HIGHER EDUCATION

CHEMICAL ENGINEERING LABORATORY

(11HE)

* Center: "....."
* Country: "....."
* Date: "....."
* Issue: "....."

Quality Certificates:

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)

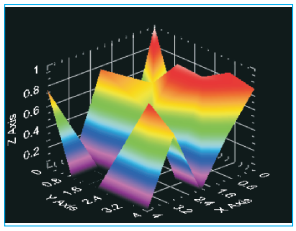
Worlddidac Quality Charter Certificate
(Worlddidac Member)

Higher Education Chemical Engineering Laboratory
(11HE)

Index

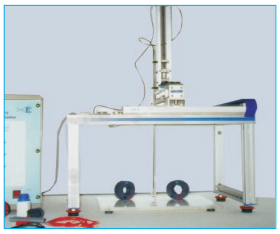
Project content

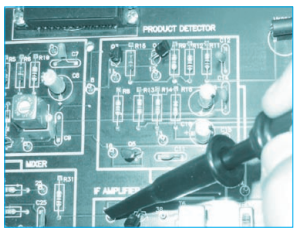
Modern design

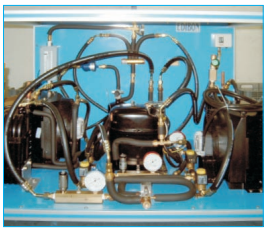


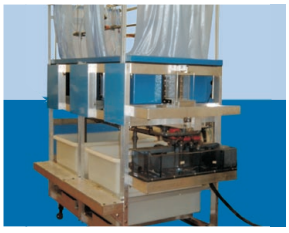
Main blocks

Products

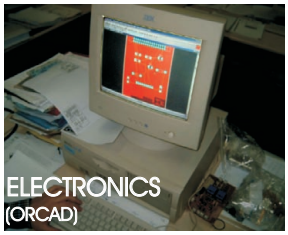


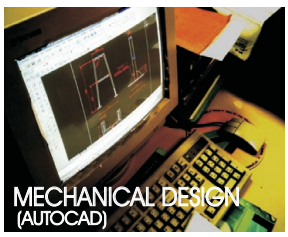






Full units design





Technical areas available

- Physics & Chemistry.
- Electronics.
- Electricity.
- Mechanics & Materials.
- Fluids Mechanics.
- Thermodynamics & Thermotechnics.
- Process Control.

*** Chemical Engineering.**

- Environment.
- Complements, Instruments and Tools.

*__Main area directly related with Higher Education Chemical Engineering Laboratory Labelled in bold letters.__

Note: The complete technical design “is ready” at our premises

Economical Proposal

Teaching Units:

"Priority 1"

1100. Chemical Engineering
1110/10S:Chemical Engineering Basic Module (10 CAI + CAL)
1110/PLC: PLC's Module
1111/10S: Chemical Engineering Medium Module (10 CAI + CAL)
1111/PLC: PLC's Module
1112/10S: Chemical Engineering Advanced Module (10 CAI + CAL)
1112/PLC: PLC's Module
1120: Chemical Process Basic Module
1120/PLC: PLC's Module
1121: Chemical Process Medium Module
1121/PLC: PLC's Module
1130: Special Chemical Process Advanced Module
1130/PLC: PLC's Module
1100/ESN: EDIBON Scada-Net for Chemical Engineering

"Priority 2"

0200. Electronics
0230: Transducers and Sensors Module
0800. Fluid Mechanics & Aerodynamics
0813-810/10S: Elementary Fluid Mechanics (10 CAI + CAL)
0820: Fuid Mechanics Basic Module
0820/PLC: PLC's Module
0831: PumpsMedium Module
0831/PLC: PLC's Module
0833: Fan-Centrifugal Module
0833/PLC: PLC's Module
0841:Turbines "Hydraulic Machines-Water" Medium Module
0841/PLC: PLC's Module
0842:Turbines "Hydraulic Machines-Air" Module
0842/PLC: PLC's Module
0800/ESN: EDIBON Scada-Net for Fluid Mechanics & Aerodynamics Units
0900. Thermodynamics & Thermotechnics
0910/10S: Refrigeration Basic Module (10 CAI + CAL)
0910/PLC: PLC's Module
0920/10S: Heat PumpsBasic Module (10 CAI + CAL)
0920/PLC: PLC's Module
0930/10S: Air Conditioning Basic Module (10 CAI + CAL)
0930/PLC: PLC's Module
0950/10S: Heat Transfer Basic Module (10 CAI + CAL)
0950/PLC: PLC's Module
0951: Heat Transfer Medium Module
0951/PLC: PLC's Module
0952: Heat Transfer Advanced Module
0952/PLC: PLC's Module
0953/10S: Heat Exchange Basic Module (10 CAI + CAL)
0953/PLC: PLC's Module
0954: Heat Exchange Medium Module
0954/PLC: PLC's Module
1000. Process Control
1010: Process Control Basic Module
1010/PLC: PLC's Module
1011: Process Control Medium Module
1011/PLC: PLC's Module
10000/ESN: EDIBON Scada-Net for Thermodynamics & Process Control Unit Units

