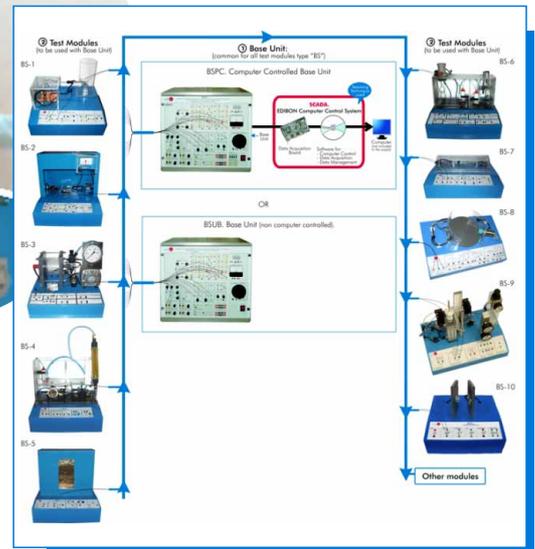
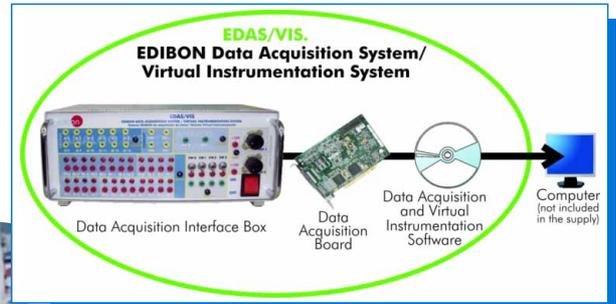
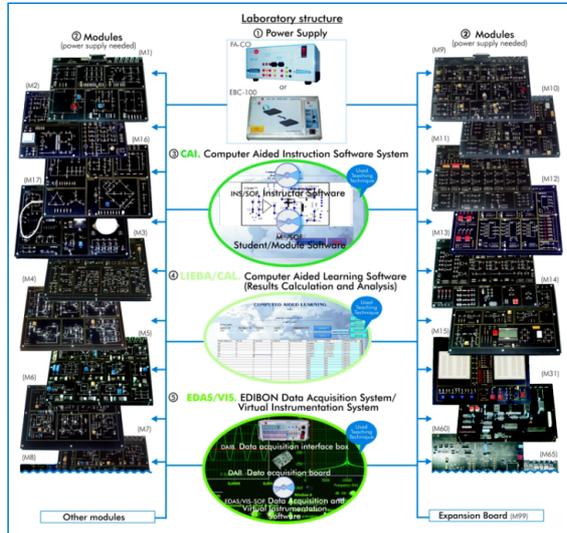


# TECHNICAL AND VOCATIONAL EDUCATION ELECTRONICS LABORATORY (2TV)



\* Center:

\* Country:

\* Date:

\* Issue:

## Quality Certificates:



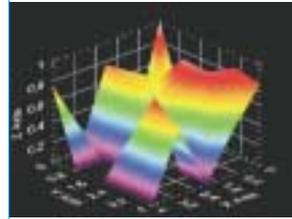
# Technical and Vocational Education Electronics Laboratory (2TV)

## Index

- Project content.
- Technical areas available.
- Economical proposal.
- Classroom and Laboratory Lay Out (Example).
- Main teaching units (included in priority 1).
- Main target.
- Project options covered.
- Project conditions.
- Teaching techniques used.

# Project content

## Modern design



## Main blocks



## Products



## Full units design



## Technical areas available

**\* Electronics.**

- Communications.
- Electricity.
- Energy.
- Automatics & Systems.
- Process Control.
- Complements, Instruments and Tools.

