



***Electron* S.r.l.**

**DESIGN, PRODUCTION and TRADING of  
EDUCATIONAL EQUIPMENT**

[www.electron.it](http://www.electron.it)

*Short Catalogue V3.0 ENG Rev2209*



## COMPANY

Educational equipment made in Italy since 1991



Our hardware solutions help technical institutions and laboratory teachers in **more than 80 countries**, to work better, faster and with a limited budget.

Updated technologies, together with software support, are skillfully implemented in friendly and easy-to-use training equipment for **Higher Technical Education** and **Vocational Training**.

The production range is one of the widest on the market. It covers almost all **Electronics** and **Electrical Training** subjects, including **Telecommunications**, **Industrial Automation** and **Mechatronics**, from basic principles to state of the art computer-based trainers.

## MISSION

The best products' quality and design with affordable price

We develop continuous and creative imagination, together with skills and experience.

Our collaboration with **Teaching institutions** worldwide and **Italian industry** gives us a constant inspiration in creating new products.



Despite our production system has been enlarged over the years, we maintain the mentality of the average small business, typical of **Made in Italy**, focusing on products identity and relationship with costumers.

We are genuine **manufacturer** of all products in our catalogues. Most of raw materials and components are also sourced in Italy or Europe.

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## SUPPORT

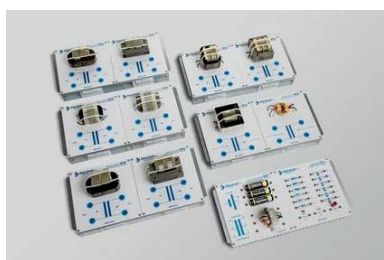
Before, during and after-sales

Our technical department can support you to optimize the use of the equipment, to supply training on site or in Italy, to provide technical assistance and to keep your trainers up to date. Tailor made Laboratory Proposals can be prepared to fit the specific need, including:

- Precisely defined minimum technical specifications.
- Training stations and complete laboratory composition, with alternatives and options.
- Budgetary proposals containing suggested quantities and experiments list.

## PRODUCTION PROGRAM

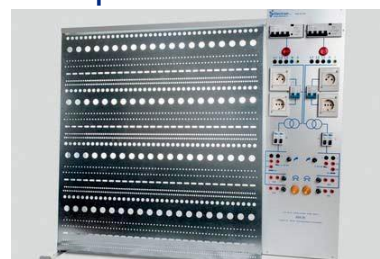
12 Typical laboratories with more than 1000 products