"Priority 3"

0100 Physics, Chemisty and Biology
0110: 3D Physics Basic Module
0120: ChemistryBasic Module
0121: Chemistry Medium Module
0200 Electronics
0213-210/10S: Elementary Electronics (10 CAI + CAL)
0231: Sensors Instrumentation
0240: Control Electronics Module
0400 Electricity
0413-410/10S: Domestic Electric Installations (10 CAI + CAL)
0700 Mechanics and Materials
0710/10S: MechanicsBasic Module (10 CAI + CAL)
1300 Environmental
1310: Water Handling Basic Module
1310/PLC: PLC's Module
1320: Dirty Water Treatment Module
1320/PLC: PLC's Module
1321 Clear Water Treatment Basic Module
1321/PLC: PLC's Module

Complements, Instruments and Tools:

5100. Complements, Instruments and Tools
5110-1: Cupboard & Shelves Module
5120-10: Computer Module
5122: Teaching Aids Module
5124: Complete Health & Safety
5140-1: Mechanical Toolkit Module
5142-1: Electricity Toolkit Module
5143-20: Electronics Toolkit Module

Services:

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

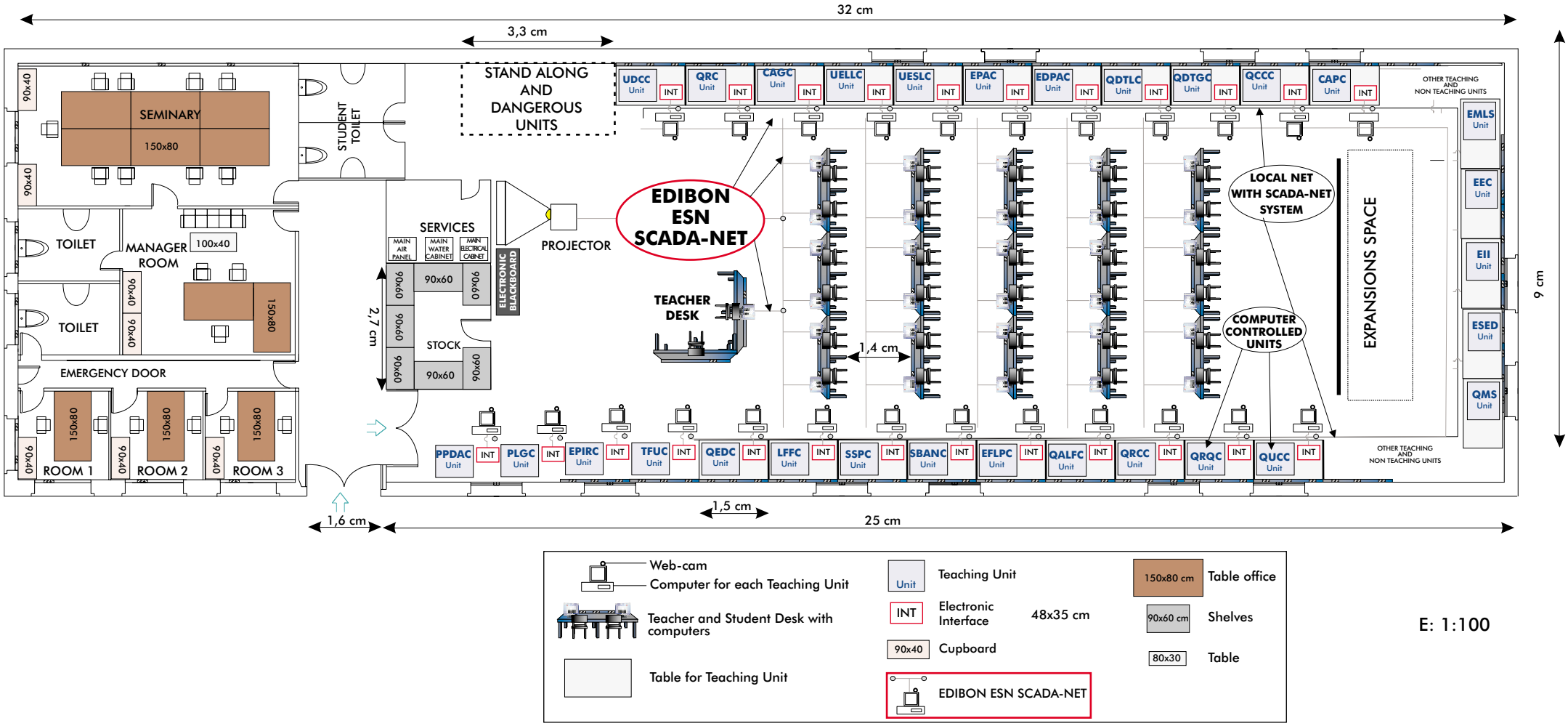
Classroom and Laboratory Lay Out

HIGHER EDUCATION

CHEMICAL ENGINEERING LABORATORY

(Example of Priority 1)

(11HE)



Web-cam

Computer for each Teaching Unit

Teacher and Student Desk with computers

Table for Teaching Unit

Unit — Teaching Unit

INT — Electronic Interface — 48x35 cm

90x40 — Cupboard

EDIBON ESN SCADA-NET

150x80 cm — Table office

90x60 cm — Shelves

80x30 — Table

E: 1:100

Main Teaching Units
(included in priority 1)
Priority 01:

UDCC	Computer Controlled Continuous Distillation Unit. Automatic feeder.
QRC	Computer Controlled Chemical Reactors Trainer.
CAGC	Computer Controlled Gas Absorption Column.
UELLC	Computer Controlled Liquid-Liquid Extraction Unit.