**\*Main area directly related with Technical and Vocational Education Electronics laboratory labelled in bold letters.**

Note: The complete technical design "is ready" at our premises

# Economical Proposal

## Teaching Units:

### **"Priority 1"**

#### **0200. Electronics**

0213-210/20S: Elementary Electronics (20 CAI + CAL)  
0213-211/20S: Elementary Electronics (20 CAI + CAL)  
0213-212/20S: Elementary Electronics (20 CAI + CAL)  
0213/20B: Elementary Electronics (20EBC-100)  
0222K-220K/20S: Elementary Electronics "KIT" (20 CAI + CAL)  
0222K-221K/20S: Elementary Electronics "KIT" (20 CAI + CAL)  
0222K/20B: Elementary Electronics "KIT" (20 FACO + M15)  
0230: Transducers and Sensors Module  
0231: Sensors Instrumentation  
0232: Controllers  
0240: Control Electronics Module  
0250: Digital Electronics Module  
0260: Industrial Electronics Module  
0270: Microprocessors Module  
0280: General Meters Module  
0299: PCB Design Module  
0200/ESN: EDIBON Scada-Net for Electronics

#### **0300. Communications**

0321-310/20S: Analog Communications (20 CAI + CAL)  
0321-320/20S: Digital Communications (20 CAI + CAL)  
0321/20B: Analog and Digital Communications (20EBC-100)

### **"Priority 2"**

#### **0400. Electricity**

0413-410/20S: Domestic Electric Installations (20 CAI + CAL)  
0413-411/20S: Domestic Electric Installations (20 CAI + CAL)  
0413-412/20S: Domestic Electric Installations (20 CAI + CAL)  
0423K-420K/5S: Domestic Electric Installations "kit" (5 CAI + CAL)  
0423K-421K/5S: Domestic Electric Installations "kit" (5 CAI + CAL)  
0423K-422K/5S: Domestic Electric Installations "kit" (5 CAI + CAL)  
0433-430/5S: Industrial Electric Installations (5 CAI + CAL)  
0433-431/5S: Industrial Electric Installations (5 CAI + CAL)  
0433-432/5S: Industrial Electric Installations (5 CAI + CAL)

### **"Priority 3"**

#### **0400. Electricity**

0443K-440K/5S: Industrial Electric Installations "kit" (5 CAI + CAL)  
0443K-441K/5S: Industrial Electric Installations "kit" (5 CAI + CAL)  
0443K-442K/5S: Industrial Electric Installations "kit" (5 CAI + CAL)  
0450: Energy Installations Basic Module  
0451: Energy Installations Medium Module  
0453-450/5S: Energy Installations (5 CAI + CAL)  
0453-451/5S: Energy Installations (5 CAI + CAL)  
0453-452/5S: Energy Installations (5 CAI + CAL)

#### **0500. Energy**

0530/10S: Basic Renewable Energies (10 CAI + CAL)  
0530/PLC: PLCs Module

#### **0600. Automation & Systems**

0610: PLC Trainer  
0620: PLC Process Emulators Applications Module  
0621: PLC Small Scale Real Applications Module

#### **1000. Process Control**

1010: Process Control Basic Module  
1010/PLC: PLC's Module  
1000/ESN: EDIBON Scada-Net for Process Control

## Complements, Instruments and Tools:

### **5100. Complements, Instruments and Tools**

5110-1: Cupboard & Shelves Module (1 unit)  
5120-10: Computer Module (10 units)  
5122: Teaching Aids Module  
5124: Complete Health & Safety  
5142-1: Electricity Toolkit Module (1 unit)  
5143-20: Electronics Toolkit Module (20 units)

