



*Innovative engineering, technical teaching
and research equipment*

The technical teaching equipment
SCADA SYSTEM developed by EDIBON

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1. Introduction to EDIBON. What do we do and why are we good at it?

1.1 About EDIBON

WHO WE ARE

EDIBON INTERNATIONAL, S.A. is a **designer and manufacturer** of Technical Teaching Equipment in the field of Engineering, with the most Advanced Technology and optimized instructive techniques.

Training tomorrow's engineers since 1978.

WHAT ARE WE GOOD AT

Designing and supplying of fully integrated engineering laboratories for technical teaching and research -industry oriented-, providing a complete solution to the specific needs of the customer.

MINISTRIES WE ARE WORKING WITH

- Ministry of Higher Education (MOHE)
- Ministry of Education (MOE)
- Ministry of Labour (MOL)
- Ministry of Defense (MOD)
- Ministry of Health (MOH)
- Ministry of Oil and Gas (MOOG)
- Ministry of Energy (MOEN)
- Ministry of Agriculture (MOA)
- Other Ministries with Technical Schools

FACT SHEET

- **Sales target for 2020:** 50 M €
- **Operating worldwide:**
98% of international activity.
- **Strong annual expansion.**
- **Headquarters:** Madrid (Spain).
- **Facilities:** 30,000 m² & 15 M € investment.
- **Staff:** 120 team members & 95% technical profile.
- **Turn key projects abroad:**
 - * 20 M € Executed in 8 countries.
 - * 42 M € signed in 4 countries.
 - * 600 M € under analysis for potential bidding.

INTERNATIONAL FINANCIAL INSTITUTIONS WE WORK WITH

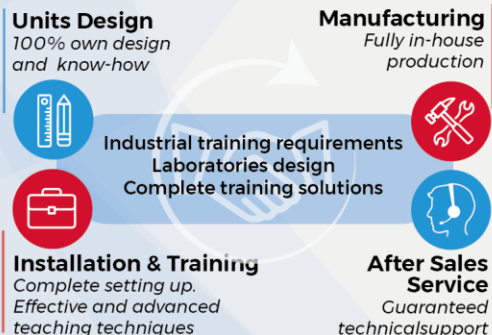
MULTILATERAL



BILATERAL



OUR MAIN ACTIVITIES



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1. Introduction to EDIBON. What do we do and why are we good at it?

1.2 Our international references.

Relevant KEY NOTE:

- Our customers are in developed, transition and developing countries.
- Regularly, EDIBON has been contract awarded with all Multilateral and Bilateral organizations.
- We comply with all globally recognized quality standards and provide long term warranties.

SOME OF OUR CLIENTS AND PARTNERS



QUALITY



WARRANTIES



Some countries already using EDIBON Technology:

- | | | | | | | | |
|---------------|----------------|------------------|---------------|---------------|---------------------|---------------------|----------------|
| • Afghanistan | • Bhutan | • Cyprus | • Guinea Ec. | • Latvia | • Pakistan | • Slovakia | • Turkmenistan |
| • Albania | • Bolivia | • Dominica | • India | • Lithuania | • Palestine | • South Africa | • UAE |
| • Algeria | • Botswana | • Dominican Rep. | • Indonesia | • Malaysia | • Panama | • South Korea | • Uganda |
| • Angola | • Brazil | • Ecuador | • Lebanon | • Mauricio | • Paraguay | • Spain | • Ukraine |
| • Argentina | • Brunei | • Egypt | • Libya | • Mauritania | • Peru | • Sri Lanka | • UK |
| • Australia | • Bulgaria | • El Salvador | • Italy | • Mexico | • Philippines | • Sudan | • Uruguay |
| • Austria | • Burkina Faso | • Estonia | • Irak | • Mongolia | • Poland | • Suriname | • USA |
| • Armenia | • Cambodia | • Ethiopia | • Iran | • Morocco | • Portugal | • Switzerland | • Uzbekistan |
| • Azerbaijan | • Cameroon | • Finland | • Ireland | • Mozambique | • Qatar | • Syria | • Venezuela |
| • Bahrain | • Canada | • France | • Israel | • Myanmar | • Romania | • Tajikistan | • Vietnam |
| • Bangladesh | • Chile | • Georgia | • Ivory Coast | • Netherlands | • Russia | • Taiwan | • Yemen |
| • Barbados | • China | • Germany | • Jordan | • New Zealand | • Saudi Arabia | • Thailand | • Zambia |
| • Belarus | • Colombia | • Ghana | • Kazakhstan | • Nicaragua | • San Cristobal & N | • Trinidad & Tobago | |
| • Belgium | • Costa Rica | • Greece | • Kuwait | • Nigeria | • Serbia | • Tunisia | |
| • Belize | • Croatia | • Guatemala | • Kyrgyzstan | • Oman | • Singapore | • Turkey | |