UESLC	Computer Controlled Solid-Liquid Extraction Unit.
EPAC	Computer Controlled Rising Film Evaporator.
EDPAC	Computer Controlled Double Effect Rising Film Evaporator.
QDTLC	Computer Controlled Liquid Mass Transfer and Diffusion Coefficient Unit.
QDTGC	Computer Controlled Gaseous Mass Transfer and Diffusion Coefficient Unit.
QCCC	Computer Controlled Cracking Column.
CAPC	Computer Controlled Wetted Wall Gas Absortion Column.
QUCC	Computer Controlled Crystallization Unit.
QRQC	Computer Controlled Chemical Reactors Training System.
QRCC	Computer Controlled Catalytic Reactors.
QALFC	Computer Controlled Fixed Bed Adsorption Unit
EFLPC	Computer Controlled Deep Bed Filter Unit.
EMLS	Liquid/Solid Mixing Unit.
EEC	Corrosion Study Unit.
EII	Ion Exchange Unit.
SBANC	Computer Controlled Tray Drier.
SSPC	Computer Controlled Spray Drier.
ESED	Sedimentation Study Unit.
LFFC	Computer Controlled Fixed and Fluidised Bed Unit.
QEDC	Computer Controlled Batch Solvent Extraction and Desolventising Unit.
QMS	Solids Handling Study Unit.
TFUC	Computer Controlled Batch Filtration Unit.
EPIRC	Computer Controlled Pyrolisis Unit.
PLGC	Computer Controlled Gas Washing Process Plant.
PPDAC	Computer Controlled Water Demineralization and Processing Plant.

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 *"Higher Education Chemical Engineering 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 ""*Higher Education Chemical Engineering 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

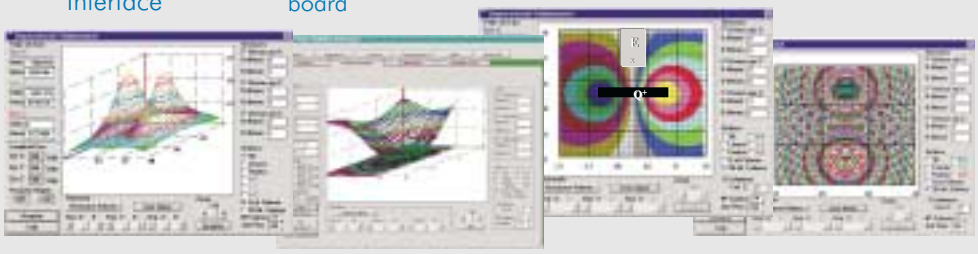

Unit


Interface


Data acquisiton board

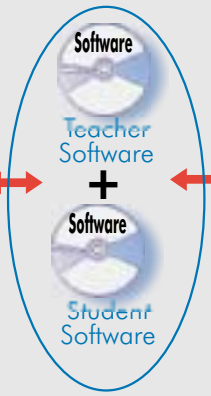
Software included:
-Control
-Data Acquisition
-Data Management