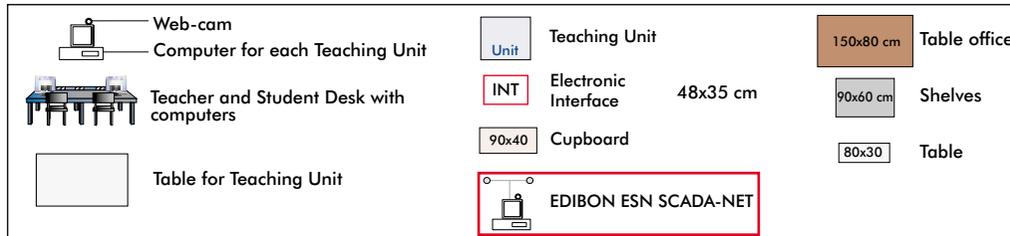
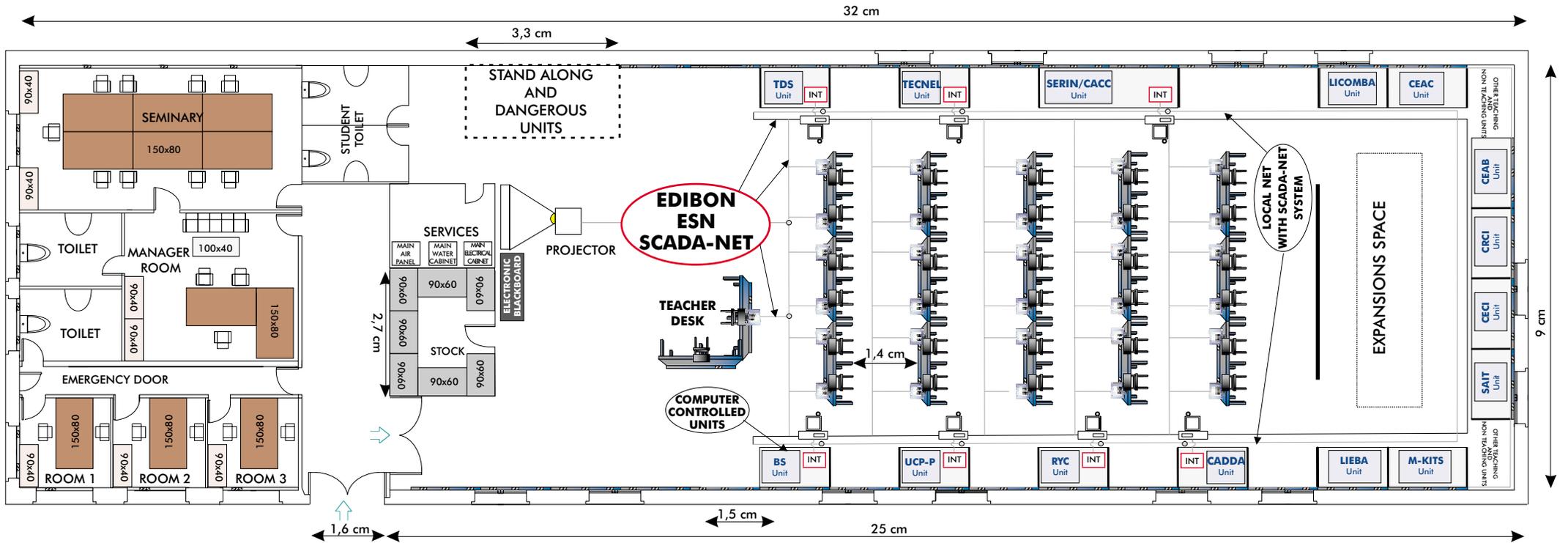
## Services:

- \* Furnitures:
- \* Electrical, Water and Air Installation and others laboratory services
- \* Installation of all units supplied, Starting up, Training, Teacher Training and Technology Transfer

# Classroom and Laboratory Lay Out

## TECHNICAL AND VOCATIONAL EDUCATION ELECTRONICS LABORATORY

(Example of Priority 1)  
(2TV)



E: 1:100

# Main Teaching Units (included in priority 1)

## Priority 01:

<b>LIEBA</b>	Basic Electrónicos and Electricity Integrated Laboratory.
<b>M-KITS</b>	Basic Electronics and Electricity Assembly Kits.
<b>SAIT</b>	Transducers and Instrumentation Trainer.
<b>BS</b>	Modular System for the Study of Sensors.
<b>UCP-P</b>	<u>Computer Controlled</u> Process Control Unit for the study of Pressure (Air).
<b>CECI</b>	Industrial Controllers Trainer.
<b>CRCI</b>	Industrial Controllers Networking.
<b>CEAB</b>	Trainer for Field Bus Applications.
<b>CEAC</b>	Controller Tuning Trainer.
<b>RYC</b>	<u>Computer Controlled</u> Teaching Unit for the Study of Regulation and Control.
<b>CADDA</b>	<u>Computer Controlled</u> Teaching Unit for the Study of A/D and D/A converters.
<b>TDS</b>	<u>Computer Controlled</u> Teaching Unit for the Study of Digital Signal Processing.
<b>TECNEL</b>	<u>Computer Controlled</u> Teaching Unit for the Study of Power Electronics. (Converters: DC/AC + AC/DC + DC/DC + AC/AC).
<b>SERIN/CACC</b>	<u>Computer Controlled</u> Industrial Servosystems Trainer (for AC and DC Motors).
<b>LICOMBA</b>	Communications Integrated Laboratory:

## Main target

\* To help the students:

- By "quick" understanding.
- By "clear" understanding (clear concepts).
- By "saving" time.
- By "extending" the laboratory to their homes.

\* To help the teachers:

- By "easy" teaching.
- By increasing the teaching "efficiency".
- By "reducing" teaching costs (less time consume).
- By "integrating" classroom and laboratory in the same place.

## Project options covered

This “Technical and Vocational Education Electronics Laboratory” will cover the following:

- a) To train students at laboratory.
- b) To train trainers.
- c) To be used for training and update educators in current teaching technologies.
- d) To give courses to workers in the industry, as it simulates industrial process.
- e) To be used for carrying out applied research, in several processes and different technical areas.
- f) To be used as research tool for international projects.
- g) To train other countries teachers.

## Project conditions

The “Technical and Vocational Education Electronics Laboratory” includes the following technical and commercial conditions:

a) Technical conditions:

- Laboratories adaptation.
- Installation of all units supplied.
- Starting up for all units.
- Training about the exercises to be done with any unit.
- Teacher training related with the teaching unit and the teaching techniques used.
- Technology transfer.

b) Commercial conditions:

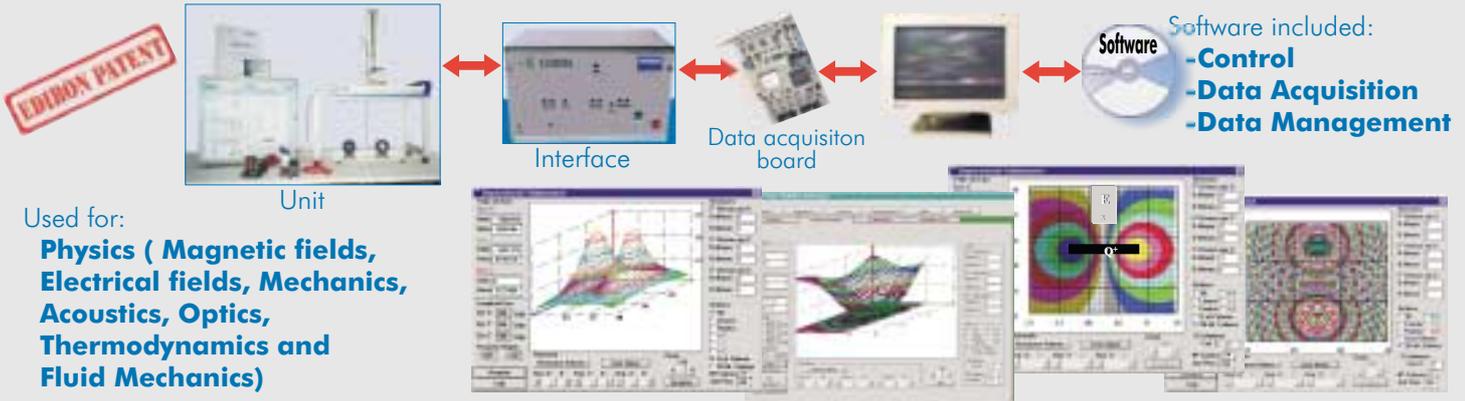
- Packing.
- Financing Charges.
- C.I.F. Charges.

c) Other conditions:

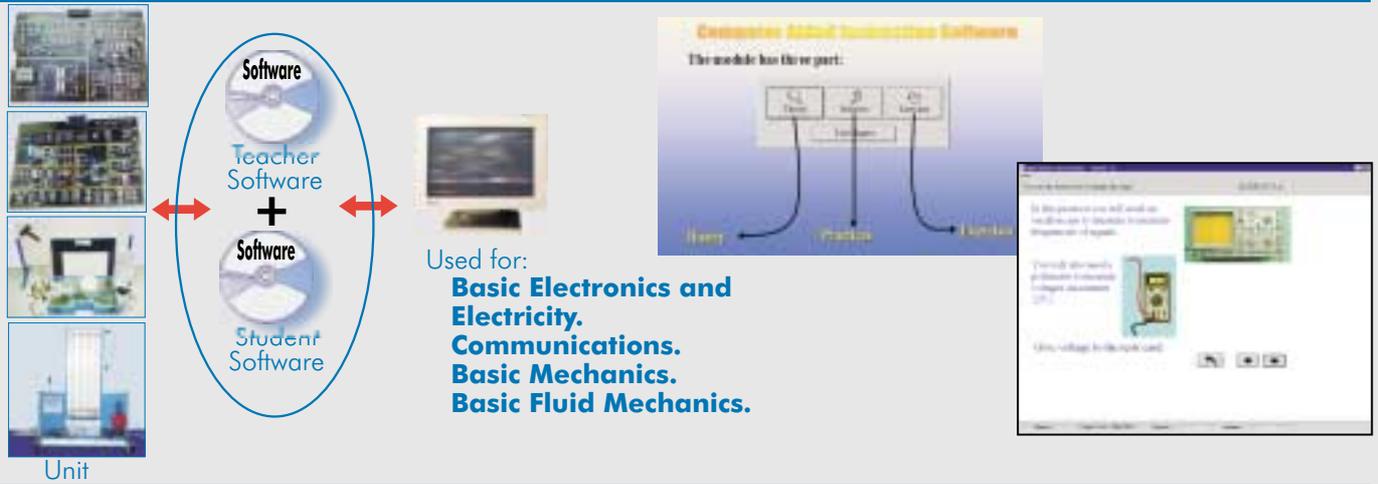
- 8 Manuals for each teaching equipment:
  - . Required services manual.
  - . Assembly and installation manual.
  - . Interface and software/control console manual.
  - . Set in operation manual.
  - . Safety norms manual.
  - . Practices manual.
  - . Maintenance manual.
  - . Calibration manual.

# TEACHING TECHNIQUES USED

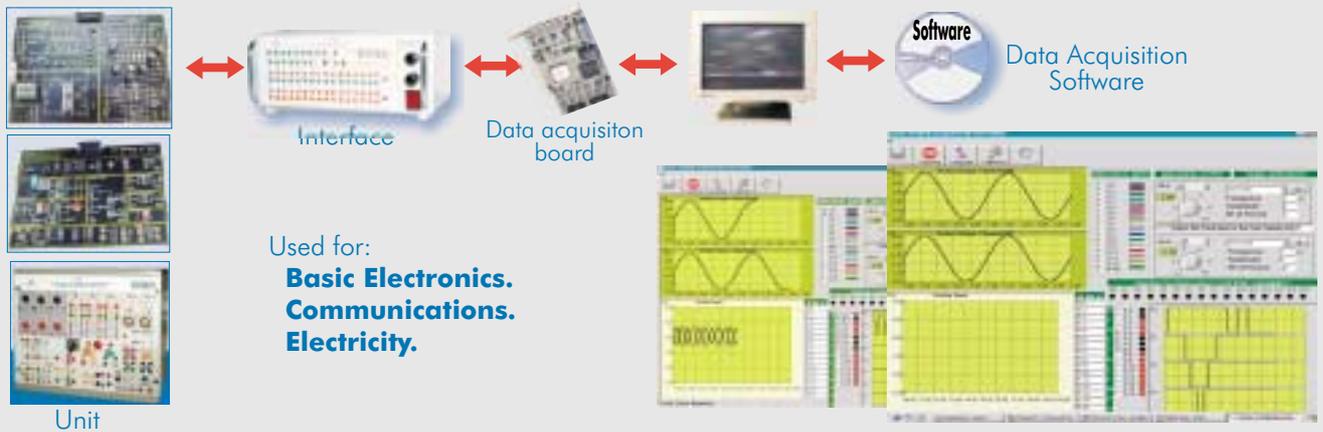
## 3D. EDIBON THREE DIMENSIONS SYSTEM



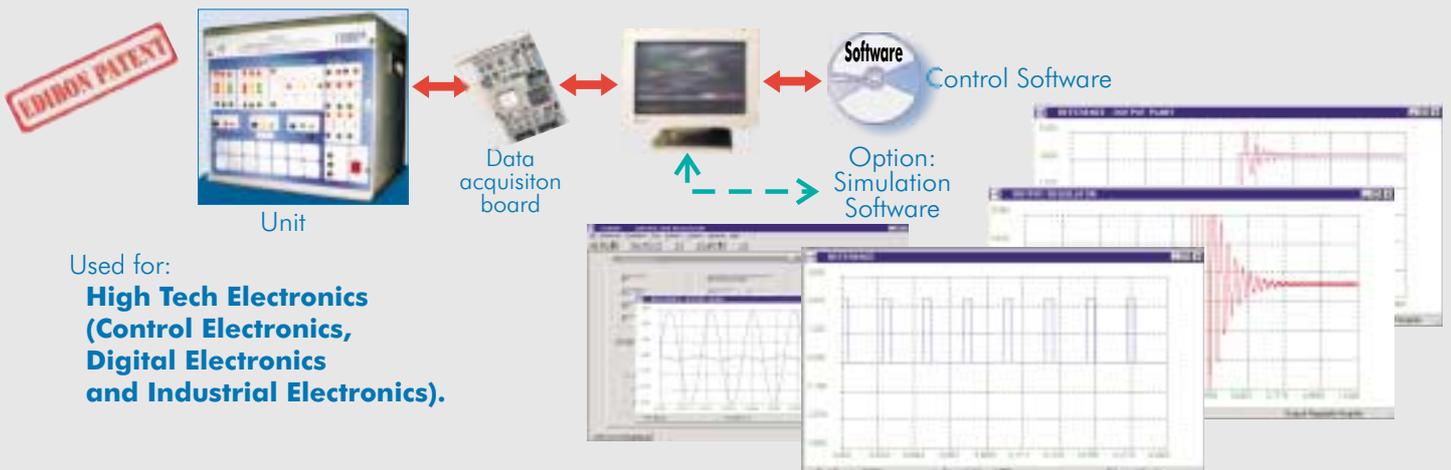
## CAI. COMPUTER AIDED INSTRUCTION SYSTEM



## EDAS. EDIBON DATA ACQUISITION SYSTEM



## RTC. EDIBON SYSTEM FOR HIGH ELECTRONICS (Real time control)



## HYBRID. EDIBON TEACHING HYBRID SYSTEM (ENERGY)

**EDIBON PATENT**

Used for:  
**Energy Power Plants.**



## PHOTOELASTICITY

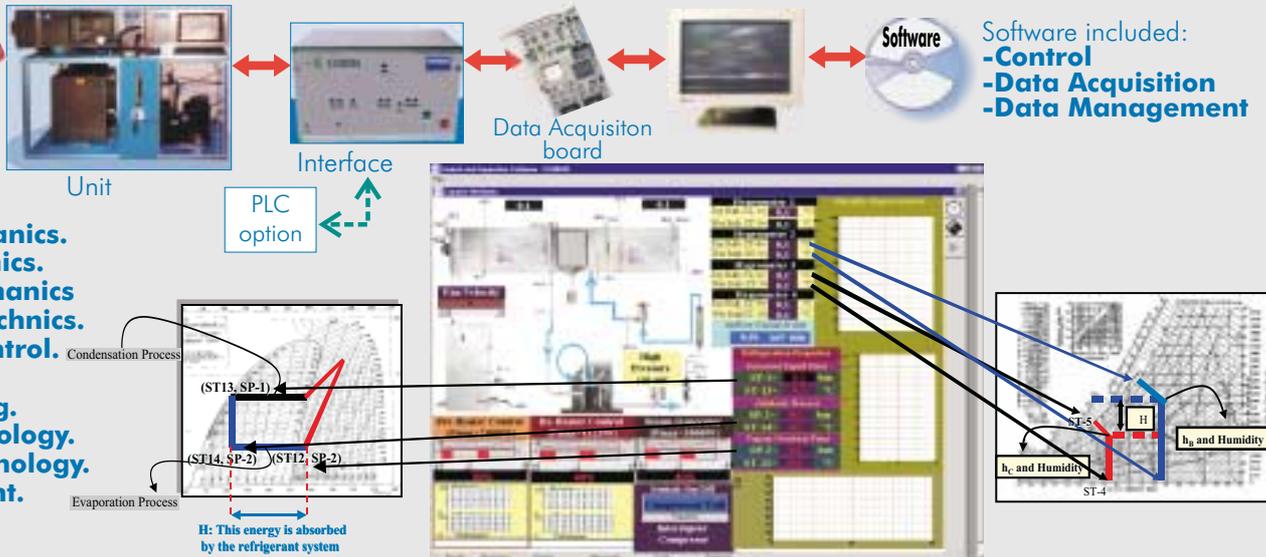
Used for:  
**Strength of Materials.**



## SACED. EDIBON COMPUTER CONTROL SYSTEM: Control+Data Acquisition+Data Management

**EDIBON PATENT**

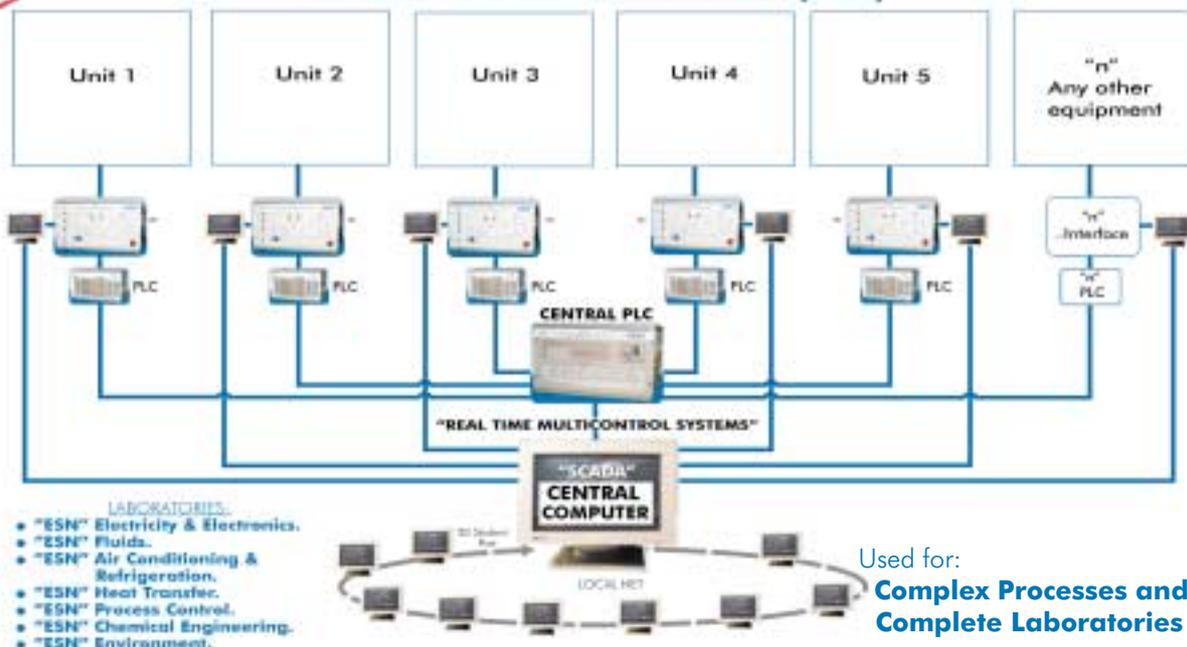
Used for:  
**Fluid Mechanics.  
Aerodynamics.  
Thermodynamics & Thermotechnics.  
Process Control.  
Chemical Engineering.  
Food Technology.  
Water Technology.  
Environment.**



## ESN. EDIBON SCADA-NET SYSTEM

**EDIBON PATENT**

### EDIBON SCADA-NET SYSTEM (ESN)



Used for:  
**Complex Processes and Complete Laboratories**