1. Introduction to EDIBON. What do we do and why are we good at it?

1.3 Technical education problems and solutions.

PROBLEMS

MULTILATERAL PROCUREMENT REGULATIONS INCLUDES MORE AND MORE THE PRINCIPLE OF: QUALITY, TECHNOLOGY AND VALUE FOR MONEY IN CONTRACT DESIGN. EDIBON PROVIDES THESE THREE FEATURES AND CONSIDER THAT THE SOLUTION, FOR THE PROPER TECHNICAL EDUCATION DEMANDED BY THE INDUSTRY TODAY IN ANY COUNTRY IN THE WORLD, REQUIRE SCADA TEACHING UNITS AND THE SCADA EXPANSIONS (SCADA+PLC, ESN, ECL, etc).

MAIN CONSTRAINS DETECTED BY EDIBON ON TODAY'S HIGHER, TECHNICAL AND VOCATIONAL EDUCATION

Larger GAP:	Between graduates and industry requeriments.
Trained PROFESSIONALS:	Reduced number of qualified training staff due not using MODERN teaching techniques.
Technology SHORTAGE:	In terms of availability of latest technology for teaching equipment.
VALUE FOR MONEY:	Lack of efficiency in theory-practical teaching and number of student per teacher.
Technology:	Not to use some technology as the industries use.
Training STANDARDS:	Low training standards on profesional teachers.
SEPARATE labs and classroom:	Not allow one teacher to teach theory and practices simultaneously.
LONG TERMS focus:	Not considered training sustainability.

1. Introduction to EDIBON. What do we do and why are we good at it?

1.3 Technical education problems and solutions.

SOLUTIONS

Solutions provided by EDIBON to these MAJOR CONSTRAINS in terms of Quality, Value-for-Money & Cost Reduction

Solutions provided within TECHNICAL SPECIFICATIONS:

TEACHING units:	Provided Technical Teaching units in all technical areas.
SCADA system:	Has become a reference in the international market as the most appropriate solution.
TOR definition:	EDIBON has become an expert in providing consultancy services on TOR definitions accordingly to solution required and available in the market.
ONE Teacher:	Teaching technical theory and practices and knowing the student level of understanding in real time.
30 Students:	Working simultaneously with one or general units and only with one teacher.

Solutions provided in terms of SCALABILITY:

Equipment ADAPTABILITY:	Independent equipment units can be integrated for complete laboratory system. Teaching Equipment has to be as industrial one, including the control system, as is the most difficult part for students to understand.
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Increased OUTPUTS with additional key services:

Collaterals:	• Project and Complete Laboratories to be supplied with EDIBON, advance and modern own technology. • Turn Key Projects (TKP) with own soft financing. • Technical Distance Learning (ECL), • Custom Made Units and Pilot Plants. Courses with advanced Teaching Unit + University Teachers + EDIBON Engineers, and more...
Services:	Laboratory adaptation. Units installation. Units setting up. Training by EDIBON engineers. After sales service, including remote control. Sustainability. Warranties.

1. Introduction to EDIBON. What do we do and why are we good at it?

1.4 Teaching equipment technology evolution.

1. Traditional Manual Units / Software Simulation

Not recommended nowadays as modern teaching technologies are available.



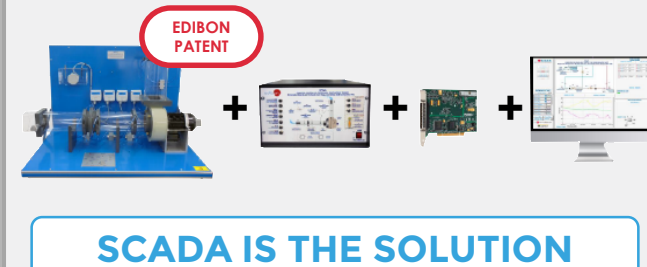
2. Units With Data Acquisition

Few companies in the world offer Data Acquisition as additional value to manual units.



