



## INTRODUCTION

A crane is a machine consisting of a movable arm (jib), mounted on a vertical member and with one or several pulleys. It is used to lift weights and carry them from one point to another within the circle described by the arm or the motion of the crane. The vertical member can be fixed to a wall or to a pillar anchored to the ground.

Although wall jib cranes are obsolete, the self-evident confluence of the four forces at the end of the jib clearly illustrates the application of a triangle of forces to a real situation.

The Unit for studying Forces in a Crane Jib (MFPG) allows to determine the forces in the members of the crane jib and to confirm the results obtained with the theoretical calculations and with the graphical results from a force parallelogram.

## GENERAL DESCRIPTION

The Unit for studying Forces in a Crane Jib, "MFPG", is designed to study the tensile and compressive forces in a planar central force system based on the example of a crane jib.

The unit represents a planar central force system in which multiple forces act on a single point of application. It consists of an adjustable length bar and a chain, which make the jib of the crane. This jib is attached to a vertical member (support bar) by adjustable clamp elements.

A weight holder and a set of weights apply loads to the jib of the crane.

The force of the bars is measured with two spring balances installed on the adjustable length bar and the chain (elements that represent the jib).

Based on the example of a crane jib, forces are determined experimentally, theoretically and graphically: cable force, tensile force and compressive force. The magnitudes and directions of the forces are graphically determined with a force parallelogram.



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)



"Worlddidac Quality Charter" and Platinum Member of Worlddidac

## SPECIFICATIONS

Anodized aluminum structure with panel in painted steel.

Diagram in the front panel with similar distribution to the elements in the real unit.

The unit consists of an adjustable length bar and a chain:

Adjustable length bar. It includes a spring balance for compressive forces. Pressure force: 0-60N, graduations: 1N.

Chain. It includes a spring balance for tensile forces. Tensile force: 0-60N, graduations: 0.5N.

Maximum load on the jib: 60N.

Support bar:

Material: stainless steel.

Length: 600 mm.

Set of weights:

Material: steel.

4 x 1N.

2 x 5N.

4 x 10N.

It includes one 1N weight holder.

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

## EXERCISES AND PRACTICAL POSSIBILITIES

- 1.- Study of the force parallelogram.
- 2.- Graphical breakdown of forces by force parallelogram.
- 3.- Determination of the bar forces on various jib forms: cable force, tensile force and compressive force.
- 4.- Comparison of results obtained in the practical exercises, the theoretical values and the values obtained from the graphical method with the force parallelogram.
- 5.- Comprehension of the action of the crane cable forces on the jib and the effect of the jib inclination.

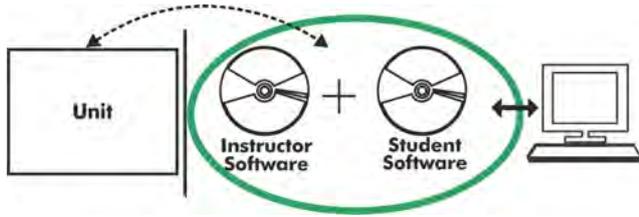
## DIMENSIONS AND WEIGHTS

MFPG:

- Dimensions: 650 x 250 x 650 mm approx.  
(25.6 x 9.84 x 25.6 inches approx.).

- Weight: 16 Kg approx.  
(35.27 pounds approx.).

**MFPG/ICAI. Interactive Computer Aided Instruction Software System:**



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.

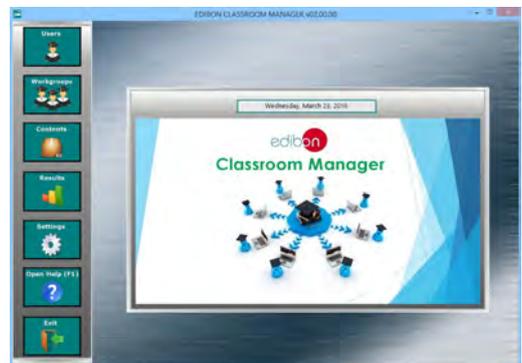
Instructor Software

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

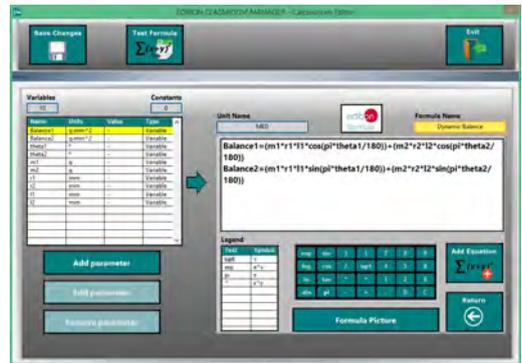
ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual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