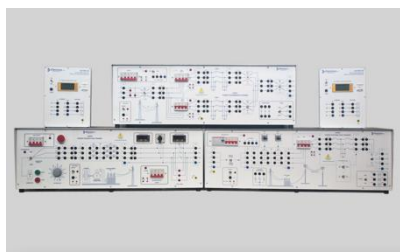
*Basic Electricity*



*Electrical Installations Modular*



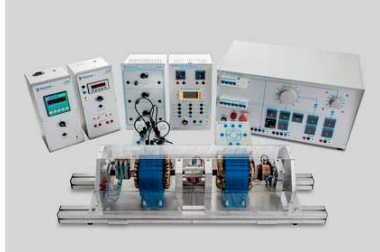
*Electrical Installations Wiring*



*Electrical Power Systems*



*Electrical Maintenance*



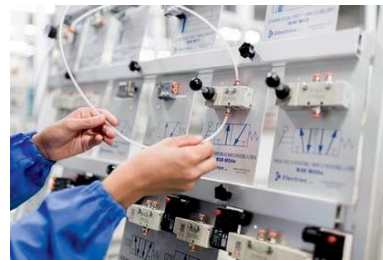
*Electrical Machines Test*



*Analogue & Digital Electronics*



*Control & Power Electronics*



*Automation & Fluid Power*



*Telecommunications*



*Electronics Maintenance*



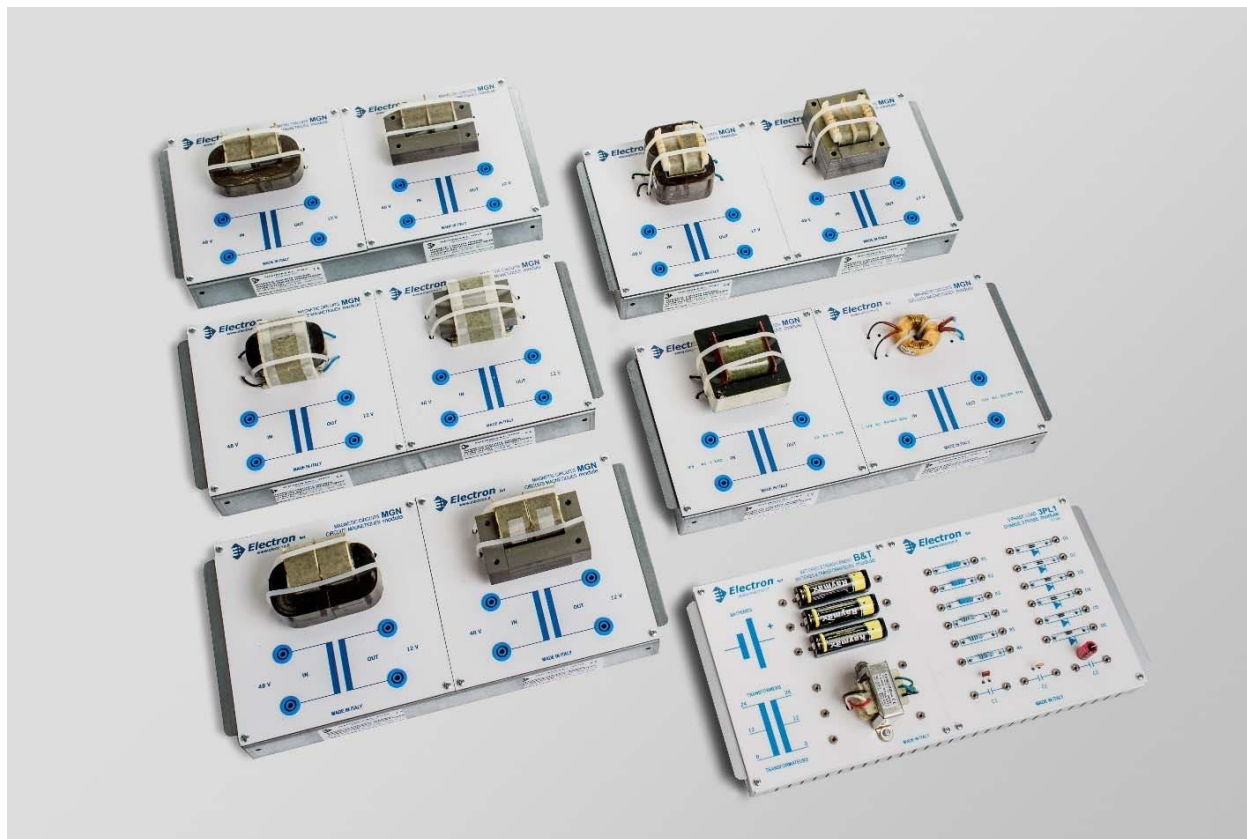
*Cnc Production Systems*

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## Lab 1 - BASIC ELECTRICITY



This laboratory includes various modules to experiment circuits and principles commonly recurrent in the field of Basic Electricity. They are recommended for students attending any subsequent electrical and electronics specialties.

Great attention is given to usability characteristics and to ensure maximum friendliness and safety even when used by inexperienced users such as first-time students.

Each module is provided with a user manual that explains its characteristics and use.

### FURNITURE, METERS & ACCESSORIES

A general use furniture, meters, power supplies & accessories have been selected as the most appropriate for smooth experiment execution in all laboratories.

### TRAINING STATIONS LIST

1.1	FUNDAMENTALS OF ELECTRICITY
1AS	COLLECTION OF LABORATORY POWER SUPPLIES
1AM	COLLECTION OF LABORATORY METERS
1AA	COLLECTION OF LABORATORY ACCESSORIES
1AF	COLLECTION LABORATORY FURNITURE





## Lab 2 - ELECTRICAL INSTALLATIONS MODULAR



The laboratory consists of an integrated set of training modules commonly recurrent in the field of Electrical Installations, in metal housings (or isolated boxes) with a clear synoptic depicting the inside logic.

Each module contains a specific electrical function that can be connected to the others to implement different circuit combinations and to execute even complex experiments. The significant advantage for the student is that he can concentrate on the functional flow of the electrical system he is designing without having to worry about the characteristics of the components. Another advantage is that the wiring, and therefore the implementation time, is drastically reduced. The modules can be set on a stand where they can be grouped to execute even complex experiments, including troubleshooting.