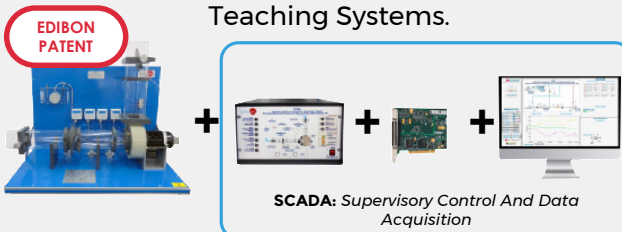
3. EDIBON Units + SCADA System

EDIBON is a pioneer company offering SCADA for thousands of Teaching Units since 30 years ago.



4. EDIBON Industrial Units (SCADA+PLC's)

This is the only Real industrial Teaching Systems.



PLC

Programmable Logic Controller with EDIBON own custom made Software for any unit.



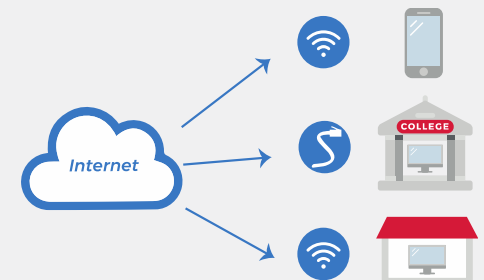
5. Multipost EDIBON SCADA-NET (ESN)

This system allows that many units in the laboratory can be used by, up to 30 students working simultaneously (many units, many students), and with only one Teacher.



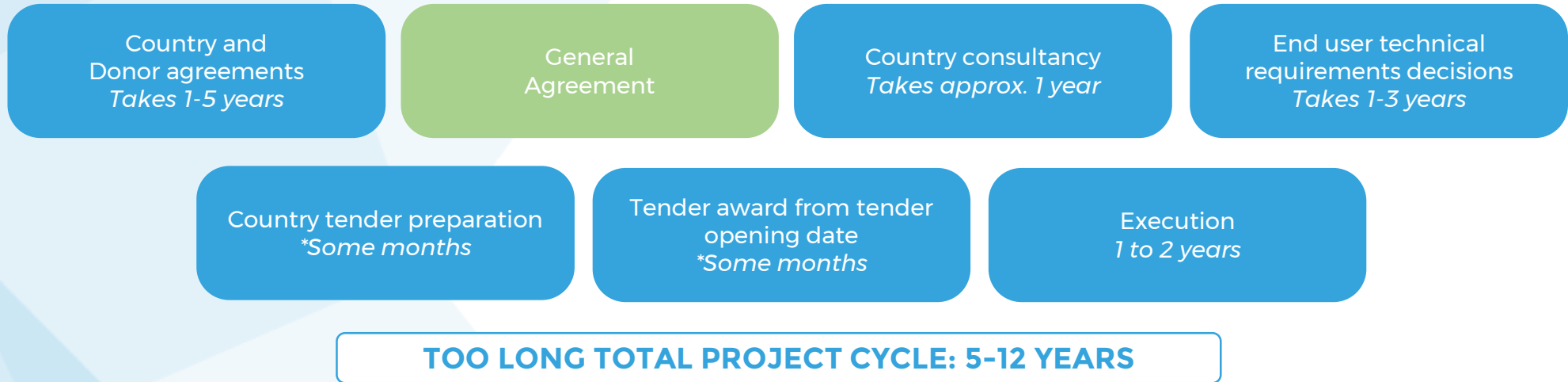
6. Multipost EDIBON Cloud Learning (ECL)

EDIBON Teaching Unit with SCADA in one place (city), students in any other place (city).



1. Introduction to EDIBON. What do we do and why are we good at it?

1.5 How EDIBON advance Technical Teaching Equipment can reduce the processing time of technical education project cycle?



How EDIBON can help the end customer for reducing processing time?

- By analysing the existing laboratories (size, conditions, installations, needs, etc.).
- By analysing the curricula and industry requirements.
- By recommending to use classroom and laboratory at the same place, for reducing costs and improving the teaching efficiency.
- By updating the laboratories in accordance with the future laboratory units requirements.
- By recommending to the end customers not only the proper Teaching units, but also the proper Teaching Technology.
- By supplying “complete packages” with installation, training and sustainability.
- By giving special and high level courses for training teachers.
- By guarantee sustainability.
- By supplying ALL SOFTWARE PACKAGES IN “ANY LANGUAGE”.
- By providing long term warranties.