Used for:
Physics (Magnetic fields, Electrical fields, Mechanics, Acoustics, Optics, Thermodynamics and Fluid Mechanics)

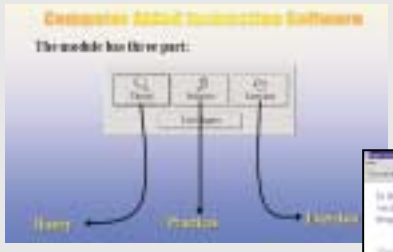


CAI. COMPUTER AIDED INSTRUCTION SYSTEM


Unit



Used for:
Basic Electronics and Electricity.
Communications.
Basic Mechanics.
Basic Fluid Mechanics.



EDAS. EDIBON DATA ACQUISITION SYSTEM

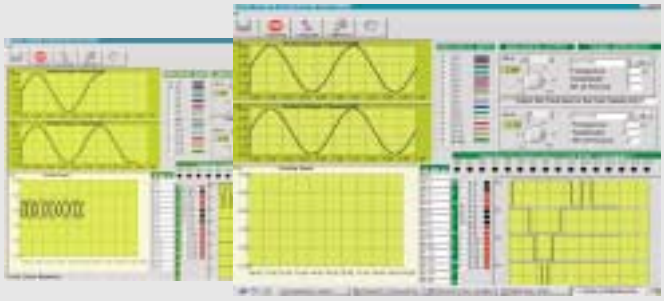

Unit


Interface


Data acquisiton board

Data Acquisition Software

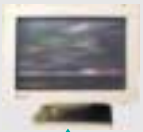
Used for:
Basic Electronics.
Communications.
Electricity.



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


Unit

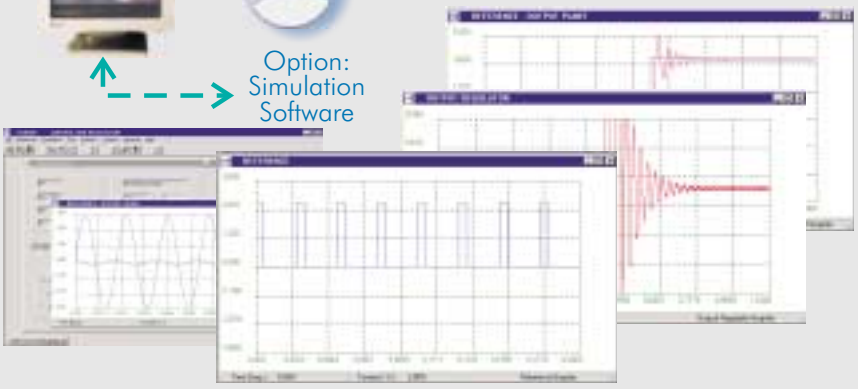

Data acquisiton board



Control Software

Option: Simulation Software

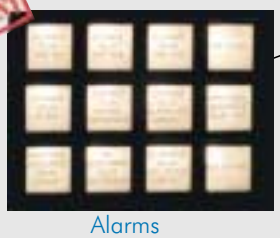
Used for:
High Tech Electronics (Control Electronics, Digital Electronics and Industrial Electronics).



HYBRID. **EDIBON TEACHING HYBRID SYSTEM (ENERGY)**

EDIBON PATENT

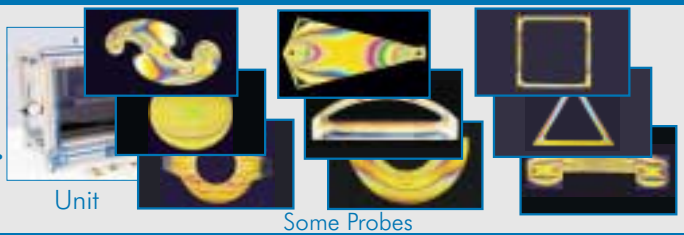
Used for:
Energy Power Plants.



Alarms

PHOTOELASTICITY

Used for:
Strength of Materials.