Manuals describe the circuits at the theoretical and practical levels, both for residential and industrial installations. The modules can also be used very effectively as a teacher demonstrator.

### TRAINING STATIONS LIST

2.1	RESIDENTIAL LIGHTING INSTALLATIONS
2.2	RESIDENTIAL ELECTRICAL INSTALLATIONS
2.3	INDUSTRIAL ELECTRICAL INSTALLATION
2.4	ADVANCED ELECTRICAL INSTALLATIONS
2.5	MOTOR SPEED CONTROL
2.6	COMPUTER NETWORKS INSTALLATION AND MAINTENANCE
2.R	ENERGIE RINNOVABILI: SOLARE ED EOLICO



## Lab 3 - ELECTRICAL INSTALLATIONS WIRING LAB



This laboratory has the objective of teaching the techniques for correct, professional implementation of residential and industrial electrical circuits. The circuits are assembled on panels by using electrical component kits and electrical wiring kits.

A work bench is also available on which the panels can be placed for use and more students can be trained at same time. The laboratory provides a comprehensive course based on industrial type components and the student acquires sufficient knowledge to be able to confront himself with almost any kind of real-life electrical installation requirement.

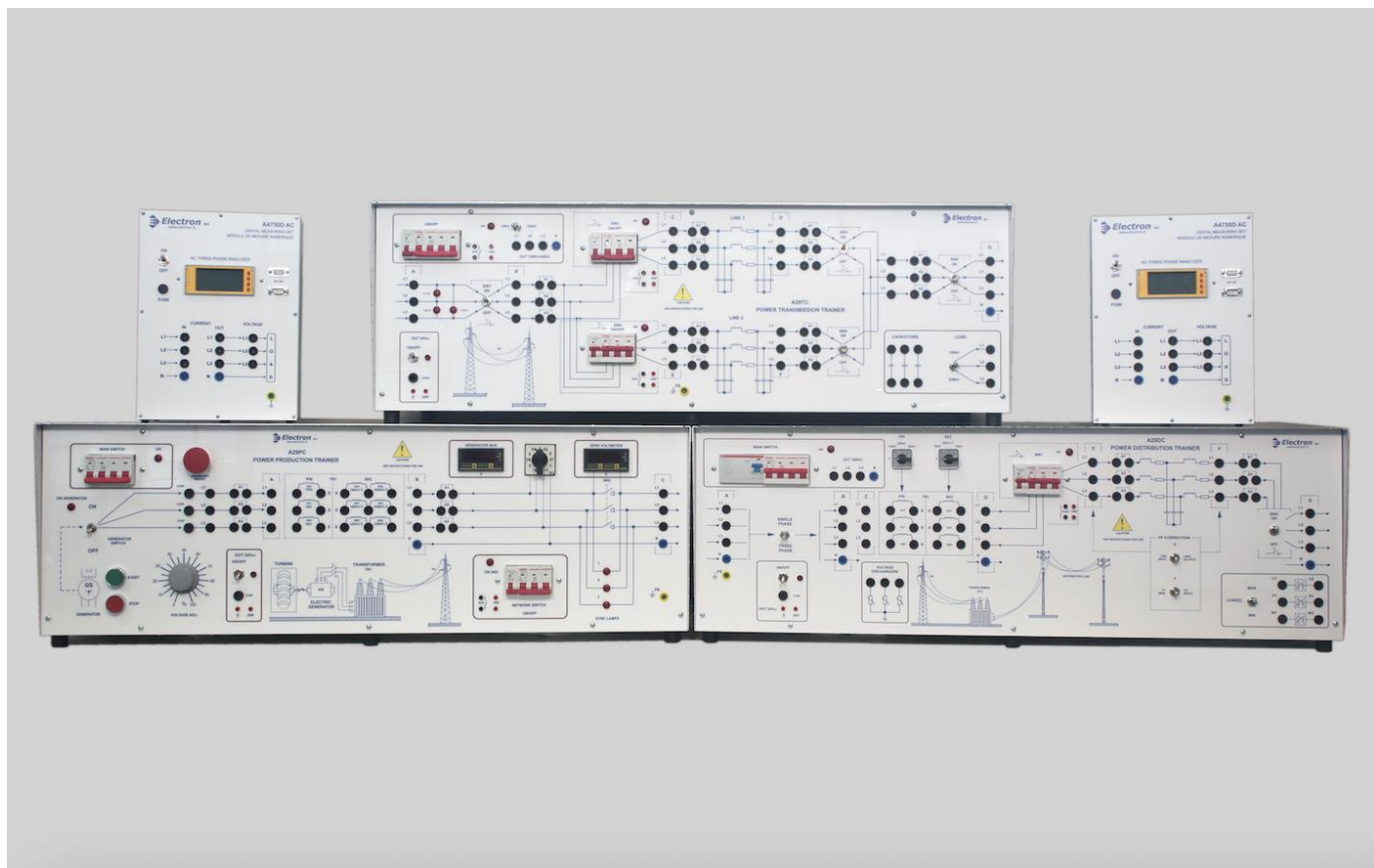
Two instruction manuals, one for residential and one for industrial installations, describe some of the feasible experiments in detail. Many more can be designed by the instructor and students to cover other aspects.