... “SO EDIBON STAFF CAN COLLABORATE AND REDUCE DRASTICALLY THIS PROCESSING TIME”

2. The SCADA Technical Teaching System

2.1 Sector of application for the SCADA system

EDIBON equipment integrity, scalability and adaptability:
4,000 Technical Teaching Units + 5,000 different configurations.

AREAS

- 10. Physics
- 20. Electronics
- 30. Communications
- 40. Electricity
- 50. Energy
- 60. Mechatronics & Compumechatronics
- 70. Mechanics
- 80. Fluid Mechanics
- 90. Thermodynamics & Thermotechnics
- 100. Process Control
- 110. Chemical Engineering
- 120. Food & Water Technologies
- 130. Environment
- 140. Biomedical Engineering

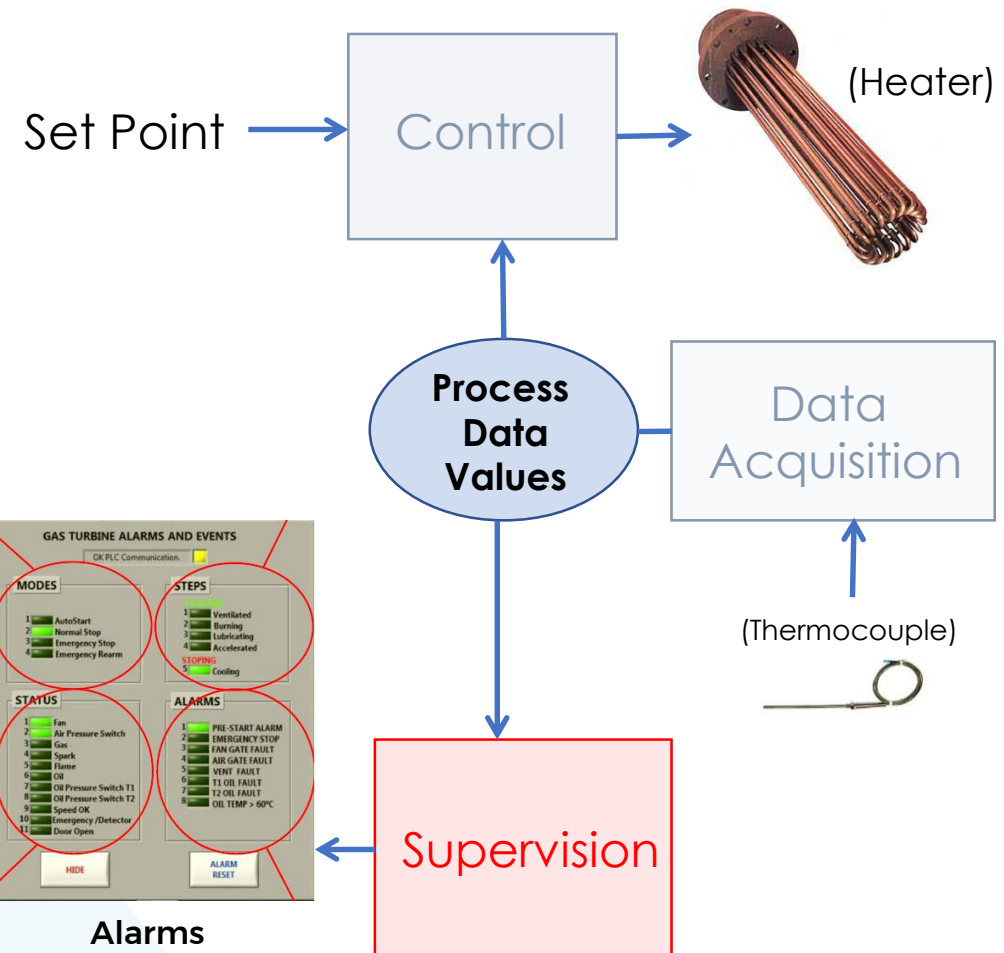
EDIBON SOLUTION SCADA CONTROL SYSTEM as it is used in any industry.

