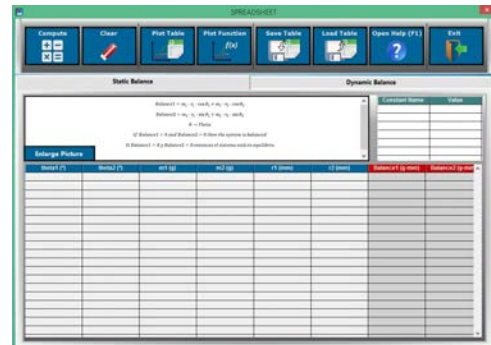
ESL-SOF. EDIBON Student LabSoft (Student Software) Application Main Screen



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.



C/ Del Agua, 14. Polígono Industrial San José de Valderas.
 28918 LEGANÉS. (Madrid). ESPAÑA - SPAIN.
 Tel: 34-91-6199363 Fax: 34-91-6198647
 E-mail: edibon@edibon.com Web: www.edibon.com

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REPRESENTATIVE:

