



INTRODUCTION

A suspension bridge is a bridge supported by an inverted arch formed by numerous steel cables from which the deck is suspended by vertical suspenders. The main forces of this type of bridges are tension in the main cables and compression in the pillars.

Suspension bridges are normally built to cover obstacles of great length, being a river, ditch, gully or natural or artificial communication path, and to allow the passage of pedestrians or vehicles.

The Suspension Bridge Unit "MVS" consists of a suspended beam that simulates a suspension bridge and allows the experimental and theoretical comparison of the tensions of the cables and the study of the suspension of a bridge under different load conditions.

GENERAL DESCRIPTION

The Suspension Bridge Unit "MVS" consists of a deck and two parallel main cables that simulate a suspension bridge and allow the study of stress in the main cables.

The deck of the bridge is simulated by a light alloy beam that is held by both parallel main cables through bars that act as suspenders.

The suspenders are distributed at constant and relatively short distances.

Loads are applied to the beam by coupling masses at a series of load points to simulate a distributed load.

These loads create some tensions in the suspenders that are supported by both main cables, and they transfer them to the pulleys, where those tensions are counteracted by hanging masses.

1 set of weights and cords are supplied.



ISO 9000: Quality Management (for Design, Manufacturing, Commercialization and After-sales service)



European Union Certificate (total safety)



Certificates ISO 14000 and ECO-Management and Audit Scheme (environmental management)



Worlddidac Quality Charter Certificate and Worlddidac Member

SPECIFICATIONS

The MVS unit mainly consists of:

Suspension bridge system, consisting of:

- 1 light alloy beam.
- 13 holders to hang the load hooks.
- 13 bars that act as suspenders.
- 2 cables to transfer the tensions created to the pulleys.

4 pulleys to transfer the tensions of the cables.

13 weight hangers to simulate the distributed load.

Set of masses composed of:

- 2 large hooks of 230 g.
- 6 small hooks of 30 g.
- 4 masses of 10 g.
- 3 masses of 20 g.
- 24 masses of 50 g.
- 12 masses of 100 g.
- 12 masses of 200 g.

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

EXERCISES AND PRACTICAL POSSIBILITIES

- | | |
|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 1.- To demonstrate the characteristics of a bridge simple suspension. | 4.- To determine the experimental value of the tension in the supporting cables of a suspended beam subjected to a uniform load distribution. |
| 2.- To observe the stability of a structure. | 5.- To compare the experimental and theoretical results. |
| 3.- To examine the relation between loads applied and suspension cable tension. | |

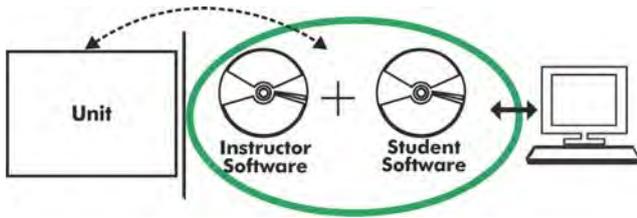
DIMENSIONS AND WEIGHT

-Dimensions: 850 x 350 x 500 mm. approx. (33.46 x 13.77x 19.68 inches approx.)

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

Optional

MVS/CAI. Computer Aided Instruction Software System:



With no physical connection between unit and computer (PC), this complete software package consists of an Instructor Software (INS/SOF) totally integrated with the Student Software (MVS/SOF). Both are interconnected so that the teacher knows at any moment what is the theoretical and practical knowledge of the students.

Example of software screens

INS/SOF. Classroom Management Software (Instructor Software):

The Instructor can:

- Organize Students by Classes and Groups.
- Create easily new entries or delete them.
- Create data bases with student information.
- Analyze results and make statistical comparisons.
- Generate and print reports.
- Detect student's progress and difficulties.
- ...and many other facilities.

This software, working in network configuration, allows controlling all the students in the classroom.

Instructor Software



Student Software

MVS/SOF. Computer Aided Instruction Software (Student Software).

It explains how to use the unit, run the experiments and what to do at any moment.