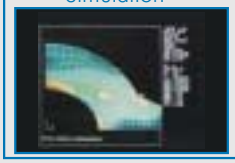


Unit

Some Probes

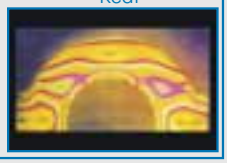
RESULTS

Simulation



Diferences between the simulation and the photoelastic reality.

Real



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

EDIBON PATENT

Unit

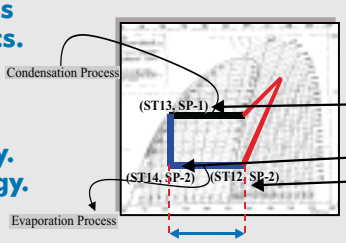
Interface

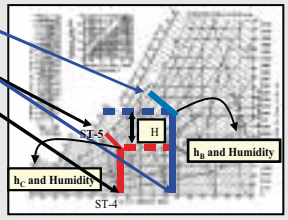
Data Acquisiton board

Software included:
-Control
-Data Acquisition
-Data Management

PLC option

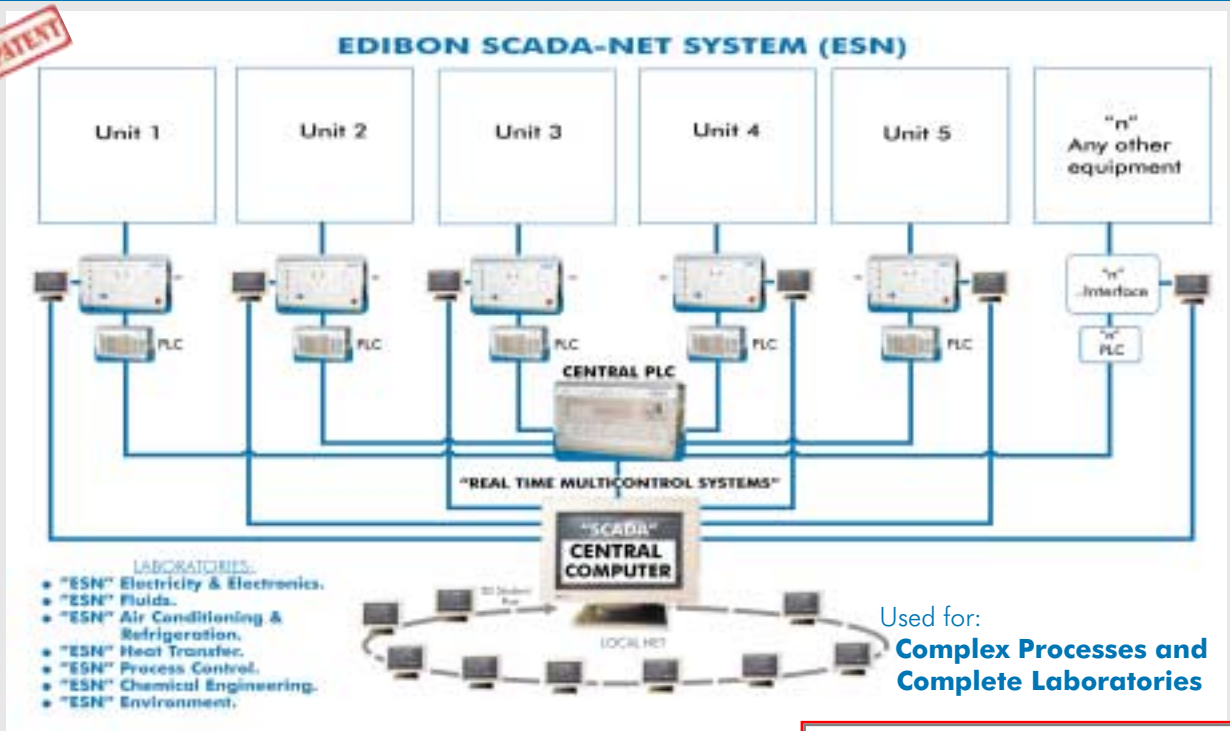
Used for:
Fluid Mechanics.
Aerodynamics.
Thermodymanics &Thermotechnics.
Process Control.
Chemical Engineering.
Food Technology.
Water Technology.
Environment.





ESN. **EDIBON SCADA-NET SYSTEM**

EDIBON PATENT



Used for:
Complex Processes and Complete Laboratories

WEB: www.edibon.com

Information in detail-CLICK HERE