### TRAINING STATIONS LIST

3.1	RESIDENTIAL ELECTRICAL WIRING
3.2	INDUSTRIAL ELECTRICAL WIRING
3.3	COMPUTER NETWORKS INSTALLATION AND MAINTENANCE
3.R	ENERGIE RINNOVABILI: SOLARE ED EOLICO



## Lab 4 - ELECTRICAL POWER SYSTEMS



This laboratory simulates a real-life generation, transmission and distribution system based on standard electrical machines, instruments, and a simulated transmission line.

The simulator reproduces the conditions of a 30 kV, 30 Km long overhead line.

The modularity and integration capabilities of this trainer allow maximum flexibility in implementing the desired configuration.

With the proposed mix of products, additional experiments may be designed to reproduce the many different situations that in a power generation, transmission and distribution system may be encountered both in normal and abnormal/failure conditions.

### TRAINING STATIONS LIST

4.1	POWER PRODUCTION
4.2	POWER TRANSMISSION
4.3	POWER DISTRIBUTION
4.4	SCADA MONITORING SYSTEM
4.5	PROGRAMMABLE PROTECTION RELAYS
4.6	REACTIVE POWER CONTROL
4.7	ANALOGUE PROTECTION RELAYS
4.8	DIGITAL PROTECTION RELAYS



## Lab 5 - ELECTRICAL MAINTENANCE



The laboratory includes kits and accessories to build, repair and test three phase AC motors and transformers. They are suitable to be used in basic electricity courses as well as in vocational courses for maintenance and repair technicians.

The electrical characteristics and assembling procedures are explained in detail in dedicated instruction manuals based fundamentally on photographs taken during actual factory assembling. A section includes commercial apparatus of latest design. Included are pressing iron, desk fan, refrigerator and washing machine, all modified for teaching purposes.

### TRAINING STATIONS LIST

5.1	TRANSFORMERS CONSTRUCTION AND REPAIR
5.2	MOTORS CONSTRUCTION AND REPAIR
5.3	TRANSFORMERS AND MOTORS TESTING STATION
5.4	HOUSEHOLD APPLIANCES MAINTENANCE





## Lab 6 - ELECTRICAL MACHINES TEST



This laboratory provides effective training in testing electrical machines by offering complete range of integrated AC and DC units in the 0,3 Kw, 1 Kw, 3 Kw and up to 10 Kw power range.

The components can be easily and quickly assembled on a test board that ensures safe coupling and noiseless, vibration free running.

Educational boards with safety terminals and printed electrical diagrams are mounted on each machine.

The accessories, covering all educational needs, are modular and implemented in rugged enclosures that can be optionally mounted on a frame.

They can be used both for individual and for group demonstration purposes.

The components of the laboratory conform to international standards of safety and are mutually compatible in terms of ratings, electrical and mechanical interconnections.

### TRAINING STATIONS LIST

6.1	TRANSFORMERS TEST
6.2	AC ELECTRICAL MACHINES TEST
6.3	DC ELECTRICAL MACHINES TEST
6.4	DATA ACQUISITION SYSTEM FOR ELECTRICAL MACHINES
6.5	MULTIFUNCTION ROTATING MACHINE
6.6	DC MOTOR CONTROL SYSTEMS TRAINERS
6.7	STEPPER & SERVO MOTORS TRAINING SET
6.8	CUT-AWAY ELECTRICAL MACHINES SET



## Lab 7 - ANALOGUE AND DIGITAL ELECTRONICS



The laboratory equipment includes various modules to show and experiment circuits and principles commonly recurrent in the field of Basic Electronics up to microelectronics. It is recommended for students attending any subsequent electrical and electronics specialties. The modules generally consist of PCB cards with components in view, especially suitable for individual student work or work in a small group.

### FURNITURE, METERS & ACCESSORIES

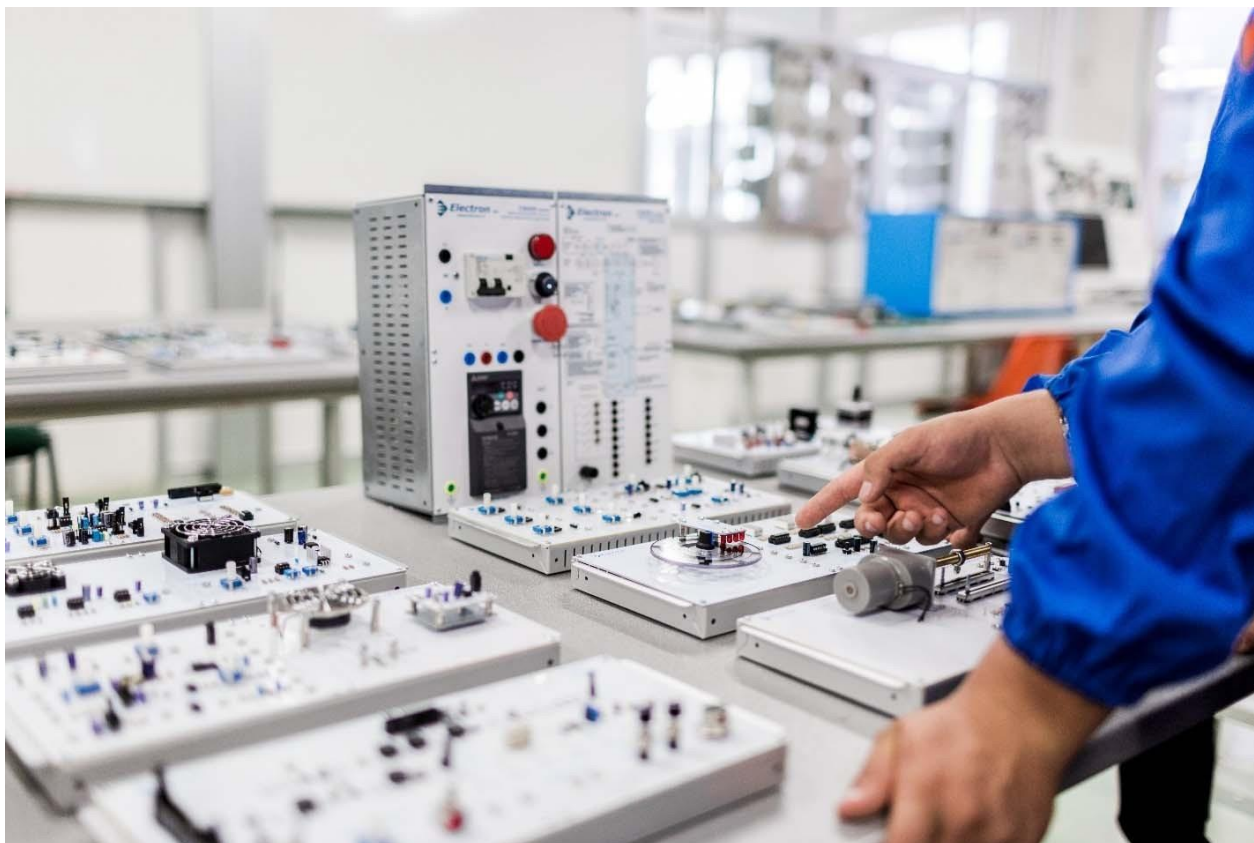
A general use furniture, meters, power supplies & accessories have been selected as the most appropriate for smooth experiment execution in all laboratories.

### TRAINING STATIONS LIST

7.1	FUNDAMENTALS OF ELECTRONICS
7.2	ANALOGUE ELECTRONICS
7.3	DIGITAL ELECTRONICS
7.4	MICROELECTRONICS
7AS	COLLECTION OF LABORATORY POWER SUPPLIES
7AM	COLLECTION OF LABORATORY METERS
7AA	COLLECTION OF LABORATORY ACCESSORIES
7AF	COLLECTION LABORATORY FURNITURE



## Lab 8 - CONTROL & POWER ELECTRONICS



This laboratory includes various modules to experiment circuits and principles commonly recurrent in the field of power electronics, transducers, and controls.

It is organized in a modular form and consists of a set of experiment boards with a common power supply.

Also included are actuators and interface with software for connecting the modules to a PC.

Each module is provided with a user manual that explains its characteristics and use.

### TRAINING STATIONS LIST

8.1	TRANSDUCERS AND CONTROLS
8.2	PROCESS CONTROL
8.3	POWER ELECTRONICS



## Lab 9 - AUTOMATION & FLUID POWER



The laboratory is conceived to give the student a clear overview of the concepts involved in industrial automation. It includes a PLC automation trainer complete with a comprehensive series of industrial process simulation modules. A Pneumatic and electro pneumatic trainer, with a comprehensive set of typical components used in pneumatic control applications. The components are mounted on modules that can be installed on a panel frame or a bench for teacher demonstration and student use.

A Hydraulics trainer designed to study and experiment oleo-dynamic power and control circuits, with panels including a number of components conveniently installed and exposed for training and experimenting.

Each module is provided with a user manual that explains its characteristics and use.

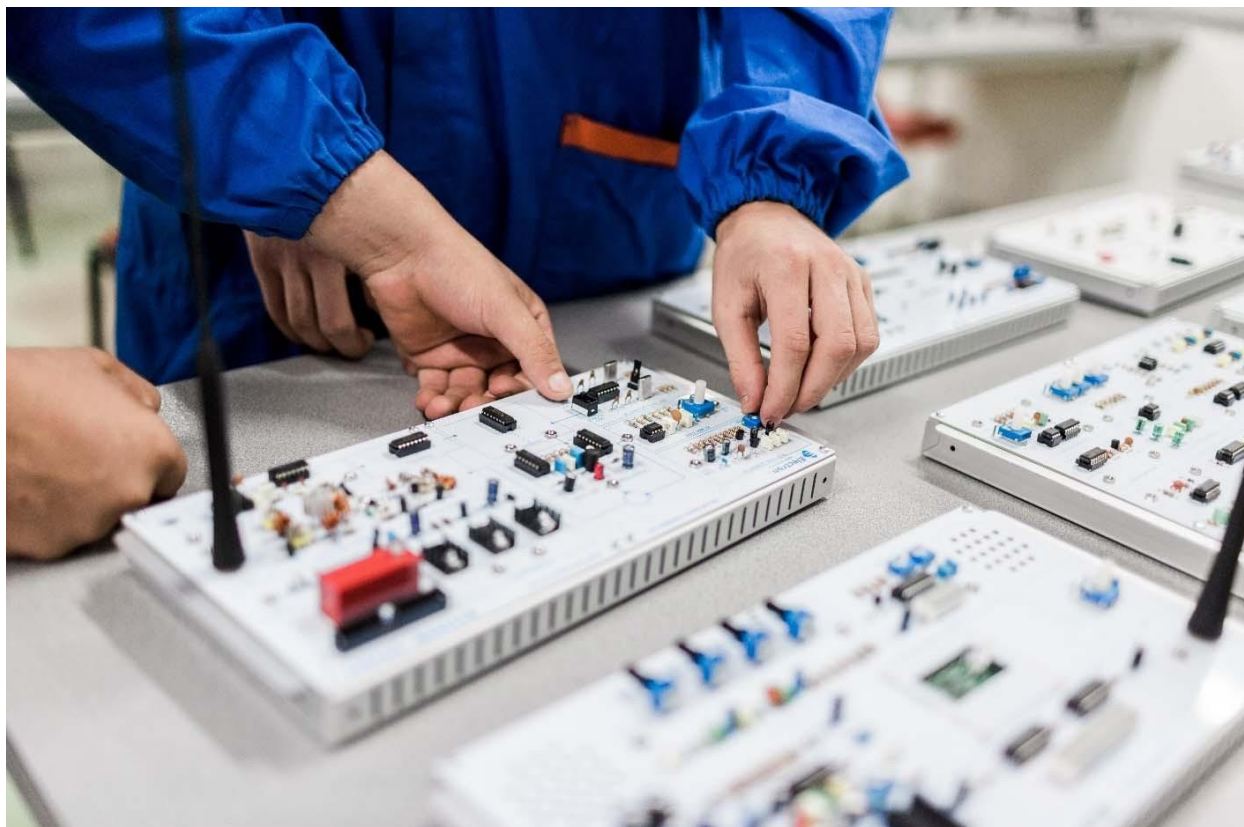
### TRAINING STATIONS LIST

9.1	PLC PROCESS SIMULATOR
9.2	INDUSTRIAL AUTOMATION BY PLC
9.3	PNEUMATICS & ELECTRO PNEUMATICS AUTOMATION
9.4	HYDRAULICS (OLEODYNAMICS) AUTOMATION





## Lab 10 - TELECOMMUNICATIONS



The laboratory includes various modules to show and experiment circuits and principles commonly recurrent in the field of telecommunications. As such, this laboratory is recommended for students attending any subsequent communications speciality. The modules generally consist of PCB cards with components in view, especially suitable for individual student work or work in a small group.

Other modules are constructed in a sturdy portable case, suitable for desktop and demonstration use, with a clear synoptic diagram displaying the functional blocks and component identities.

Special care is provided for measurements reliability by using low-cost meters that are normally available in all laboratories. No sophisticated (high cost) instruments are therefore required.

### TRAINING STATIONS LIST

10.1	FUNDAMENTALS OF COMMUNICATIONS
10.2	ANALOGUE COMMUNICATIONS
10.3	DIGITAL COMMUNICATIONS
10.4	OPTICAL COMMUNICATION
10.5	TRANSMISSION LINES
10.6	ANTENNAS
10.7	MICROWAVES



## Lab 11 - ELECTRONICS MAINTENANCE



The laboratory includes a collection of training units covering the most important subjects of Electronics maintenance, especially suited for installation and maintenance engineers.

A section is dedicated to design and production of single and double-sided electronic cards.

It also includes commercial apparatus of latest design, like TV, telephony and PC equipment, modified for teaching purposes.

### TRAINING STATIONS LIST

11.1	AUDIO & VIDEO EQUIPMENT
11.2	TELEPHONY EQUIPMENT
11.3	COMPUTER & ACCESSORIES
11.4	PRINTED CIRCUIT BOARDS (PCB) PRODUCTION
11.5	COMPUTER NETWORKS INSTALLATION AND MAINTENANCE



## Lab 12 - CNC PRODUCTION SYSTEMS



The laboratory includes various modules to show and experiment with real size CNC production system. They are suitable for both mechanical, electronics and mechatronics courses.

Lathe, Milling Machine and CAD CAM Software Package, are designed and manufactured according to the latest technology and especially suited to be used in various training environments where new CNC operators must be prepared, or former ones need to be updated on the current state of the art.

### TRAINING STATIONS LIST

12.1	CNC MILLING MACHINE
12.2	CNC LATHE
12.3	CAD-CAM SOFTWARE





## REFERENCES

More than 80 countries throughout the world

EUROPE (14)	AFRICA (25)	MIDDLE EAST (15)	ASIA (18)	AMERICAS (11)
Austria Belgium Denmark France Germany Greece Italy Nederland Romania Russia Serbia Spain Switzerland UK	Algeria Burkina Faso Burundi Djibouti Egypt, Ethiopia Gambia, Ghana Kenya Libya Madagascar Mali, Maroc Mauritania, Mauritius Mozambique Niger, Nigeria Rwanda Sierra Leone South Africa South Sudan, Sudan Tunisie Uganda	Armenia Bahrain Iran Iraq Kuwait Jordan Lebanon Oman Palestine Qatar Saudi Arabia Syria Turkey UAE Yemen	Bangladesh Cambodia India Indonesia Japan Kazakhstan Laos Malaysia Myanmar Nepal Pakistan Philippines Seychelles Singapore Sri Lanka Taiwan Thailand Vietnam	Argentina Canada Chile Cuba Fiji Jamaica Mexico Nicaragua Peru Saint Lucia USA



*"Electron products are robust, well designed and very safe to work with.*

*The fit and finish is good, and the schematics provided are very helpful in the teaching and learning process." (Professor from Mauritius)*

### Our UN references:

UNESCO Paris - France  
ILO EQUIPRO Geneva - Switzerland  
BIT Turin - Italy  
UNOPS Copenhagen - Denmark  
UNICEF Copenhagen- Denmark  
UNDP New York – USA



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Thanks for your time,  
*Massimo & Paolo*  
President and CEO of Electron