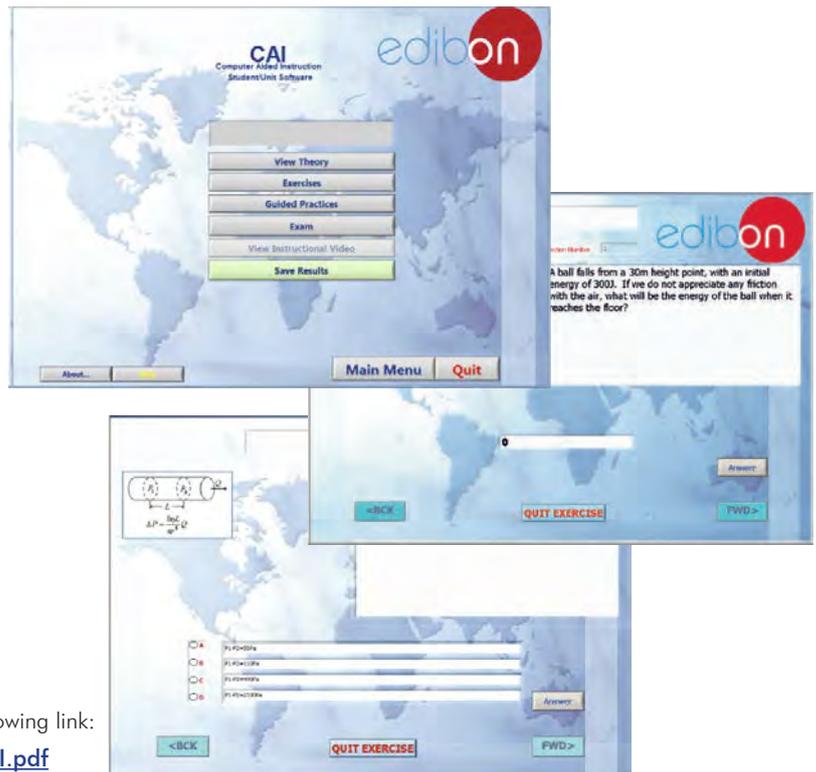
- This software contains:

Theory: gives the student the theoretical background for a total understanding of the studied subject.

Exercises: divided by thematic areas and chapters to check out that the theory has been understood.

Guided Practices: presents several practices to be done with the unit, showing how to perform the exercises and practices.

Exams: set of questions to test the obtained knowledge.



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

www.edibon.com/products/catalogues/en/CAI.pdf

MVS/CAL. Computer Aided Learning Software (Results Calculation and Analysis):

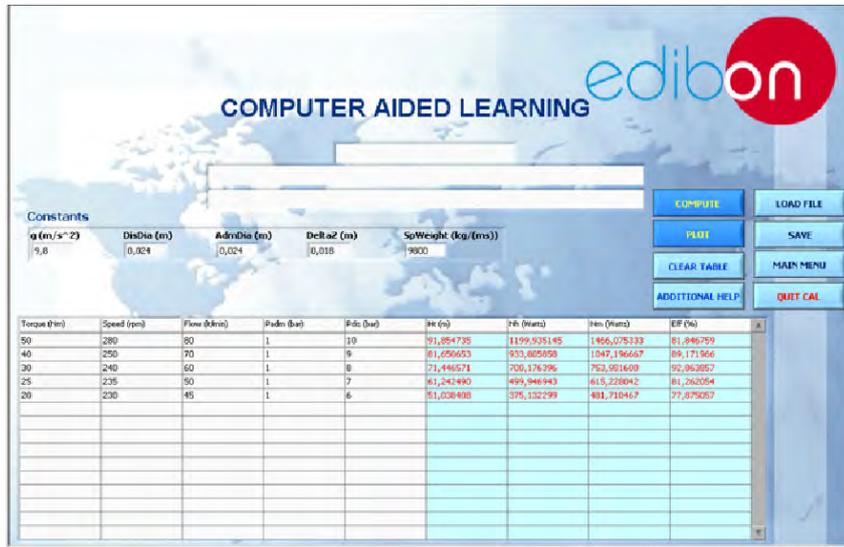
This Computer Aided Learning Software (Results Calculation and Analysis) "CAL" is a Windows based software, simple and very easy to use, specifically developed by EDIBON.

CAL is a class assistant that helps in doing the necessary calculations to extract the right conclusions from data obtained during the experimental practices. With a single click, CAL computes the value of all the variables involved and performs the calculations.

Also, CAL allows to plot and print the results. Within the plotting options, any variable can be represented against any other.

Available different plotting displays.

It has a wide range of information, such as constant values, unit conversion factors and integral and derivative tables.



On a table, we introduce data obtained during the development of the exercise.

Above this table, it is shown "Constants" theoretically involved with the field of study. The values of these "Constants" may be modified to our convenience, assigning the appropriate values.

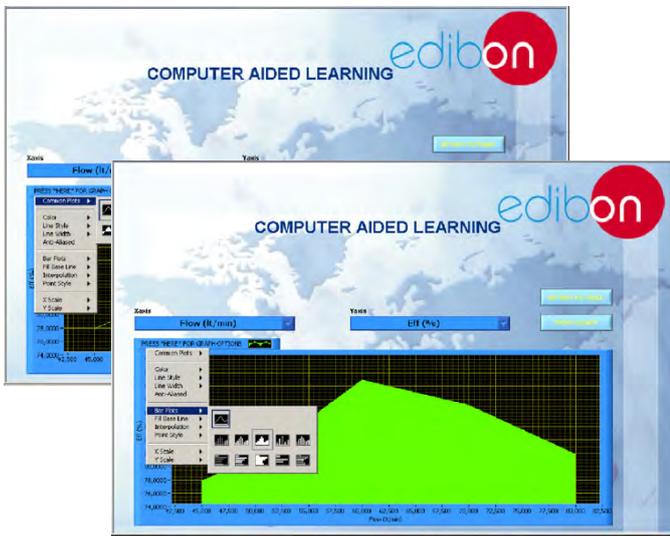
Simply, by clicking on "COMPUTE", CAL performs the calculations of the desired variables.

We can save and print the data of the experiment or calculations.

Also we can load any data file saved previously.

With the calculated variables, CAL gives the option of plotting the results. It is possible to represent any variable against any other. It has the option of representing the graph with different layouts. Screens below give an example of the multiple choices.

CAL has a wide range of help information. By clicking the button "ADDITIONAL HELP" opens a window where we have information about typical Constants, International System Units, Conversion Factors, and Table of Main Integrals and Derivatives (General), and there is other specific help for the particular unit.



The screenshot shows a window titled 'SI base units' and 'SI Prefixes'. The 'SI base units' table is as follows:

Name	Symbol	Quantity
metre	m	Length
kilogram	kg	Mass
second	s	Time
ampere	A	Electrical current
kelvin	K	Thermodynamic temperature
mole	mol	Amount of substance
candela	cd	Luminous intensity

The 'SI Prefixes' table is as follows:

Name	Symbol	Factor
yotta	Y	10 ²⁴
zetta	Z	10 ²¹
exa	E	10 ¹⁸
peta	P	10 ¹⁵
tera	T	10 ¹²
giga	G	10 ⁹
mega	M	10 ⁶
kilo	k	10 ³
hecto	h	10 ²
deca	da	10 ¹
deci	d	10 ⁻¹
centi	c	10 ⁻²
milli	m	10 ⁻³
micro	µ	10 ⁻⁶
nano	n	10 ⁻⁹
micro	µ	10 ⁻⁶
centi	c	10 ⁻²
deca	da	10 ¹
hecto	h	10 ²
kilo	k	10 ³
mega	M	10 ⁶
giga	G	10 ⁹
tera	T	10 ¹²
peta	P	10 ¹⁵
exa	E	10 ¹⁸
zetta	Z	10 ²¹
yotta	Y	10 ²⁴

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

www.edibon.com/products/catalogues/en/CAL.pdf

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



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