Innovative features:

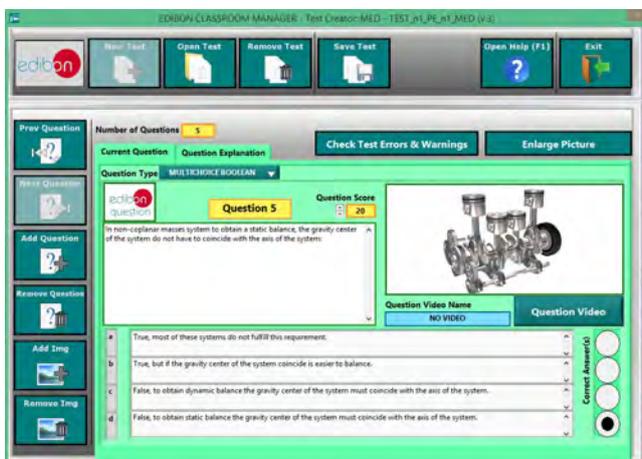
- User Data Base Management.
- Administration and assignment of Workgroup, Task and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.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



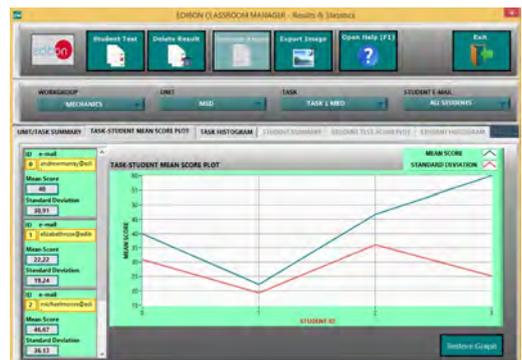
ECM-SOF. EDIBON Classroom Manager (Instructor Software) Application Main Screen



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:

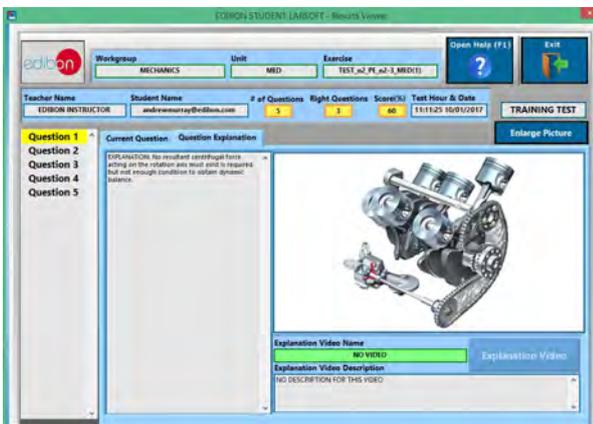
[www.edibon.com/en/files/expansion/ICAI/catalog](http://www.edibon.com/en/files/expansion/ICAI/catalog)



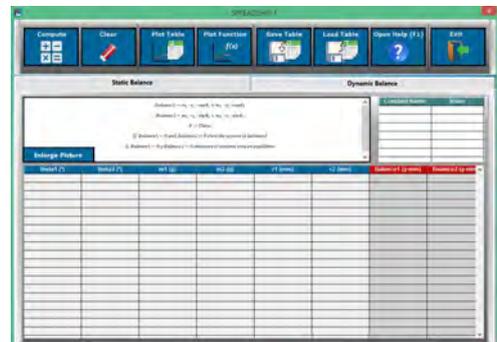
ESL-SOF. EDIBON Student LabSoft (Student Software)  
Application Main Screen



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:

