edibon

Technical Teaching Equipment

Products List

100% own Design and own Manufacturing

Index

Units

Complete Laboratories and Industrial Systems (page 20)

Turn-Key Projects (page 20)

- Technical and Vocational Education.
- Higher Technical Education.

Custom made Units (page 20)

EDIBON can offer the design of teaching and research units, in accordance with the customer requirements, by using the EDIBON know-how and computer controlled system, as we have developed big amount of new Teaching and Research Technology.

Other units

See EDILAB products. (www.edilab.es/BETA/products)

Teaching Techniques Used

* 3D=	**EDIBON Three Dimensions System.** Real Time Control, obtaining results in Three Dimensions.
CAI=	**Computer Aided Instruction Software System.** The computer guides the student what to do and the teacher controls the student work.
CAL=	**Computer Aided Learning Software (Results Calculation and Analysis).**
EDAS/VIS=	**EDIBON Data Acquisition System/Virtual Instrumentation System.**
MUAD=	**Electric Power Data Acquisition System.**
* RTC=	**EDIBON Real Time Control System.** Electronic Real Time Control for Advanced Electronics.
* HYBRID=	**EDIBON Hybrid System (Energy).** It uses Real Units combined with Software, using mathematical models.
* PHOTOELASTICITY=	For Strength of Materials.
* SCADA=	**EDIBON Computer Control System: Computer Control + Data Acquisition + Data Management.** Multicontrol + Real Time Control + Open Control.
* PLC=	**Industrial Control using PLC.**
* Mini ESN=	**EDIBON Mini-Scada-Net System.** 30 students can work simultaneously doing Real Time Computer Control.
* ESN=	**EDIBON Scada-Net System (Management Control from a local NET).** 30 students can work simultaneously doing Real Time Computer Control.
* ETDL=	**EDIBON Technical Distance Learning System.** The Scada-Net System can be controlled through Internet at any distance.
FSS=	**Faults Simulation System.**

*=These Teaching Techniques are EDIBON PATENT.

Issue: HPI0111
Date: January/2011

C/ Del Agua, 14. Poligono Industrial San José de Valderas. 28918 LEGANÉS. (Madrid). SPAIN. Phone: +34 920199363. Fax: +34 920198647. edibon@edibon.com www.edibon.com

edibon INTERNATIONAL

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)

1.-Physics

1.1.- 3D Physics (Three Dimensions) (It uses 3D System)

- EFAC Computer Controlled **Three Dimensions (3D) Physics System:**

  - FUB **Base structure and Robot.** (Common for all applications type "F").

  Sets (sensor+elements+control software) **required for each application**

  - FCE **Set for Electrical Fields application.**
  - FCM **Set for Magnetic Fields application.**
  - FM **Set for Mechanics Study application.**
  - FAC **Set for Acoustics Study application.**
  - FOP **Set for Optics Study application.**
  - FTT **Set for Thermodynamics Study application.**

2.- Electronics

2.1.- Basic Electronics (It uses CAI and/or CAL and/or EDAS/VIS System)

- LIEBA **Basic Electronics and Electricity Integrated Laboratory:**

Power Supplies
(one power supply required)

- FA-CO **Power Supply.**
- EBC-100 **Base Unit**, with built-in power supply.

Modules

Basic Electronics concepts

- M3 **Semiconductors I.**
- M4 **Semiconductors II.**
- M6 **Oscillators.**
- M7 **Operational Amplifiers.**
- M8 **Filters.**
- M9 **Power Electronics.**
- M60 **Analog/Digital Converters.**
- M61 **Digital/Analog Converters.**
- M99 **Expansion Board.**

  Some electronic sub-boards available:

  - M99-1 **Analogical Commutator.**
  - M99-2 **Analogical Multiplier.**
  - M99-3 **Function Generator.**
  - M99-4 **AM Modulator.**
  - M99-5 **AM Demodulator.**
  - M99-6 **Motors, Generators and Controls.**

  * We can develop any electronic sub-board according to the application required by the customer.

Digital Electronics

- M10 **Digital Systems & Converters.**
- M11 **Digital Electronics Fundamentals.**
- M12 **Basic Combinational Circuits.**
- M13 **Basic Sequential Circuits.**
- M14 **Optoelectronics.**
- M41 **Resistance Transducers.**

Basic Electricity concepts

- M5 **Power Supplies.**
- M1 **Direct Current (D.C.) Circuits.**
- M2 **Alternating Current (A.C.) Circuits.**
- M16 **Electric Networks.**
- M17 **Electromagnetism.**
- M18 **Three-phase Circuits.**

Electronics Applications

- M43 **Applications of Temperature.**
- M49 **Applications of Temperature and Pressure.**
- M44 **Applications of Light.**
- M45 **Linear Position and Force.**
- M46 **Environmental Measurements.**
- M15 **Development Module.**
- M48 **Sounds Measurements.**

Control

- M65 **Control and Regulation.**
- M47 **Rotational Speed & Position Control.**

Basic Electronics: Microprocessors

- M30 **16 Bits Microprocessor.** (EDILAB)
- M31 **Z80 Microprocessor.** (EDILAB)
- M-EB **Practical Expansion Boards.** (EDILAB)
- M32 **8051 Microcontroller.** (EDILAB)
- M33 **68000 Microprocessor.** (EDILAB)
- M34 **DSP Microprocessor.** (EDILAB)

Software

- CAI **Computer Aided Instruction Software System,** additional and optional to the Modules type "M".
- LIEBA/CAL **Computer Aided Learning Software (Results Calculation and Analysis),** additional and optional to the Modules type "M".

Data Acquisition and Virtual Instrumentation

- EDAS/VIS 0.25 **EDIBON Data Acquisition System/Virtual Instrumentation System,** for being used with the Modules type "M".
- EDAS/VIS 1.25 **EDIBON Data Acquisition System/Virtual Instrumentation System,** for being used with the Modules type "M".

2.2.- Electronics Kits (It uses CAI and/or CAL and/or EDAS/VIS System)

- M-KITS **Basic Electronics and Electricity Assembly Kits:**

Required elements by any Kit

- FA-CO **Power Supply.**
- M15 **Development module.**

Assembly Kits

Basic Electronics concepts

- M3-KIT **Semiconductors I.**
- M4-KIT **Semiconductors II.**
- M6-KIT **Oscillators.**
- M7-KIT **Operational Amplifiers.**
- M8-KIT **Filters.**
- M9-KIT **Power Electronics.**

Digital Electronics

- M10-KIT **Digital Systems & Converters.**
- M11-KIT **Digital Electronics Fundamentals.**
- M12-KIT **Basic Combinational Circuits.**
- M13-KIT **Basic Sequential Circuits.**
- M14-KIT **Optoelectronics.**

Basic Electricity concepts

- M5-KIT **Power Supplies.**
- M1-KIT **Direct Current (D.C.) Circuits.**
- M2-KIT **Alternating Current (A.C.) Circuits.**
- M16-KIT **Electric Networks.**

Software

- CAI **Computer Aided Instruction Software System,** additional and optional to the Kits type "M-KIT".
- CAL **Computer Aided Learning Software (Results Calculation and Analysis),** additional and optional to the Kits type "M-KIT".

Data Acquisition and Virtual Instrumentation

- EDAS/VIS 0.25 **EDIBON Data Acquisition System/Virtual Instrumentation System,** for being used with the Kits type "M-KIT".
- EDAS/VIS 1.25 **EDIBON Data Acquisition System/Virtual Instrumentation System,** for being used with the Kits type "M-KIT".

2.3.- Transducers and Sensors

- SAIT **Transducers and Instrumentation Trainer.**

Software

- CAI **Computer Aided Instruction Software System,** additional and optional to "SAIT" Trainer.

Additional Data Acquisition and Virtual Instrumentation

- EDAS/VIS 0.25 **EDIBON Data Acquisition System/Virtual Instrumentation System,** for being used with "SAIT" Trainer.
- EDAS/VIS 1.25 **EDIBON Data Acquisition System/Virtual Instrumentation System,** for being used with "SAIT" Trainer.

- BS **Modular System for the Study of Sensors:** (It uses SCADA System)

Base Units
(one base unit is required)

- BSPC Computer Controlled **Base Unit.**
- BSUB **Base Unit** (no computer controlled).

Modules

- BS-1 **Vibration and/or Deformation Test Module.**
- BS-2 **Temperature Test Module.**
- BS-3 **Pressure Test Module.**
- BS-4 **Flow Test Module.**
- BS-5 **Ovens Test Module.**
- BS-6 **Liquid Level Test Module.**
- BS-7 **Tachometers Test Module.**
- BS-8 **Proximity Test Module.**
- BS-9 **Pneumatic Test Module.**
- BS-10 **Light Test Module.**

- SPC Computer Controlled **Weighing System.** (It uses SCADA System)
- SCSP **Pressure Sensors Calibration System.**

2.4.- Control Electronics (Advanced) (It uses RTC System)

- RYC Computer Controlled **Teaching Unit for the Study of Regulation and Control.**
- RYC/SOF **Regulation and Control Simulation Software.**
- CADDA Computer Controlled **Teaching Unit for the Study of Analog/Digital and Digital/Analog Converters.**
- CADDA/SOF **Analog/Digital and Digital/Analog Converters Simulation Software.**

2.5.- Digital Electronics (Advanced) (It uses RTC System)

- TDS Computer Controlled **Teaching Unit for the Study of Digital Signal Processing.**
- TDS/SOF **Digital Signal Processing Simulation Software.**

2.6.- Industrial Electronics (Advanced) (It uses RTC System)

- TECNEL Computer Controlled **Teaching Unit for the Study of Power Electronics** (with IGBTS). (Converters: DC/AC + AC/DC + DC/DC + AC/AC).
- TECNEL/B Computer Controlled **Basic Teaching Unit for the Study of Power Electronics** (no IGBTS). (Converters: AC/DC + AC/AC).
- PECADS **Power Electronics Computer Aided Design and Simulation Software.** (Converters: DC/AC, AC/DC, DC/DC, AC/AC).
- SERIN/CA Computer Controlled **Advanced Industrial Servosystems Trainer (AC motors).**
- SERIN/CC Computer Controlled **Advanced Industrial Servosystems Trainer (DC motors).**
- SERIN/CACC Computer Controlled **Advanced Industrial Servosystems Trainer (AC and DC motors).**
- SERIN/CCB **Basic Servosystems Trainer (DC motors).**
- SERIN/CAB **Basic Servosystems Trainer (AC motors).**
- SERVOS/SOF **Servosystems Simulation Software.**

3.- Communications

3.1.- Analog Communications (It uses CAI and/or CAL and/or EDAS/VIS System)

- LICOMBA **Communications Integrated Laboratory:**

  Power Supplies
  (one power supply required)

  - FA-CO **Power Supply.**
  - EBC-100 **Base Unit**, with built-in power supply.

  Modules

  - ED-CAM **AM Communications.**
  - ED-CFM **FM Communications.**

  Software

  - CAI **Computer Aided Instruction Software System,** additional and optional to the Modules "ED-CAM and ED-CFM".
  - LICOMBA/CAL **Computer Aided Learning Software (Results Calculation and Analysis),** additional and optional to the Modules "ED-CAM and ED-CFM".

  Data Acquisition and Virtual Instrumentation

  - EDAS/VIS 0.25 **EDIBON Data Acquisition System/Virtual Instrumentation System,** for being used with the Modules "ED-CAM and ED-CFM".
  - EDAS/VIS 1.25 **EDIBON Data Acquisition System/Virtual Instrumentation System,** for being used with the Modules "ED-CAM and ED-CFM".

- EMDA **Analogue and Digital Modulations Trainer.**

3.2.- Digital Communications (It uses CAI and/or CAL and/or EDAS/VIS System)

- LICOMBA **Communications Integrated Laboratory:**

  Power Supplies
  (one power supply required)

  - FA-CO **Power Supply.**
  - EBC-100 **Base Unit**, with built-in power supply.

  Modules

  - EDICOM1 **Signals Sampling and Reconstruction.**
  - EDICOM2 **Time Division Multiplex (TDM). PAM Transmitter and Receiver.**
  - EDICOM3 **MIC-TDM Transmission/Reception.**
  - EDICOM4 **Delta Modulation and Demodulation.**
  - EDICOM5 **Line codes. Signal Modulation and Demodulation.**
  - EDICOM6 **Optical Fibre Transmission and Reception.**

  Software

  - CAI **Computer Aided Instruction Software System,** additional and optional to the Modules type "EDICOM".
  - LICOMBA/CAL **Computer Aided Learning Software (Results Calculation and Analysis),** additional and optional to the Modules type "EDICOM".

  Data Acquisition and Virtual Instrumentation

  - EDAS/VIS 0.25 **EDIBON Data Acquisition System/Virtual Instrumentation System,** for being used with the Modules type "EDICOM".
  - EDAS/VIS 1.25 **EDIBON Data Acquisition System/Virtual Instrumentation System,** for being used with the Modules type "EDICOM".

- EMDA **Analogue and Digital Modulations Trainer.**

3.3.- Telephony

- CODITEL **Telephony Systems Trainer.**

3.4.- Applied Communications

- EGPS **GPS Trainer.**
- EAN **Antenna Trainer.**
- ESA **Satellite Trainer.**
- EMI **Microwave Trainer.**
- EBL **Bluetooth Trainer.**
- ETM **Cellular Mobile Trainer.**
- ERA **Radar Trainer.**

4.- Electricity

4.1.- Basic Electricity (It uses CAI and/or CAL and/or MUAD System)

- LIELBA **Electrical Installations Integrated Laboratory:**

Frames (applications support)

- BASB **Basic frame.**
- BASS **Double frame, single side working post.**

APPLICATIONS:

Domestic Electrical Installations

General

- AD1A **Robbery Alarm Station.**
- AD3A **Fire Alarm Station.**
- AD5 **Temporization of Stairs.**
- AD13 **Audio Door Entry System.**
- AD14 **Audio and Video Door Entry System.**

Industrial Control

- AD6A **Luminosity Control Station.**
- AD9A **Heating Control Station.**
- AD15A **Position Control Station.**
- AD17A **Photoelectric Control Position Station.**
- AD22 **Flooding Control Station.**
- AD23 **Wireless Basic Control Station (RF).**
- AD24 **Position Switch.**
- AD25A **Control Station for Domestic Electric Services through the Telephone.**
- AD28A **Integral Control Station of Domestic Electric Systems.**
- AD30 **Gas Control Station.**

Sound

- AD19A **Sound Station.**
- AD31 **Movement and Sound Detection and Control.**

Instruments

- AD8 **Blinds Activator.**
- AD11A **Network Analyzer.**
- AD32 **24 Vac/12 Vdc Circuits Analyzer.**
- AD33 **Installations Faults Simulator.**

Industrial Electrical Installations

Starters and Motors

- AI1 **Star-Delta Starter.**
- AI2 **Starter through Auto-Transformer.**
- AI4 **Starter-Inverter.**
- AI5 **AC Wound Rotor Motor Starter.**
- AI6 **DC Motor Starter.**
- AI12 **Modular Trainer (AC Motors).**

Speed Control

- AI3 **Speed Commutator for Dahlander Motor.**
- AI7 **Automatic Change of Speed of a Dahlander Motor with Change of Direction.**

Electrotecnics

- AI8 **Reactive Power Compensation (Power Factor Correction).**
- AI13 **Modular Trainer for Electrotecnics.**
- AI13-A **Modular Trainer for Electrotecnics (RLC Circuits).**
- AI13-B **Modular Trainer for Electrotecnics (Electrostatic Kit).**
- AI13-C **Modular Trainer for Electrotecnics (Motors).**
- AI13-D **Modular Trainer for Electrotecnics (Transformers).**
- AI13-E **Modular Trainer for Electrotecnics (Lighting).**

Safety

- AI9 **People Safety Against Indirect Electrical Contacts in TT Neutral Regimen.**
- AI10 **People Safety Against Indirect Electrical Contacts in TN Neutral Regimen.**
- AI11 **People Safety Against Indirect Electrical Contacts in IT Neutral Regimen.**

Energy Installations

Protection and Relays

- AE3 **Test Unit for Magneto-Thermal Automatic Switches.**
- AE4 **Test Unit for Differential Automatic Switches.**
- AE5 **Relay Control Station.**
- AE7 **Multi-Functional Electrical Protection Station.**
- AE9 **Directional Relay:** Earth Fault Detection. Directional Power Flow Detection. Reactive Power Flow Detection.

Measurements and Control

- AE2 **Reactive Energy Control and Compensation.**
- AE6 **Energy Counters Control Station.**
- AE8 **Power & Torque Measurements of Electrical Motors.**

Lines

- AE1 **Aerial Line Model.**

Software

- CAI **Computer Aided Instruction Software System,** additional and optional to the LIELBA Applications type "A".
- CAL **Computer Aided Learning Software (Results Calculation and Analysis),** additional and optional to the LIELBA Applications type "A".

Data Acquisition

- MUAD **Electric Power Data Acquisition System,** for being used with the LIELBA Applications type "A".

- ELE-KITS **Electrical Installations Assembly Kits:**

  - BAS-K **Installation Cubicle.**

KITS:

Domestic Electrical Installations

General

- KD1A **Robbery Alarm Station Kit.**
- KD3A **Fire Alarm Station Kit.**
- KD5 **Temporization of Stairs Kit.**
- KD13 **Audio Door Entry System Kit.**
- KD14 **Audio and Video Door Entry System Kit.**

Industrial Control

- KD6A **Luminosity Control Station Kit.**
- KD9A **Heating Control Station Kit.**
- KD15A **Position Control Station Kit.**
- KD17A **Photoelectric Control Position Station Kit.**
- KD22 **Flooding Control Station Kit.**
- KD23 **Wireless Basic Control Station (RF) Kit.**
- KD24 **Position Switch Kit.**
- KD25A **Kit of Control Station for Domestic Electric Services through the Telephone.**
- KD28A **Kit of Integral Control Station of Domestic Electric Systems.**
- KD30 **Gas Control Station Kit.**

Sound

- KD19A **Sound Station Kit.**
- KD31 **Movement and Sound Detection and Control Kit.**

Instruments

- KD8 **Blinds Activator Kit.**
- KD11A **Network Analyzer Kit.**
- KD32 **24 Vac/12 Vdc Circuits Analyzer Kit.**
- KD33 **Installations Faults Simulator Kit.**

Industrial Electrical Installations

Starters and Motors

- KI1 **Star-Delta Starter Kit.**
- KI2 **Starter through Auto-Transformer Kit.**
- KI4 **Starter-Inverter Kit.**
- KI5 **AC Wound Rotor Motor Starter Kit.**
- KI6 **DC Motor Starter Kit.**

Speed Control

- KI3 **Speed Commutator for Dahlander Motor Kit.**
- KI7 **Kit of Automatic Change of Speed of a Dahlander Motor with Change of Direction.**

Electrotecnics

- KI8 **Kit of Reactive Power Compensation (Power Factor Correction).**

Safety

- KI9 **Kit of People Safety Against Indirect Electrical Contacts in TT Neutral Regimen.**
- KI10 **Kit of People Safety Against Indirect Electrical Contacts in TN Neutral Regimen.**
- KI11 **Kit of People Safety Against Indirect Electrical Contacts in IT Neutral Regimen.**

Energy Installations

Protection and Relays

- KE3 **Kit of Test Unit for Magneto-Thermal Automatic Switches.**
- KE4 **Kit of Test Unit for Differential Automatic Switches.**
- KE5 **Relay Control Station Kit.**
- KE7 **Multi-Functional Electrical Protection Station Kit.**
- KE9 **Kit of Directional Relay:** Earth Fault Detection. Directional Power Flow Detection. Reactive Power Flow Detection.

Measurements and Control

- KE2 **Kit of Reactive Energy Control and Compensation.**
- KE6 **Energy Counters Control Station Kit.**
- KE8 **Kit of Power & Torque Measurements of Electrical Motors.**

Lines

- KE1 **Aerial Line Model Kit.**

Software

- CAI **Computer Aided Instruction Software System,** additional and optional to the Kits type "K".
- CAL **Computer Aided Learning Software (Results Calculation and Analysis),** additional and optional to the Kits type "K".

Data Acquisition

- MUAD **Electric Power Data Acquisition System,** for being used with the Kits type "K".

- EIV2 **Home Automation Installations Trainer.**
- EIV6 **Home Automation Installations Trainer.**

4.2.- Electricity Demonstration

- PDL **Lamps Demonstration Panel.**
- PDCE-P **Electric Cables Demonstration Panel (Power).**
- PDCE-S **Electric Cables Demonstration Panel (Signalling).**
- PDF **Fuses Demonstration Panel.**

4.3.- Electrical Installations Workshop

- EIWS **Including furniture, tools, components, etc.**

4.4.- Electrical Machines

- LIMEL Integrated Laboratory for Electrical Machines:

Electrical Machines Units

-EME Electrical Machines Unit. (Advanced option).
-EME/M Electrical Machines Unit. (Intermediate option).
-EME/B Electrical Machines Unit. (Basic option).

Measurement Units

-MULT Digital Multimeter.
-EAL Network Analyzer Unit.
-EALD Network Analyzer Unit, with Computer Data Acquisition + Oscilloscope (PC).
-EALDG Network Analyzer Unit, with Computer Data Acquisition+Oscilloscope (PC)+Oscilloscope Display.
-EAM-VA Analog Measurement Unit.
-MUAD Electric Power Data Acquisition System.

Loads

-RCL3R Resistive, Inductive and Capacitive Loads Module.
-Individual elements:
-IND Inductance with protection box.
-CON Condensers with protection box.
-REV Variable Resistance with protection box.
-REF Fixed Resistance with protection box.
-REV/T Three-phase variable resistance with protection box.

Motors

Motors (DC)

-EMT1 D.C. Independent excitation motor-generator.
-EMT2 D.C. Series excitation motor-generator.
-EMT3 D.C. Shunt excitation motor-generator.
-EMT4 D.C. Compound excitation motor-generator.
-EMT5 D.C. Shunt-series compound excitation motor.
-EMT12 Universal motor (single-phase).
-EMT15 D.C. Permanent magnet motor.
-EMT18 D.C. Brushless motor.
-EMT19 Stepper motor.

Motors (AC)

-EMT6 A.C. Synchronous Three-phase motor alternator.
-EMT7 Asynchronous Three-phase motor of squirrel cage.
-EMT7-B Asynchronous Three-phase motor of squirrel cage (4 poles).
-EMT8 Asynchronous Three-phase motor with wound rotor.
-EMT9 Dahlander Three-phase (two-speeds).
-EMT10 Asynchronouts Three-phase motor of two independent speeds.
-EMT11 Asynchronous Single-phase motor with starting capacitor.
-EMT12 Universal motor (single-phase).
-EMT14 Repulsion motor, single-phase with short-circuited brushes.
-EMT16 Asynchronous Single-phase motor with starting and running capacitor.
-EMT17 Three-phase motor of squirel cage with "Y" connection.
-EMT20 Asynchronous Single-phase motor with split phase.
-EMT21 Three-phase Reluctance motor.
-EMT22 Single-phase Shaded Pole motor.

Brakes

-FRE-FE Electronic Brake.
-DI-FRE Pendular Dynamo Brake.
-EMCC Load Cell Module.
-FREND Dynamo Brake.
-FRENP Magnetic Powder Brake.
-FREPR Prony Brake.
-FRECP Eddy Current Brake.

Transformers

-ETT Three-phase and Single-phase Transformers Unit.
-TPPT Three- phase Power Transformer Unit.
-EMPTA Auxiliary Transformer and Protection Module.
-AUTR Variable Auto-transformer.
-Individual elements:
-TRANS Single-phase transformer.
-TRANS/3Three-phase transformer.

DC Motor Speed Control

-VVCC DC Motor Speed Controller.
-VVCC/M DC Motor Speed Controller (intermediate option).
-VVCC/B DC Motor Speed Controller, with no other elements.

AC Motor Speed Control

-VVCA AC Motor Speed Controller.
-VVCA/M AC Motor Speed Controller (intermediate option).
-VVCA/B AC Motor Speed Controller, with no other elements.

PLC (Programmable Logic Controller)

-PLC-PI PLC Module for Unit Operations Control.
-EDIBON FP-X-CPU PLC, with no other elements.

Tachogenerator

-TECNEL/T Tachogenerator.

Software

- CAI Computer Aided Instruction Software System.
- CAL Computer Aided Learning Software (Results Calculation and Analysis).

Data Acquisition

- MUAD Electric Power Data Acquisition System.

- EMT-E Motors (available 21 different type of motors).
- EMT-S Cut Away Motors (available 21 different type of motors).
- ESAM Faults Simulation Trainer in Electrical Motors.
- ESAE Electrical Faults Simulation Trainer.
- EEA Alternators Study Unit.
- EGMG24 Motor-Generator Group, three-phase 24 Vac, no excitation required (permanent magnets).
- ERP Protection Relays Test:
  - ERP-UB Protection Relays Test Unit (common for the relays modules type "ERP").

Relays Modules

  - ERP-SFT Overcurrent and Earth Fault Protection Relay Module.
  - ERP-SDND Directional/Non Directional Overcurrent Protection Relay Module.
  - ERP-PDF Differential Protection Relay Module.
  - ERP-MA Feeders Management Relay Module.
  - ERP-PD Distance Protection Relay Module.

4.5.- Electrical Machines Kits

- EMT-KIT Disassembly Machines Kit.

5.- Energy

5.1.- Energy Simulation

5.2.- Energy Power Plants (It uses SCADA System)

- APS12 **Advanced Electrical Power System and Mechanical Power Plants Simulator** (Generation, Transformation, Transport, Distribution and Consumption). (12 different Power Plants can be simulated).
- MPSS **Modular Power System Simulator.**
- MPSSC **Modular Power System Simulator with SCADA Control System.**

5.3.- Renewable (Alternative) Energies

Photovoltaic

- EESFC Computer Controlled **Photovoltaic Solar Energy Unit.** (It uses SCADA System)
- EESFB **Photovoltaic Solar Energy Unit.**
- MINI-EESF **Photovoltaic Solar Energy Modular Trainer.**
- EF5C Computer Controlled **Photovoltaic Solar Energy Concentrator Unit.** (It uses SCADA System)
- EF5B **Photovoltaic Solar Energy Concentrator Unit.**

Solar Thermal

- EESTC Computer Controlled **Thermal Solar Energy Unit.** (It uses SCADA System)
- EEST **Thermal Solar Energy Unit.**
- MINI-EESTC Computer Controlled **Thermal Solar Energy Basic Unit.** (It uses SCADA System)
- MINI-EEST **Thermal Solar Energy Basic Unit.**
- ET5C Computer Controlled **Thermal Solar Energy Concentrator Unit.** (It uses SCADA System)
- ET5B **Thermal Solar Energy Concentrator Unit.**

Wind

- EEEC Computer Controlled **Wind Energy Unit.** (It uses SCADA System)
- EEE **Wind Energy Unit.**
- MINI-EEEC Computer Controlled **Wind Energy Basic Unit.** (It uses SCADA System)
- MINI-EEE **Wind Energy Basic Unit.**
- EFTEC Computer Controlled **Turbine Electric Hub Troubleshooting Learning System.** (It uses SCADA System)
- EFTNC Computer Controlled **Turbine Nacelle Troubleshooting Learning System.** (It uses SCADA System)

Fuel Cells

- EC5C Computer Controlled **PEM Fuel Cell Unit** (22 Watt). (It uses SCADA System)
- EC5B **PEM Fuel Cell Unit** (22 Watt).
- EC6C Computer Controlled **PEM Fuel Cell Advanced Unit** (1.5 kW). (It uses SCADA System)
- EC6B **PEM Fuel Cell Advanced Unit** (1.5 kW).
- EA5C Computer Controlled **Alkaline Fuel Cell Unit.** (It uses SCADA System)
- EA5B **Alkaline Fuel Cell Unit.**

Bio

- EBDC Computer Controlled **Biodiesel Process Unit.** (It uses SCADA System)
- EBDB **Biodiesel Process Unit.**
- EBEC Computer Controlled **Bioethanol Process Unit.** (It uses SCADA System)
- EBEB **Bioethanol Process Unit.**
- EBGC Computer Controlled **Biogas Process Unit.** (It uses SCADA System)
- EBGB **Biogas Process Unit.**
- EBMC Computer Controlled **Biomass Process Unit.** (It uses SCADA System)
- EBMB **Biomass Process Unit.**

Sea

- EOMC Computer Controlled **Waves Energy Unit.** (It uses SCADA System)
- EOMB **Waves Energy Unit.**
- EMMC Computer Controlled **Tidal Energy Unit.** (It uses SCADA System)
- EMMB **Tidal Energy Unit.**
- ECMC Computer Controlled **Submarine Currents Energy Unit.** (It uses SCADA System)
- ECMB **Submarine Currents Energy Unit.**
- ETMC Computer Controlled **Ocean Thermal Energy Unit.** (It uses SCADA System)
- ETMB **Ocean Thermal Energy Unit.**

Geothermal

- EG5C Computer Controlled **Geothermal (low enthalpy) Energy Unit.** (It uses SCADA System)
- EG5B **Geothermal (low enthalpy) Energy Unit.**
- EG6C Computer Controlled **Geothermal (high enthalpy) Energy Unit.** (It uses SCADA System)
- EG6B **Geothermal (high enthalpy) Energy Unit.**

Hidro

- SCE Computer Controlled **Generating Stations Control and Regulation Simulator.** (It uses SCADA System)

Organic

- TORC Computer Controlled **Organic Rankine Cycle Unit.** (It uses SCADA System)

5.4.- Relays Units

- ERP **Protection Relays Test:**
  - ERP-UB **Protection Relays Test Unit** (common for the relays modules type "ERP").

  Relays Modules

  - ERP-SFT **Overcurrent and Earth Fault Protection Relay Module.**
  - ERP-SDND **Directional/Non Directional Overcurrent Protection Relay Module.**
  - ERP-PDF **Differential Protection Relay Module.**
  - ERP-MA **Feeders Management Relay Module.**
  - ERP-PD **Distance Protection Relay Module.**

6.- Automation & Systems

6.1.- Automation (PLC Process Emulation)

- PLCE **PLC Trainer.**

PLC Process Emulators for working with PLCE:

Traffic and Parking

- PLCE-CST **Traffic Signal Control.**
- PLCE-AV **Car Parking.**
- PLCE-AG2Z **Two Zones Parking Garage.**

Small Industrial Machines

- PLCE-CA **Elevator Control.**
- PLCE-CLA **Automatic Washing Machine Control.**
- PLCE-MB **Drinks Machine.**
- PLCE-MBC **Hot Drinks Machine.**
- PLCE-CB **Pump Control.**
- PLCE-MA **Embossing Machine.**

Small Industrial Systems

- PLCE-ST **Drilling System.**
- PLCE-SBAR **Dirty-Water Pump System.**
- PLCE-SBP **Pump System (Pressure).**
- PLCE-SL **Cleaning System.**
- PLCE-SALL **Automatic Filling System.**
- PLCE-SBT **Conveyor Belts System.**
- PLCE-SCCT **Conveyor Charging System.**
- PLCE-SCA **Canalization System.**
- PLCE-SDT **Pipe Bending System.**
- PLCE-PAE **Automatic Stamping Press.**

Big Industrial Systems

- PLCE-PLLT **Filling Process of Tanks.**
- PLCE-SCC **Collecting Belt Conveyor.**
- PLCE-MCC **Mails Allocation Machine.**
- PLCE-RAC **Compressed Air Network.**
- PLCE-TC **Coal Treatment.**
- PLCE-PELE **Packing Line and Bottling Plant.**

Simple Control Applications

- PLCE-CA2P **Two-Doors Access Control.**
- PLCE-CI **Fire Control.**
- PLCE-CP **Proximity Control** (security).
- PLCE-CCO **Sluice Gate Control.**
- PLCE-CNC **Level and Flow Control.**
- PLCE-CNTA **Water Tower Level Control.**
- PLCE-CF **Photo Control.**
- PLCE-CMM **Molding Machine Control.**
- PLCE-CPOS **Position Control.**
- PLCE-CS **Silo Control.**
- PLCE-CACV **Vehicle Feeding & Loading Control.**

Industrial Control Applications

- PLCE-ACC **Feeding and Loading Control.**
- PLCE-CML **Liquids Blending Control.**
- PLCE-CME **Mixer Control.**
- PLCE-CR **Reactor Control.**
- PLCE-CCP **Count and Position Control.**
- PLCE-CL **Rolling Mill Control.**
- PLCE-CTRA **WorkCell Application.**
- PLCE-CTI **Tower Lighting Control.**

Thermal Applications

- PLCE-AC **Buffer Storage.**
- PLCE-RT **Temperature Regulation.**
- PLCE-CSC **Heating System Control.**
- PLCE-CSV **Ventilation System Control.**

Electrical Machines Control (Motors)

- PLCE-M **Motor Control.**
- PLCE-MPP **Stepper Motor Control.**
- PLCE-MET **Star-Delta Connection.**
- PLCE-MCETI **Reversing Star-Delta Connection.**
- PLCE-MD **Dahlander Motor Circuit.**
- PLCE-M2BS **Motor with 2 Separate Windings.**
- PLCE-MAC **Starting a Wound-Rotor Motor.**

Alarms/Current

- PLCE-AN **Annunciator.**
- PLCE-SLU **Running Lights.**
- PLCE-CPR **Reactive Current Compensation.**
- PLCE-MCI **Reversing Contactor.**

6.2.- Automation (PLC Small Scale Real Applications)

- PLCE **PLC Trainer.**

PLC Small Scale Real Applications for working with PLCE:

Sensors

- PLCE-BS1 **Vibration and/or Deformation Test Module.**
- PLCE-BS2 **Temperature Test Module**
- PLCE-BS3 **Pressure Test Module.**
- PLCE-BS4 **Flow Test Module.**
- PLCE-BS5 **Ovens Test Module.**
- PLCE-BS6 **Liquid Level Test Module.**
- PLCE-BS7 **Tachometers Test Module.**
- PLCE-BS8 **Proximity Test Module.**
- PLCE-BS9 **Pneumatic Test Module.**
- PLCE-BS10 **Light Test Module.**

6.3.- Automation (Industrial PLC Applications)

- PLC-IN **PLC Industrial Control System.**

6.4.- Automation (PLC Unit Operations Control)

- PLC-PI **PLC Module for Unit Operations Control** (for working with EDIBON Computer Controlled Units).
- EDIBON FP-X-CPU **PLC,** with no additional elements.

6.5.- Automation (Regulation and Control) (It uses RTC System)

- RYC Computer Controlled **Teaching Unit for the Study of Regulation and Control.**
- RYC/SOF **Regulation and Control Simulation Software Package.**

6.6.- Automation (Control)

- CECI **Industrial Controllers Trainer.**
- CRCI **Industrial Controllers Networking.**
- CEAB **Trainer for Field Bus Application.**
- CEAC **Controller Tuning Trainer.**
- EPID-T **Industrial Regulation Trainer, PID type (Temperature).**

6.7.- Systems

- SCE Computer Controlled **Generating Stations Control and Regulation Simulator.** (It uses SCADA System)
- SBB **Ball and Beam System.**
- CPVM **DC Motor Position and Speed Control.**

7.- Mechanics & Materials

7.1.- Basic Mechanics (It uses CAI and/or CAL System)

- LIMEBA **Basic Mechanics Integrated Laboratory:**

  Modules

  - MECA1 **Statics Experiments.**
  - MECA2 **Load Elevation Mechanisms Experiments.**
  - MECA3 **Transmissions Experiments.**
  - MECA4 **Dynamics Experiments.**
  - MECA5 **Friction Experiments.**
  - MECA6 **Special Mechanisms Experiments.**

  Software

- CAI **Computer Aided Instruction Software System,** additional and optional to the Modules type "MECA".
- LIMEBA/CAL **Computer Aided Learning Software System (Results Calculation and Analysis),** additional and optional to the Modules type "MECA".

7.2.- General Mechanics

7.2.1.- Automotive Mechanisms

- MFT **Drum Brake System.**
- MEM **Plate Clutch.**
- MFD **Disk Brake.**
- MCC **Gearbox.**
- MDC **Differential-Crownwheel and Pinion.**
- MFF **Braking and Accelerating Forces Unit.**
- MGE **Gear Generation Unit.**

7.2.2.- Gears and Transmissions

- MEC **Overdrive Unit.**
- MEE **Geared Lifting Machine.**
- MBW **Borg-Warner Automatic Transmission.**
- MED **Static & Dynamic Balancing Unit.**
- MTE1 **Epicyclic Gear Unit** (1 element).
- MTE2 **Epicyclic Gear Unit** (2 elements).
- MTE3 **Epicyclic Gear Unit** (3 elements).

7.2.3.- Mechanisms

- MSH **Simple Hydraulic System.**
- MBD **Slider Crank Mechanism.**
- MYE **Scotch Yoke Mechanism.**
- MBM1 **Slotted Link Mechanism.**
- MBM2 **Whitworth Quick Return Mechanism.**
- MCA **Chain Mechanism.**
- MME **Geneva Stop Mechanism.**
- MAC **Coupling Mechanism.**
- MUN **Hook's Joint Mechanism.**
- MEX **Cam and Follower Mechanism.**
- MUV **Constant Velocity Joint Mechanism.**
- MBI **Crank Mechanism.**

7.2.4.- Lubrication. Wear. Friction

- MCF **Belt Friction Unit.**
- MEF **Friction Study Unit.**

7.3.- Automotive

7.3.1.- Sensors and Basic Electricity of Automobile

7.3.2.- Electricity and Electronics of Automobile

7.3.3.- Motors

7.3.4.- Injection Systems

7.3.5.- General Automotive Mechanics

7.4.- Special Mechanics & Foundry

- MCAM **Bell Casting Basic Training Set.**
- MCLA **Foundry Building-up Training Set 1.**
- MCEN **Centrifugal Casting Building-up Training Set 2.**

7.5.- Strength of Materials

7.5.1.- General Strength Of Materials

- EEFC Computer Controlled **Fatigue Testing Unit.** (It uses SCADA System)
- EEF **Fatigue Testing Unit.**
- EEU/20KN **Universal Material Testing Unit.**
- EEFCR **Creep Testing Unit.**
- EEICI **Charpy and Izod Impact Testing Unit.**
- EEDB **Brinell Hardness Testing Unit.**
- MVV **Unsymmetrical Cantilever Unit .**
- MUP **Loading of Struts Unit.**
- MTP **Twist & Bend Machine.**
- MFV **Beam Deflection Unit.**
- MTB **Torsion Unit.**
- MFLT **Strut Unit.**
- MVS **Suspension Bridge Unit.**
- MFL **Two Pinned Arch Unit.**
- MPO **Portal Frame Unit.**
- MDB **Deflection of Curved Bars Unit.**
- MMF **Shear Force and Bending Momentum Unit.**
- MVL **Free Vibration Unit.**
- MVLF **Free & Forced Vibration Unit.**
- MOT **Torsional Oscillations Unit.**
- MAE **Acceleration of Geared Systems Unit.**
- MES **Simple Balancing Unit.**
- MBU **Universal Bench Mounted Frame.**
- MCG **Strain Gauge Calibration Unit.**
- MCD **Thin Cylinder Unit.**

7.5.2.- Strength of Materials (Photoelasticity)

(It uses PHOTOELASTICITY System)

- EFO **Photoelasticity Unit.**
- EFOC **Photoelasticity Unit with Strain Gauges Measurement System** (quality and quantity measurement in some points).
- EFOV **Photoelasticity Unit with Artificial Vision System** (quality and quantity measurement in any point).

7.6.- Basic Cut Away Mechanics

7.7.- General Cut Away Mechanics

7.8.- Building (It uses SCADA System)

- TIAC Computer Controlled **Acoustic Impedance Tube/Acoustic Insulation Test Unit.**
- TDRC Computer Controlled **Noise Control Demonstration Unit.**
- TEVC Computer Controlled **Ventilation Trainer.**
- TCMC Computer Controlled **Thermal Conductivity of Building and Insulating Materials Unit.**

7.9.- Civil Engineering

7.10.-Agricultural Engineering

7.11.-Other Engineerings

8.- Fluid Mechanics & Aerodynamics

8.1.- Fluid Mechanics (Basic) (It uses CAI and/or CAL and/or BDAS System)

- LIFLUBA **Basic Fluids Mechanics Integrated Laboratory:**

Base Service Units

- FME00 **Hydraulics Bench.**
- FME00/B **Basic Hydraulic Feed System.**

Modules

General concepts

- FME01 **Impact of a Jet.**
- FME02 **Flow over Weirs.**
- FME04 **Orifice Discharge.**
- FME14 **Free and Forced Vortices.**
- FME08 **Hydrostatic Pressure.**
- FME10 **Dead Weight Calibrator.**
- FME11 **Metacentric Height.**
- FME26 **Depression Measurement System** (vacuum gauge).
- FME32 **Pitot Static Tube Module.**

Laws

- FME03 **Bernoulli's Theorem Demonstration.**
- FME22 **Venturi, Bernoulli and Cavitation Unit.**
- FME06 **Osborne-Reynolds' Demonstration.**
- FME31 **Horizontal Osborne-Reynolds Demonstration.**
- FME24 **Unit for the study of Porous Beds in Venturi Tubes (Darcy's Equation).**

Demonstration

- FME09 **Flow Visualization in Channels.**
- FME20 **Laminar Flow Demonstration.**
- FME30 **Vortex Flow Meter.**
- FME15 **Water Hammer.**
- FME19 **Cavitation Phenomenon Demonstration.**
- FME25 **Flow Channel, 1m. length.**
- FME18 **Flow Meter Demonstration.**
- FME17 **Orifice and Free Jet Flow.**

Pipes

- FME05 **Energy Losses in Bends.**
- FME07 **Energy Losses in Pipes.**
- FME23 **Basic Pipe Network Unit.**

Hydraulic Machines

- FME12 **Series/Parallel Pumps.**
- FME13 **Centrifugal Pumps Characteristics.**
- FME27 **Axial Flow Turbine.**
- FME16 **Pelton Turbine.**
- FME28 **Francis Turbine.**
- FME29 **Kaplan Turbine.**
- FME21 **Radial Flow Turbine.**

Software

- CAI **Computer Aided Instruction Software System,** additional and optional to the Modules type "FME".
- FME/CAL **Computer Aided Learning Software (Results, Calculation and Analysis),** additional and optional to the Modules type "FME".

Data Acquisition

- BDAS **Basic Data Acquisition System and sensors,** for being used with the Modules type "FME".

8.2.- Fluid Mechanics (General)

- BHI **Hydrostatics Bench & Fluid Properties.**
- LFA **Laminar Flow Visualization and Analysis Unit.**
- AFTC Computer Controlled **Fluid Friction in Pipes, with Hydraulics Bench (FME00).** (It uses SCADA System)
- AFT **Fluid Friction in Pipes, with Hydraulics Bench (FME00).**
- AFT/B **Fluid Friction in Pipes, with Basic Hydraulic Feed System (FME00/B).**
- AFT/P **Fluid Friction in Pipes.**
- AFT/CAL **Computer Aided Learning Software (Results, Calculation and Analysis),** additional and optional to the units type "AFT".
- AMTC Computer Controlled **Pipe Network Unit, with Hydraulics Bench (FME00).** (It uses SCADA System)
- AMT **Pipe Network Unit, with Hydraulics Bench (FME00).**
- AMT/B **Pipe Network Unit, without Hydraulics Bench (FME00).**
- EGAC Computer Controlled **Water Hammer Unit.** (It uses SCADA System)
- HMM **Manometers & Multimanometers:**
  - HMM-W500 **U-shape Double Manometer.**
  - HMM-U1000 **U-shape Manometer.**
  - HMM-I1000 **Inclined Multimanometer with 20 manometric tubes of 250 mm. length.**
  - HMM-V500 **Multimanometer with 8 manometric tubes of 500 mm. length, vertical position.**
  - HMM-V500-12 **Multimanometer with 12 manometric tubes of 500 mm. length, vertical position.**
  - HMM-4B **4 Bourdon type Manometers Unit.**
- HCMP **Precision Pressure Gauge Calibrator.**
- HVB **Falling Sphere Viscosimeter and Drag Coefficient.**
- UVF **Hydrogen Bubble Flow Visualisation Unit.**
- FMDU **Flow Meters Demonstration Unit.**
- HECA **Air Flow Studies Unit.**
- HSMAP **Air Pressure Maintained Water System Trainer.**

8.3.- Fluid Mechanics (Flow Channels)

- CFC Computer Controlled **Flow Channels (section: 80 x 300 mm).** (They use SCADA System)

  Available length:

  2.5 / 5 / 7.5 and 10 m.
- CF **Flow Channels (section: 80 x 300 mm).**

  Available length:

  2.5 / 5 / 7.5 and 10 m.
- CFGC Computer Controlled **Flow Channels (section: 300 x 450 mm).** (They use SCADA System)

  Available length:

  5 / 7.5 / 10 / 12.5 and 15 m.

  On request: Any other dimensions.
- CFG **Flow Channels (section:300 x 450 mm).**

  Available length:

  5 / 7.5 / 10 / 12.5 and 15 m.

  On request: Any other dimensions.
- CAS **Sediment Transport Demonstration Channel.**
- HVFLM **Mobile Bed and Flow Visualisation Unit.**

8.4.- Hydraulic Machines (Pumps)

- PBOC Computer Controlled **Multipump Testing Bench.** (It uses SCADA System)
- PBCC Computer Controlled **Centrifugal Pump Bench.** (It uses SCADA System)
- PBCB **Centrifugal Pump Bench.**
- PBSPC Computer Controlled **Series/Parallel Pumps Bench.** (It uses SCADA System)
- PBSPB **Series/Parallel Pumps Bench.**
- PBEC Computer Controlled **Gear Pump Bench.** (It uses SCADA System)
- PBAC Computer Controlled **Axial Pump Bench.** (It uses SCADA System)
- PBRC Computer Controlled **Piston Pump Bench.** (It uses SCADA System)

8.5.- Hydraulic Machines (Fans and Compressors)

- HVCC Computer Controlled **Centrifugal Fan Teaching Trainer.** (It uses SCADA System)
- HVCB **Centrifugal Fan Teaching Trainer.**
- HVAC Computer Controlled **Axial Fan Teaching Trainer.** (It uses SCADA System)
- HVAB **Axial Fan Teaching Trainer.**
- HCCC Computer Controlled **Centrifugal Compressor Demonstration Unit.** (It uses SCADA System)

8.6.- Hydraulic Machines (Turbines) (It uses SCADA System)

- TFRC Computer Controlled **Radial Flow Turbine.**
- TPC Computer Controlled **Pelton Turbine.**
- TFAC Computer Controlled **Axial Flow Turbine.**
- TFC Computer Controlled **Francis Turbine.**
- TKC Computer Controlled **Kaplan Turbine.**
- HTRC Computer Controlled **Experimental Reaction Turbine.**
- HTIC Computer Controlled **Experimental Impulse Turbine.**

Note: See other **Turbines** in section **"9.14. Thermal Turbines"** (page 15)

8.7.- Aerodynamics (Basic)

- TA50/250C Computer Controlled **Aerodynamic Tunnel, 50 x 250 mm.** (It uses SCADA System)
- TA50/250 **Aerodynamic Tunnel, 50 x 250 mm.**

8.8.- Aerodynamics (General) (It uses SCADA System)

- TA1200/1200 Computer Controlled **Aerodynamic Tunnel, 1200 x 1200 mm.**
- TA500/500 Computer Controlled **Water Tunnel, 500 x 500 mm.**

9.- Thermodynamics & Thermotechnics

9.1.- Refrigeration

Basic Refrigeration

- TCRC Computer Controlled **Refrigeration Cycle Demonstration Unit.** (It uses SCADA System)
- TCRB **Refrigeration Cycle Demonstration Unit.**
- TRAC Computer Controlled **Absorption Refrigeration Unit.** (It uses SCADA System)
- TRD2PC **Two Doors Domestic Refrigeration System Trainer.**
- TRCVC Computer Controlled **Vapour-Compresion Refrigeration Unit.** (It uses SCADA System)

General Refrigeration

- THIBAR22C Computer Controlled **Heat Pump + Air Conditioning + Refrigeration Unit, with Cycle Inversion Valve** (two condensers (water and air) and two evaporators (water and air)). (It uses SCADA System)
- THIBAR22B **Heat Pump + Air Conditioning + Refrigeration Unit, with Cycle Inversion Valve** (two condensers (water and air) and two evaporators (water and air)).
- THAR22C Computer Controlled **Refrigeration and Air Conditioning Unit** (two condensers (water and air) and two evaporators (water and air)). (It uses SCADA System)
- THAR22B **Refrigeration and Air Conditioning Unit** (two condensers (water and air) and two evaporators (water and air)).
- THAR2LC Computer Controlled **Refrigeration and Air Conditioning Unit** (two condensers (water and air) and one evaporator (water)). (It uses SCADA System)
- THAR2LB **Refrigeration and Air Conditioning Unit** (two condensers (water and air) and one evaporator (water)).
- THARL2C Computer Controlled **Refrigeration and Air Conditioning Unit** (one condenser (water) and two evaporators (water and air)). (It uses SCADA System)
- THARL2B **Refrigeration and Air Conditioning Unit** (one condenser (water) and two evaporators (water and air)).
- THARA2C Computer Controlled **Refrigeration and Air Conditioning Unit** (one condenser (air) and two evaporators (water and air)). (It uses SCADA System)
- THARA2B **Refrigeration and Air Conditioning Unit** (one condenser (air) and two evaporators (water and air)).
- THARLLC Computer Controlled **Refrigeration and Air Conditioning Unit** (one condenser (water) and one evaporator (water)). (It uses SCADA System)
- THARLLB **Refrigeration and Air Conditioning Unit** (one condenser (water) and one evaporator (water)).
- THARALC Computer Controlled **Refrigeration and Air Conditioning Unit** (one condenser (air) and one evaporator (water)). (It uses SCADA System)
- THARALB **Refrigeration and Air Conditioning Unit** (one condenser (air) and one evaporator (water)).
- THARA2C/1 Computer Controlled **Capacity Control Methods in Refrigeration.** (It uses SCADA System)
- THARA2C/2 Computer Controlled **Double Chamber Refrigerator Module.** (It uses SCADA System)
- THALAC/1 Computer Controlled **Multiple Compressor Refrigeration Control.** (It uses SCADA System)
- TCPISC Computer Controlled **Cooling Plant with Ice Store.** (It uses SCADA System)

Special Refrigeration

- TPVC Computer Controlled **Vortex Tube Refrigerator Unit.** (It uses SCADA System)
- TPCC Computer Controlled **Contact Plate Freezer.** (It uses SCADA System)
- TEVC Computer Controlled **Ventilation Trainer.** (It uses SCADA System)

9.3.- Heating

- EACC Computer Controlled **Hot Water Production and Heating Teaching Unit.** (It uses SCADA System)

9.4.- Heat Pumps

General Heat Pumps

- THIBAR22C Computer Controlled **Heat Pump + Air Conditioning + Refrigeration Unit, with Cycle Inversion Valve** (two condensers (water and air) and two evaporators (water and air)). (It uses SCADA System)
- THIBAR22B **Heat Pump + Air Conditioning + Refrigeration Unit, with Cycle Inversion Valve** (two condensers (water and air) and two evaporators (water and air)).
- THIBAR44C Computer Controlled **Heat Pump + Air Conditioning + Refrigeration Unit, with Cycle Inversion Valve** (four condensers (two of water and two of air) and four evaporators (two of water and two of air)). (It uses SCADA System)
- THIBAR44B **Heat Pump + Air Conditioning + Refrigeration Unit, with Cycle Inversion Valve** (four condensers (two of water and two of air) and four evaporators (two of water and two of air)).
- THB22C Computer Controlled **Heat Pump Unit** (two condensers (water and air) and two evaporators (water and air)). (It uses SCADA System)
- THB22B **Heat Pump Unit** (two condensers (water and air) and two evaporators (water and air)).
- THB2LC Computer Controlled **Heat Pump Unit** (two condensers (water and air) and one evaporator (water)). (It uses SCADA System)
- THB2LB **Heat Pump Unit** (two condensers (water and air) and one evaporator (water)).
- THBL2C Computer Controlled **Heat Pump Unit** (one condenser (water) and two evaporators (water and air)). (It uses SCADA System)
- THBL2B **Heat Pump Unit** (one condenser (water) and two evaporators (water and air)).
- THBA2C Computer Controlled **Heat Pump Unit** (one condenser (air) and two evaporators (water and air)). (It uses SCADA System)
- THBA2B **Heat Pump Unit** (one condenser (air) and two evaporators (water and air)).
- THBLLC Computer Controlled **Heat Pump Unit** (one condenser (water) and one evaporator (water)). (It uses SCADA System)
- THBLLB **Heat Pump Unit** (one condenser (water) and one evaporator (water)).
- THBALC Computer Controlled **Heat Pump Unit** (one condenser (air) and one evaporator (water)). (It uses SCADA System)
- THBALB **Heat Pump Unit** (one condenser (air) and one evaporator (water)).
- THB2AC Computer Controlled **Heat Pump Unit** (two condensers (water and air) and one evaporator (air)). (It uses SCADA System)
- THB2AB **Heat Pump Unit** (two condensers (water and air) and one evaporator (air)).
- THBLAC Computer Controlled **Heat Pump Unit** (one condenser (water)and one evaporator (air)). (It uses SCADA System)
- THBLAB **Heat Pump Unit** (one condenser (water) and one evaporator (air)).
- THBAAC Computer Controlled **Heat Pump Unit** (one condenser (air) and one evaporator (air)). (It uses SCADA System)
- THBAAB **Heat Pump Unit** (one condenser (air) and one evaporator (air)).

Special Heat Pumps

- TBTC Computer Controlled **Thermo-Electric Heat Pump.** (It uses SCADA System)
- TBCF **Bomb Calorimeter Set for Testing Calorific Value of Fuels.**

9.5.- Air Conditioning

General Air Conditioning

- TAAC Computer Controlled **Air Conditioning Laboratory Unit.** (It uses SCADA System)
- TAAB **Air Conditioning Laboratory Unit.**
- TARC Computer Controlled **Recirculating Air Conditioning Unit.** (It uses SCADA System)
- TARB **Recirculating Air Conditioning Unit.**
- TAAUC Computer Controlled **Automobile Air Conditioning Trainer.** (It uses SCADA System)
- TAAU **Automobile Air Conditioning Trainer.**

Applied Air Conditioning

- THIBAR22C Computer Controlled **Heat Pump + Air Conditioning + Refrigeration Unit, with Cycle Inversion Valve** (two condensers (water and air) and two evaporators (water and air)). (It uses SCADA System)
- THIBAR22B **Heat Pump + Air Conditioning + Refrigeration Unit, with Cycle Inversion Valve** (two condensers (water and air) and two evaporators (water and air)).
- THAAAC Computer Controlled **Air Conditioning Unit** (one condenser (air) and one evaporator (air)). (It uses SCADA System)
- THAAAB **Air Conditioning Unit** (one condenser (air) and one evaporator (air)).
- THALAC Computer Controlled **Air Conditioning Unit** (one condenser (water) and one evaporator (air)). (It uses SCADA System)
- THALAB **Air Conditioning Unit** (one condenser (water) and one evaporator (air)).
- THA2AC Computer Controlled **Air Conditioning Unit** (two condensers (water and air) and one evaporator (air)). (It uses SCADA System)
- THA2AB **Air Conditioning Unit** (two condensers (water and air) and one evaporator (air)).
- THAR22C Computer Controlled **Refrigeration and Air Conditioning Unit** (two condensers (water and air) and two evaporators (water and air)). (It uses SCADA System)
- THAR22B **Refrigeration and Air Conditioning Unit** (two condensers (water and air) and two evaporators (water and air)).
- THAR2LC Computer Controlled **Refrigeration and Air Conditioning Unit** (two condensers (water and air) and one evaporator (water)). (It uses SCADA System)
- THAR2LB **Refrigeration and Air Conditioning Unit** (two condensers (water and air) and one evaporator (water)).
- THARL2C Computer Controlled **Refrigeration and Air Conditioning Unit** (one condenser (water) and two evaporators (water and air)). (It uses SCADA System)
- THARL2B **Refrigeration and Air Conditioning Unit** (one condenser (water) and two evaporators (water and air)).
- THARA2C Computer Controlled **Refrigeration and Air Conditioning Unit** (one condenser (air) and two evaporators (water and air)). (It uses SCADA System)
- THARA2B **Refrigeration and Air Conditioning Unit** (one condenser (air)and two evaporators (water and air)).
- THARLLC Computer Controlled **Refrigeration and Air Conditioning Unit** (one condenser (water) and one evaporator (water)). (It uses SCADA System)
- THARLLB **Refrigeration and Air Conditioning Unit** (one condenser (water) and one evaporator (water)).
- THARALC Computer Controlled **Refrigeration and Air Conditioning Unit** (one condenser (air) and one evaporator (water)). (It uses SCADA System)
- THARALB **Refrigeration and Air Conditioning Unit** (one condenser (air) and one evaporator (water)).

9.6.- Cooling Towers

- TTEC Computer Controlled **Bench Top Cooling Tower.** (It uses SCADA System)

- TTEB **Bench Top Cooling Tower.**

9.7.- Heat Exchange

- TICC Computer Controlled **Heat Exchangers Training System:** (It uses SCADA System)

  - TIUS **Base Service Unit.** (Common for the Heat Exchangers type "TI").

  Heat Exchangers
  (computer controlled)

  - TITC **Concentric Tube Heat Exchanger.**
  - TITCA **Extended Concentric Tube Heat Exchanger.**
  - TIPL **Plate Heat Exchanger.**
  - TIPLA **Extended Plate Heat Exchanger.**
  - TICT **Shell & Tube Heat Exchanger.**
  - TIVE **Jacketed Vessel Heat Exchanger.**
  - TIVS **Coil Vessel Heat Exchanger.**
  - TIFT **Turbulent Flow Heat Exchanger.**
  - TICF **Cross Flow Heat Exchanger.**

- TICB **Heat Exchangers Training System:**

  - TIUSB **Base Service Unit.** (Common for the Heat Exchangers type "TI..B").

  Heat Exchangers

  - TITCB **Concentric Tube Heat Exchanger.**
  - TITCAB **Extended Concentric Tube Heat Exchanger.**
  - TIPLB **Plate Heat Exchanger.**
  - TIPLAB **Extended Plate Heat Exchanger.**
  - TICTB **Shell & Tube Heat Exchanger.**
  - TIVEB **Jacketed Vessel Heat Exchanger.**
  - TIVSB **Coil Vessel Heat Exchanger.**
  - TIFTB **Turbulent Flow Heat Exchanger.**
  - TICFB **Cross Flow Heat Exchanger.**

9.8.- Heat Transfer (Basic)

- TSTCC Computer Controlled **Heat Transfer Series:** (It uses SCADA System)

  - TSTCC/CIB **Control Interface for Heat Transfer Series.** (Common for modules type "TXT").

  Modules
  (computer controlled)

  - TXC/CL **Linear Heat Conduction Module.**
  - TXC/CR **Radial Heat Conduction Module.**
  - TXC/RC **Radiation Heat Conduction Module.**
  - TXC/CC **Combined Free and Forced Convection and Radiation Module.**
  - TXC/SE **Extended Surface Heat Transfer Module.**
  - TXC/ER **Radiation Errors in Temperature Measurement Module.**
  - TXC/EI **Unsteady State Heat Transfer Module.**
  - TXC/LG **Thermal Conductivity of Liquids and Gases Module.**
  - TXC/FF **Free and Forced Convection Heat Transfer Module.**
  - TXC/TE **3 Axis Heat Transfer Module.**
  - TXC/MM **Metal to Metal Heat Transfer Module.**
  - TXC/TC **Ceramic Heat Transfer Module.**
  - TXC/TI **Isolated Material Heat Transfer Module.**

- TSTCB **Heat Transfer Series:**

  Modules

  - TXC/CLB **Linear Heat Conduction Module.**
  - TXC/CRB **Radial Heat Conduction Module.**
  - TXC/RCB **Radiation Heat Conduction Module.**
  - TXC/CCB **Combined Free and Forced Convection and Radiation Module.**
  - TXC/SEB **Extended Surface Heat Transfer Module.**
  - TXC/ERB **Radiation Errors in Temperature Measurement Module.**
  - TXC/EIB **Unsteady State Heat Transfer Module.**
  - TXC/LGB **Thermal Conductivity of Liquids and Gases Module.**
  - TXC/FFB **Free and Forced Convection Heat Transfer Module.**
  - TXC/TEB **3 Axis Heat Transfer Module.**
  - TXC/MMB **Metal to Metal Heat Transfer Module.**
  - TXC/TCB **Ceramic Heat Transfer Module.**
  - TXC/TIB **Isolated Material Heat Transfer Module.**

9.9.- Heat Transfer (General)

- TRTC Computer Controlled **Thermal Radiation and Light Radiation Unit.** (It uses SCADA System)
- TMT **Temperature Measurement Unit.**
- TMCP **Pressure Measurement and Calibration Unit.**
- TTLFC Computer Controlled **Fluidisation and Fluid Bed Heat Transfer Unit.** (It uses SCADA System)
- TTLFB **Fluidisation and Fluid Bed Heat Transfer Unit.**
- TCEC Computer Controlled **Boiling Heat Transfer Unit.** (It uses SCADA System)
- TCEB **Boiling Heat Transfer Unit.**
- TCCC Computer Controlled **Heat Conduction Unit.** (It uses SCADA System)
- TCLGC Computer Controlled **Thermal Conductivity of Liquids and Gases Unit.** (It uses SCADA System)
- TCPGC Computer Controlled **Film and Dropwise Condensation Unit.** (It uses SCADA System)
- TCPGB **Film and Dropwise Condensation Unit.**
- TCLFC Computer Controlled **Free and Forced Convection Heat Transfer Unit.** (It uses SCADA System)
- TIFCC Computer Controlled **Cross Flow Heat Exchanger.** (It uses SCADA System)
- TIFCB **Cross Flow Heat Exchanger.**
- TCMC Computer Controlled **Thermal Conductivity of Building and Insulating Materials Unit.** (It uses SCADA System)

9.10.-Heat Transfer (Special)

- TFLVC Computer Controlled **Laminar/Viscous Flow Heat Transfer Unit.** (It uses SCADA System)
- TFLVB **Laminar/Viscous Flow Heat Transfer Unit.**
- TIVAC Computer Controlled **Steam to Water Heat Exchanger.** (It uses SCADA System)
- TFEC Computer Controlled **Flow Boiling Demonstration Unit.** (It uses SCADA System)
- TFEB **Flow Boiling Demonstration Unit.**
- TRLC Computer Controlled **Recycle Loops Unit.** (It uses SCADA System)
- TRLB **Recycle Loops Unit.**
- TSPC Computer Controlled **Saturation Pressure Unit.** (It uses SCADA System)
- TFUC Computer Controlled **Continuous and Batch Filtration Unit.** (It uses SCADA System)
- TFUB **Continuous and Batch Filtration Unit.**
- TEPGC Computer Controlled **Expansion Processes of a Perfect Gas Unit.** (It uses SCADA System)

9.11.-Nozzles & Steam

- TFTC Computer Controlled **Nozzle Performance Test Unit.** (It uses SCADA System)
- TPT **Nozzle Pressure Distribution Unit.**
- TGV **Steam Generator (3 kW).**
- TGV-6KW **Steam Generator (6 kW).**
- TGV-6KWA **Steam Generator (6 kW)** (for high pressures and high temperatures)
- TPTVC Computer Controlled **Steam Power Plant.** (It uses SCADA System)
- TCESC Computer Controlled **Separating & Throttling Calorimeter.** (It uses SCADA System)

9.12.-Combustion (It uses SCADA System)

- TVCC Computer Controlled **Combustion Laboratory Unit.**
- TVPLC Computer Controlled **Flame Propagation and Stability Unit.**

9.13.-Engines Test Benches (It uses SCADA System)

- TBMC3 Computer Controlled **Test Bench for Single-Cylinder Engines, 2.2 kW.**

  Available Test Engines:

  - TM3-1 **Air-cooled single-cylinder four-stroke petrol engine.**
  - TM3-2 **Air-cooled single-cylinder four-stroke diesel engine.**
  - TM3-3 **Air-cooled single-cylinder four-stroke petrol engine, with variable compression.**
  - TM3-4 **Air-cooled single-cylinder two-stroke petrol engine.**
- TBMC8 Computer Controlled **Test Bench for Single-Cylinder Engines, 7.5 kW.**

  Available Test Engines:

  - TM8-1 **Air-cooled single-cylinder four-stroke petrol engine.**
  - TM8-2 **Air-cooled single-cylinder two-stroke petrol engine.**
  - TM8-3 **Air-cooled single-cylinder four-stroke diesel engine.**
  - TM8-4 **Four-stroke diesel engine, water cooled.**
- TBMC12 Computer Controlled **Test Bench for Single-Cylinder and Two-Cylinders Engines, 11 kW.**

  Available Test Engines:

  - TM12-1 **Water-cooled single-cylinder engine, with variable compression.**
  - TM12-2 **Two-cylinders petrol engine.**
  - TM12-3 **Two-cylinders diesel engine.**
- TBMC75 Computer Controlled **Test Bench for Four-Cylinders Engines, 75 kW.**

  Available Test Engines:

  - TM75-1 **Water-cooled four-cylinders four-stroke petrol engine.**
  - TM75-2 **Water-cooled four-cylinders four-stroke diesel engine.**
- TBMC-CG Computer Controlled **Exhaust Gas Calorimeter.**
- TBMC-AGE **Exhaust Gas Analyzer.**
- TMSC Computer Controlled **Stirling Motor.**
- TDEGC Computer Controlled **Diesel Engine Electricity Generator.**
- TMHC Computer Controlled **Test Bench for Hybrid Engine.**

9.14.-Thermal Turbines (It uses SCADA System)

- TGDEC Computer Controlled **Two-Shaft Gas Turbine.**
- TGDEPC Computer Controlled **Two-Shaft Gas Turbine/Jet Engine.**
- TGFAC Computer Controlled **Axial Flow Gas Turbine/Jet Engine.**
- TTVC Computer Controlled **Steam Turbine.**
- HTVC Computer Controlled **Solar/Heat Source Vapour Turbine.**

Note: See other **Turbines** in section **"8.6. Hydraulic Machines (Turbines)"** (page 12)

10.- Process Control

10.1.-Process Control. Fundamentals

- UCP Computer Controlled **Process Control System (with electronic control valve)**: (It uses SCADA System)
  - UCP-UB **Base Unit.** (Common for all Sets for process control type "UCP").

  Sets (sensor and elements + computer control software) **used in the base unit**
  - UCP-T **Set for Temperature Process Control.**
  - UCP-C **Set for Flow Process Control.**
  - UCP-N **Set for Level Process Control.**
  - UCP-PA **Set for Pressure Process Control.**
  - UCP-PH **Set for pH Process Control.**
  - UCP-CT **Set for Conductivity and TDS (Total Dissolved Solids) Process Control.**
- UCPCN Computer Controlled **Process Control System (with pneumatic control valve)**: (It uses SCADA System)
  - UCPCN-UB **Base Unit.** (Common for all Sets for process control type "UCPCN").

  Sets (sensor and elements + computer control software) **used in the base unit**
  - UCPCN-T **Set for Temperature Process Control.**
  - UCPCN-C **Set for Flow Process Control.**
  - UCPCN-N **Set for Level Process Control.**
  - UCPCN-PA **Set for Pressure Process Control.**
  - UCPCN-PH **Set for pH Process Control.**
  - UCPCN-CT **Set for Conductivity and TDS (Total Dissolved Solids) Process Control.**
- UCPCV Computer Controlled **Process Control System (with speed controller)**: (It uses SCADA System)
  - UCPCV-UB **Base Unit.** (Common for all Sets for process control type "UCPCV").

  Sets (sensor and elements + computer control software) **used in the base unit**
  - UCPCV-T **Set for Temperature Process Control.**
  - UCPCV-C **Set for Flow Process Control.**
  - UCPCV-N **Set for Level Process Control.**
  - UCPCV-PA **Set for Pressure Process Control.**
  - UCPCV-PH **Set for pH Process Control.**
  - UCPCV-CT **Set for Conductivity and TDS (Total Dissolved Solids) Process Control.**
- UCPCNCV Computer Controlled **Process Control System (with electronic control valve + pneumatic control valve + speed controller):** (It uses SCADA System)
  - UCPCNCV-UB **Base Unit.** (Common for all Sets for process control type "UCPCNCV").

  Sets (sensor and elements + computer control software) **used in the base unit**
  - UCPCNCV-T **Set for Temperature Process Control.**
  - UCPCNCV-C **Set for Flow Process Control.**
  - UCPCNCV-N **Set for Level Process Control.**
  - UCPCNCV-PA **Set for Pressure Process Control.**
  - UCPCNCV-PH **Set for pH Process Control.**
  - UCPCNCV-CT **Set for Conductivity and TDS (Total Dissolved Solids) Process Control.**
- UCP-P Computer Controlled **Process Control Unit for the Study of Pressure (Air).** (It uses SCADA System)
- CECI **Industrial Controllers Trainer.**
- CRCI **Industrial Controllers Networking.**
- CEAB **Trainer for Field Bus Applications.**
- CEAC **Controller Tuning Trainer.**

10.2.-Industrial Process Control (It uses SCADA System)

- CPIC Computer Controlled **Process Control Plant with Industrial Instrumentation and Service Module** (Flow, Temperature, Level and Pressure).
- CPIC-C Computer Controlled **Process Control Plant with Industrial Instrumentation and Service Module** (only Flow).
- CPIC-T Computer Controlled **Process Control Plant with Industrial Instrumentation and Service Module** (only Temperature).
- CPIC-N Computer Controlled **Process Control Plant with Industrial Instrumentation and Service Module** (only Level).
- CPIC-P Computer Controlled **Process Control Plant with Industrial Instrumentation and Service Module** (only Pressure).

11.- Chemical Engineering

11.1.-Chemical Engineering (Basic)

- CAGC Computer Controlled **Gas Absorption Column.** (It uses SCADA System)
- CAG **Gas Absorption Column.**
- UELLC Computer Controlled **Liquid-Liquid Extraction Unit.** (It uses SCADA System)
- UELL **Liquid-Liquid Extraction Unit.**
- UDCC Computer Controlled **Continuous Distillation Unit.** (It uses SCADA System)
- UDCB **Continuous Distillation Unit.**
- UDDC Computer Controlled **Batch Distillation Unit.** (It uses SCADA System)
- UDDB **Batch Distillation Unit.**

11.2.-Chemical Engineering (General)

- UESLC Computer Controlled **Solid-Liquid Extraction Unit.** (It uses SCADA System)
- UESLB **Solid-Liquid Extraction Unit.**
- EPAC Computer Controlled **Rising Film Evaporator.** (It uses SCADA System)
- EPDC Computer Controlled **Falling Film Evaporator**, for adding to EPAC. (Accessory for EPAC).
- EPAB **Rising Film Evaporator.**
- EPDB **Falling Film Evaporator**, for adding to EPAB. (Accessory for EPAB).
- EDPAC Computer Controlled **Double Effect Rising Film Evaporator.** (It uses SCADA System)
- EDPDC Computer Controlled **Double Effect Falling Film Evaporator**, for adding to EDPAC. (Accessory for EDPAC).
- EDPAB **Double Effect Rising Film Evaporator.**
- EDPDB **Double Effect Falling Film Evaporator**, for adding to EDPAB. (Accessory for EDPAB).
- CAPC Computer Controlled **Wetted Wall Gas Absorption Column.** (It uses SCADA System)
- QDTLC Computer Controlled **Liquid Mass Transfer and Diffusion Coefficient Unit.** (It uses SCADA System)
- QDTL **Liquid Mass Transfer and Diffusion Coefficient Unit.**
- QDTGC Computer Controlled **Gaseous Mass Transfer and Diffusion Coefficient Unit.** (It uses SCADA System)
- QDTG **Gaseous Mass Transfer and Diffusion Coefficient Unit.**
- QCCC Computer Controlled **Cracking Column.** (It uses SCADA System)
- QUCC Computer Controlled **Crystallisation Unit.** (It uses SCADA System)
- QUCB **Crystallisation Unit.**
- QALFC Computer Controlled **Fixed Bed Adsorption Unit.** (It uses SCADA System)

11.3.-Chemical Reactors

- QRQC Computer Controlled **Chemical Reactors Training System:** (It uses SCADA System)
  - QRUBI **Base Service Unit.** (Common for the following Reactors type "QR").

  Reactors

  - QRIA **Isothermal Reactor with Stirrer.**
  - QRIA/D **Isothermal Reactor with Distillation.**
  - QRFT **Tubular Flow Reactor.**
  - QRAD **Adiabatic and Isothermal Reactor.**
  - QRSA **Reactors with Stirrer in Series.**
- QRC Computer Controlled **Chemical Reactors Trainer:** (It uses SCADA System)
  - QUSC **Service Unit.** (Common for the following Reactors type "QR..C").

  Reactors

  - QRCAC **Continuous Stirred Tank Reactor.**
  - QRTC **Tubular Flow Reactor.**
  - QRDC **Batch Reactor.**
  - QRSC **Stirred Tank Reactors in Series.**
  - QRLC **Laminar Flow Reactor.**
  - QRPC **Plug Flow Reactor.**
- QR **Chemical Reactors Trainer:**
  - QUS **Service Unit.** (Common for the following Reactors type "QR.").

  Reactors

  - QRCA **Continuous Stirred Tank Reactor.**
  - QRT **Tubular Flow Reactor.**
  - QRD **Batch Reactor.**
  - QRS **Stirred Tank Reactors in Series.**
  - QRL **Laminar Flow Reactor.**
  - QRP **Plug Flow Reactor.**
- QRCC Computer Controlled **Catalytic Reactors.** (It uses SCADA System)
- QRCB **Catalytic Reactors.**

11.4.-Chemical Process

- EMLS **Liquid/Solid Mixing Unit.**
- EEC **Corrosion Study Unit.**
- ESED **Sedimentation Study Unit.**
- LFFC Computer Controlled **Fixed and Fluidised Bed Unit.** (It uses SCADA System)
- LFF **Fixed and Fluidised Bed Unit.**
- QEDC Computer Controlled **Batch Solvent Extraction and Desolventising Unit.** (It uses SCADA System)
- QMS **Solids Handling Study Unit.**
- TFUC Computer Controlled **Continuous and Batch Filtration Unit.** (It uses SCADA System)
- TFUB **Continuous and Batch Filtration Unit.**
- EFLPC Computer Controlled **Deep Bed Filter Unit.** (It uses SCADA System)
- EFLP **Deep Bed Filter Unit.**
- EII **Ion Exchange Unit.**

11.5.-Chemical Process (Agronomical Industry)

- SBANC Computer Controlled **Tray Drier.** (It uses SCADA System)
- SSPC Computer Controlled **Spray Drier.** (It uses SCADA System)
- SSPB **Spray Drier.**

11.6.-Chemical Process (Special) (It uses SCADA System)

- EPIRC Computer Controlled **Pyrolysis Unit.**
- PLGC Computer Controlled **Gas Washing Process Plant.**
- PPDAC Computer Controlled **Water Demineralization and Processing Plant.**

12.- Food & Water Technologies

12.1.-Food Technology (Basic)

- PADC Computer Controlled **Teaching Autonomous Pasteurization Unit.** (It uses SCADA System)
- PASC Computer Controlled **Laboratory Pasteuriser.** (It uses SCADA System)
- SBANC Computer Controlled **Tray Drier.** (It uses SCADA System)
- SSPC Computer Controlled **Spray Drier.** (It uses SCADA System)
- SSPB **Spray Drier.**
- AEHC Computer Controlled **Hydrogenation Unit.** (It uses SCADA System)
- AEDC Computer Controlled **Deodorising Unit.** (It uses SCADA System)
- TFDC Computer Controlled **Teaching Frigorific Tank.** (It uses SCADA System)
- EDLC Computer Controlled **Teaching Machine for Putting in Plastic Packing Liquids.** (It uses SCADA System)
- EDSC Computer Controlled **Teaching Machine for Putting into a Container Solids.** (It uses SCADA System)
- ROUC Computer Controlled **Reverse Osmosis/Ultrafiltration Unit.** (It uses SCADA System)
- VPMC Computer Controlled **Multipurpose Processing Vessel.** (It uses SCADA System)
- TPCC Computer Controlled **Contact Plate Freezer.** (It uses SCADA System)
- QEDC Computer Controlled **Batch Solvent Extraction and Desolventising Unit.** (It uses SCADA System)
- AFPMC Computer Controlled **Plate and Frame Filter Press.** (It uses SCADA System)
- MINI-LAB **Laboratory Homogeniser.**

12.2.-Food Technology (Milk)

- DSNC Computer Controlled **Teaching Cream Separator.** (It uses SCADA System)
- DSN **Teaching Cream Separator.**
- EMANC Computer Controlled **Butter Maker Teaching Unit.** (It uses SCADA System)
- EMAN **Butter Maker Teaching Unit.**
- AUHTC Computer Controlled **UHT Unit.** (It uses SCADA System)
- PADC Computer Controlled **Teaching Autonomous Pasteurization Unit.** (It uses SCADA System)
- PASC Computer Controlled **Laboratory Pasteuriser.** (It uses SCADA System)
- CCDC Computer Controlled **Teaching Curdled Tank.** (It uses SCADA System)
- PVQC Computer Controlled **Teaching Cheese Vertical Press.** (It uses SCADA System)
- IYDC Computer Controlled **Teaching Yogurt Incubator.** (It uses SCADA System)
- RDC Computer Controlled **Teaching Cottage Cheese Maker.** (It uses SCADA System)
- AEQC Computer Controlled **Cheese Vat & Cheese Macking Accesories.** (It uses SCADA System)
- FQDC Computer Controlled **Teaching Cheese Melter.** (It uses SCADA System)

12.3.-Food Technology (Oil)

- PACC Computer Controlled **Continuous Cycle Oil Production Plant.** (It uses SCADA System)

12.4.-Food Technology (Pilot Plants) (It uses ESN System)

- LE00 **Process Plant for Dairy Products with Scada-Net System "ESN".**
- CA00 **Process Plant for Meat with Scada-Net System "ESN".**
- CI00 **Process Plant for Citrus Fruits with Scada-Net System "ESN".**
- FR00 **Process Plant for Fruits with Scada-Net System "ESN".**
- VE00 **Process Plant for Vegetables with Scada-Net System "ESN".**
- AS00 **Process Plant for Seeds Oil with Scada-Net System "ESN".**
- AC00 **Process Plant for Olive Oil with Scada-Net System "ESN".**
- TO00 **Process Plant for Tomatoes with Scada-Net System "ESN".**
- UV00 **Process Plant for Grapes with Scada-Net System "ESN".**
- CE00 **Process Plant for Cereals with Scada-Net System "ESN".**

12.5.-Clean Water Process

- BL-6 **Water Demineralizer.**
- DESMID **Ion Exchange Demineralizer.**

13.- Environment

13.1.-Water Handling

- ESHC (4x2m) Computer Controlled **Hydrologic Systems, Rain Simulator and Irrigation Systems Unit** (4x2m). (It uses SCADA System)
- ESHC (2x1m) Computer Controlled **Hydrologic Systems, Rain Simulator and Irrigation Systems Unit** (2x1m). (It uses SCADA System)
- ESH (2x1m) **Hydrologic Systems Rain Simulator and Irrigation Systems Unit** (2x1m).
- EFAS **Ground Water Flow Unit.**
- PAHSC Computer Controlled **Soil Moisture Suction Sand Unit.** (It uses SCADA System)
- PAHS **Soil Moisture Suction Sand Unit.**
- PL **Demonstration Lysimeter.**
- PPD **Drain Permeameter.**
- PDFDC Computer Controlled **Drainage and Seepage Tank.** (It uses SCADA System)
- PDFD **Drainage and Seepage Tank.**
- PEIF **Filterability Index Unit.**
- ESED **Sedimentation Study Unit.**
- PDSC Computer Controlled **Sedimentation Tank.** (It uses SCADA System)
- PDS **Sedimentation Tank.**
- PEFP **Permeability/Fluidisation Studies Unit.**
- HVFLM **Mobile Bed and Flow Visualisation Unit.**

13.2.-Water Treatment

- EFLPC Computer Controlled **Deep Bed Filter Unit.** (It uses SCADA System)
- EFLP **Deep Bed Filter Unit.**
- EII **Ion Exchange Unit.**
- PDAC Computer Controlled **Aerobic Digester.** (It uses SCADA System)
- PDA **Aerobic Digester.**
- PDANC Computer Controlled **Anaerobic Digester.** (It uses SCADA System)
- PDAN **Anaerobic Digester.**
- PEFC Computer Controlled **Flocculation Test Unit.** (It uses SCADA System)
- PEF **Flocculation Test Unit.**
- PEAIC Computer Controlled **Aeration Unit.** (It uses SCADA System)
- PEAI **Aeration Unit.**
- ROUC Computer Controlled **Reverse Osmosis/Ultrafiltration Unit.** (It uses SCADA System)
- PPTAC Computer Controlled **Water Treatment Plant.** (It uses SCADA System)

13.3.-Pollution (Ground) (It uses SCADA System)

- ECASC Computer Controlled **Subterranean Water Pollution Unit.**

Complete Laboratories and Industrial Systems

Physics:
- 1SE. **Secondary Education.**
- 1AD. **Advanced Physics Laboratory.**

Electronics:
- 2TV. **Technical and Vocational Education Electronics Laboratory.**
- 2HE. **Higher Education Electronics Laboratory.**

Telecommunications:
- 3TV. **Technical and Vocational Education Telecommunications Laboratory.**
- 3HE. **Higher Education Telecommunications Laboratory.**

Electricity:
- 4TV. **Technical and Vocational Education Electricity Laboratory.**
- 4HE. **Higher Education Electricity Laboratory.**
- 4EMTV. **Technical and Vocational Education Electrical Machines Laboratory.**
- 4EMAD. **Advanced Electrical Machines Laboratory.**

Energy:
- 5TV. **Technical and Vocational Education Energy Laboratory.**
- 5AD. **Advanced Energy Laboratory.**
- 5TC. **Energy Training Center.**

Renewable Energy:
- 5RTV. **Technical and Vocational Education Renewable Energy Laboratory.**
- 5RAD. **Advanced Renewable Energy Laboratory.**

Automation and Systems:
- 6TV. **Technical and Vocational Education Automation and Systems Laboratory.**
- 6AD. **Advanced Automation and Systems Laboratory.**

Mechanics and Materials:
- 7TV. **Technical and Vocational Education Mechanics and Materials Laboratory.**
- 7HE. **Higher Education Mechanics and Materials Laboratory.**

Fluid Mechanics:
- 8AD1. **Fluid Mechanics Laboratory (Phase 1).**
- 8AD2. **Fluid Mechanics Laboratory (Phase 2).**
- 8AD3. **Fluid Mechanics Laboratory (Phase 3).**

Thermodynamics and Thermotechnics:
- 9AD1. **Thermodynamics and Thermotechnics Laboratory (Phase 1).**
- 9AD2. **Thermodynamics and Thermotechnics Laboratory (Phase 2).**
- 9AD3. **Thermodynamics and Thermotechnics Laboratory (Phase 3).**

Process Control:
- 10G1. **General Process Control Laboratory (Phase 1).**
- 10G2. **General Process Control Laboratory (Phase 2).**
- 10PCTC. **Process Control and Maintenance Training Center.**
- 10RC. **Regulation, Control and Process Control Laboratory.**

Chemical Engineering:
- 11TV. **Technical and Vocational Education Chemical Engineering Laboratory.**
- 11HE. **Higher Education Chemical Engineering Laboratory.**
- 11PTC. **Petroleum Training Center.**

Food Technology:
- 12TV. **Technical and Vocational Education Food Technology Laboratory.**
- 12HE. **Higher Education Food Technology Laboratory.**
- 12PP. **Food Technology: Pilot Plants:**
  - For **Dairy Products** (LE00).
  - For **Meat** (CA00).
  - For **Citrus Fruits** (CI00).
  - For **Fruits** (FR00).
  - For **Vegetables** (VE00).
  - For **Seeds Oil** (AS00).
  - For **Olive Oil** (AC00).
  - For **Tomatoes** (TO00).
  - For **Grapes** (UV00).
  - For **Cereals** (CE00).

Environment:
- 13AD. **Advanced Environment Laboratory.**
- 13DES. **Desalination Laboratory.**
- 13CW. **Drinking and Handling Water Laboratory.**
- 13DW. **Dirty Water Treatment Laboratory.**

Special Laboratories:
- 20SKILL. **New Technologies Technical Skills Center.**
- 20GREEN. **Green Laboratory.**
- 20AIRP. **Airport Laboratory.**
- 20TTC. **Teachers Technical Training and Applied Research Center.**
- 20TDL. **Technical Professional Distance Learning.**
- 20MOBIL. **Mobile Units.**

Turn-Key Projects

- Technical and Vocational Education.
- Higher Technical Education.

Custom made Units

EDIBON can offer the design of teaching and research units, in accordance with the customer requirements, by using the EDIBON know-how and computer controlled system, as we have developed big amount of new Teaching and Research Technology.

Name: ..... **Position:** .....
Company/Teaching Center: ..... **Department:** .....
E-mail: ..... **Phone:** ..... **Fax:** .....
Address: ..... **City:** ..... **Country:** .....

I would like you to send me information and prices of the areas/units marked with an " X ".

Issue: HPI0111
Date: January/2011

edibon INTERNATIONAL
C/ Del Agua, 14. Polígono Industrial San José de Valderas. 28918 LEGANÉS. (Madrid). SPAIN. Phone: +34 920199363. Fax: +34 920198647. edibon@edibon.com www.edibon.com