INCONVENIENCE Some teachers need training for SCADA CONTROL SYSTEMS, as they are not familiar with. EDIBON do it.

UNITS AVAILABILITY Most of the units in stock.

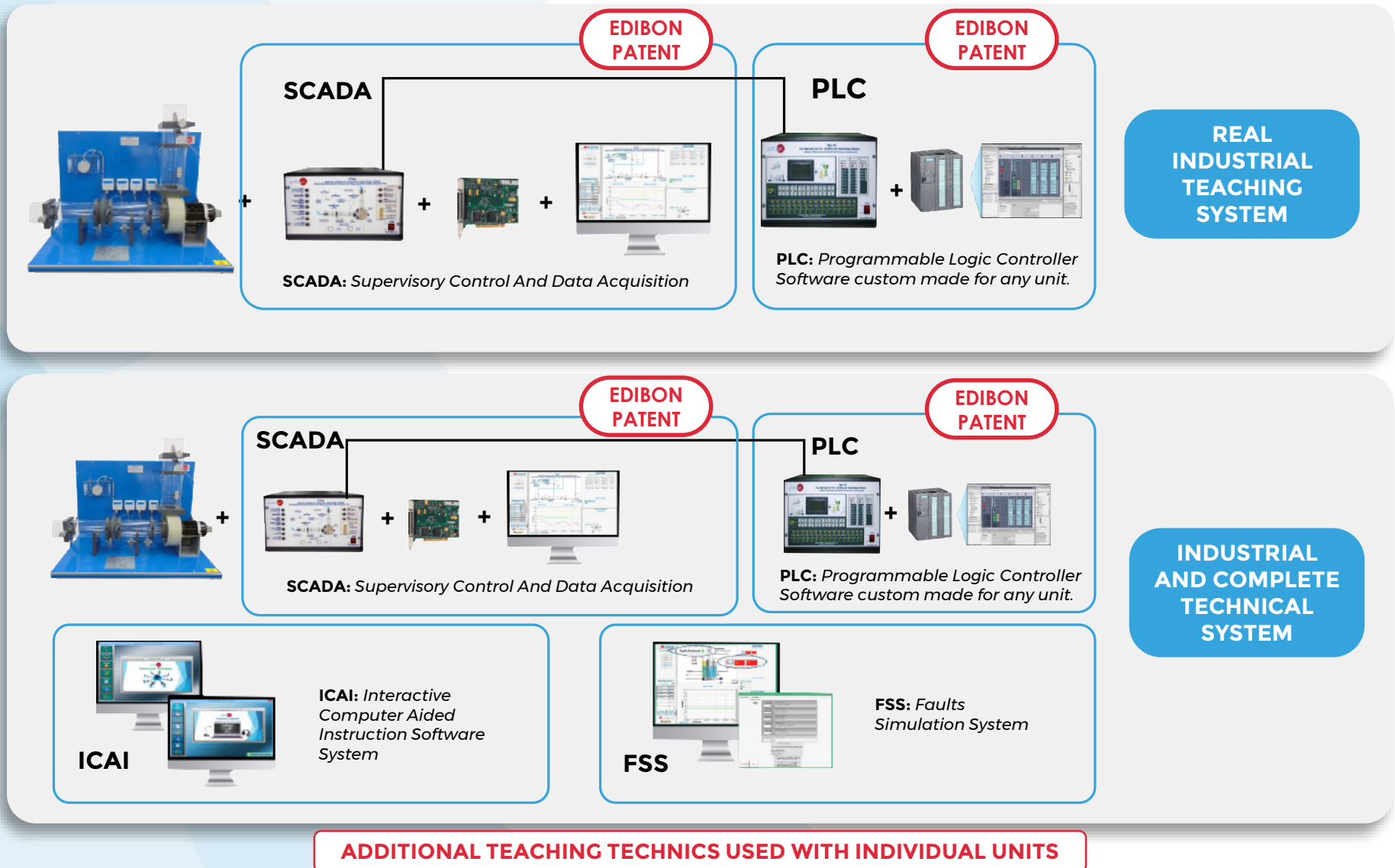
SOME SCADA CONCEPTS Proportional, Integral, Derivative, Offset, Gain, Error, Set-point, Process variable, etc.

SCADA



2. The SCADA Technical Teaching System

2.2 Development of modern **TEACHING TECHNIQUES**, as a consequence of advanced technology used.



2. The SCADA Technical Teaching System

2.3 Alignment of EDIBON Technical Equipment with the new and future Procurement regulation of Multilateral Financing BANKS (ADB implemented already).

EXAMPLE ESN

Modern Laboratories



SCADA NET

EDIBON provides a fully integrated solution for engineering laboratories

ESN

Quick and clear concept for students by using EDIBON Technology

Accessibility, Opportunity Cost, Interconnectivity (locally and externally), Superior Quality Specifications, Value-for-Money and overall Cost Reduction with SCADA Family Technology

ESN main advantages:

- 30 students can work simultaneously.
- Only one teacher controls and explains to ALL students at the same time.
- All units at the laboratory can be interconnected.
- Lower cost per student.
- The efficiency increases drastically.

Local Net:

- The ESN System allows all units and student computers, even teacher computer, to be interconnected.

Note:

- All EDIBON Computer Controlled Units using “SCADA” can be incorporated in any SCADA-NET (ESN) System.

ESN costs analysis:

- Unit cost = 1x
- System cost = 1x
- Total cost = 2x

15 TIMES LOWER COST PER STUDENT

30 Students

2 x Total cost= 15

ESN Additional Advantages:

- Laboratory and classroom AT THE SAME PLACE.
- 30 students working SIMULTANEOUSLY.
- Only one teacher teaching theory and practices AT THE SAME TIME.
- Much higher Teaching Efficiency.

HIGHER EFFICIENCY

2. The SCADA Technical Teaching System

2.3 Alignment of EDIBON Technical Equipment with the new and future

Procurement regulation of Multilateral Financing BANKS (ADB implemented already).

EXAMPLE ECL

Accessibility, Opportunity Cost, Interconnectivity (locally and externally), Superior Quality Specifications, Value-for-Money and overall Cost Reduction with SCADA Family Technology

ECL Analysis:

- Master unit: EDIBON unit with SCADA in one place and/or city.
- Satellite unit: Up to 100 other centers in other places or cities students can use the pilot unit.
- Unit control IN REAL TIME.
- Visualization camera included.

Use option:

- Satellite places can use the master unit from:
 - Other laboratories.
 - Students homes.
 - Students mobile phones.

ECL Costs:

- Unit cost = 1x
- System cost = 1x
- Total cost = 2x

50 to 100 TIMES LOWER COST

$$\begin{aligned} &100 \text{ places} \\ &2 \times \text{Total cost} = 50 \end{aligned}$$

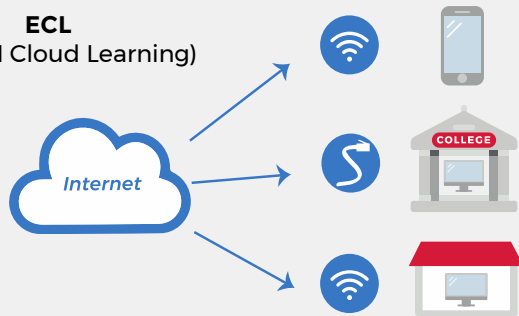
Advantages:

- Lower maintenance costs.
- Teaching theory and practices at the same time.
- Many satellite centers can be connected with the unit in the Pilot Center.

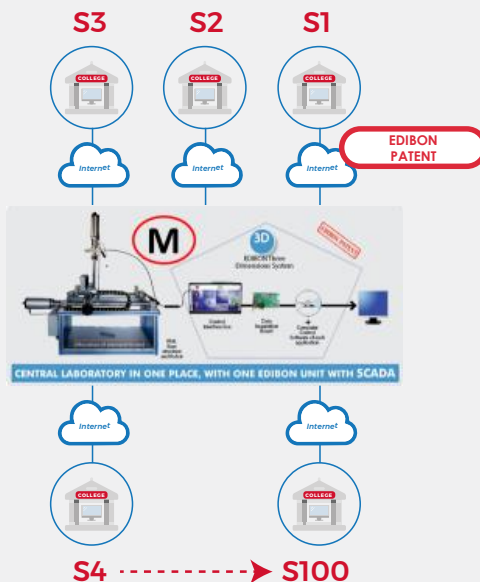
ECL Customer references:

- System designed 8 years ago.
- Commercialization since July 2017.
- One order for Villalkor College (Madrid – Spain).
- Enquiries from Tamil Nadu (Chennai – India), Honduras, Kazakhstan, Nigeria, and on.

ECL
(EDIBON Cloud Learning)



ECL
(EDIBON Cloud Learning)

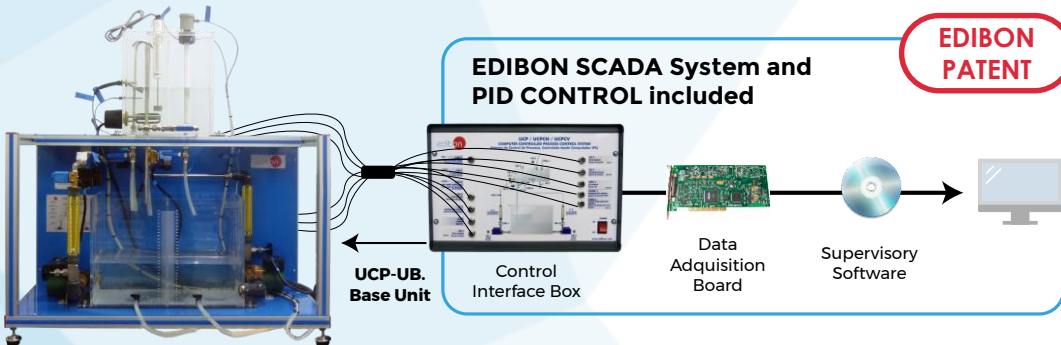


3. Examples of the SCADA System and expansions.

3.1 UCP Process Control Unit.

SCADA EXPANSIONS

UCP - Computer Controlled Process Control System (with electronic control valve), with SCADA and PID Control



Key Innovative Features:

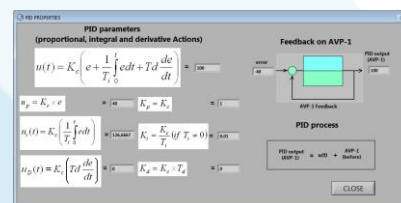
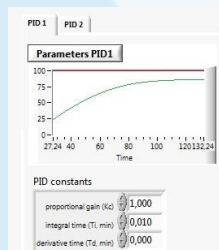
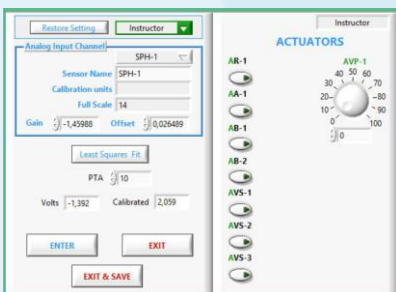
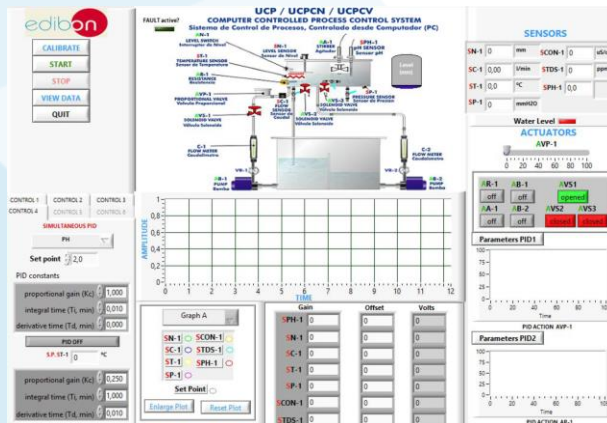
- Advanced Real-Time SCADA and PID Control.
- Open Control + Multicontrol + Real-Time Control.
- Specialized EDIBON Control Software based on LabView.
- Calibration exercises.
- Projector and/or electronic whiteboard compatibility.
- Capable of doing applied research.
- Remote operation and control.
- Totally safe, utilizing 4 safety systems (Mechanical, Electrical, Electronic & Software).
- Designed and manufactured under several quality standards.

Teaching advantages:

- The student identifies and can see and compare, at the same time, the unitary process with Mathematic formula.
- Quick and clear understanding.
- Unitary process analysis in details.
- Apply research with zero additional cost.
- Approximately **DOUBLE PRACTICES** possibilities compared with manual unit.

Cost:

- **EDIBON SCADA** with PID Control. **SIMILAR PRICE** than any other European manufacturers.

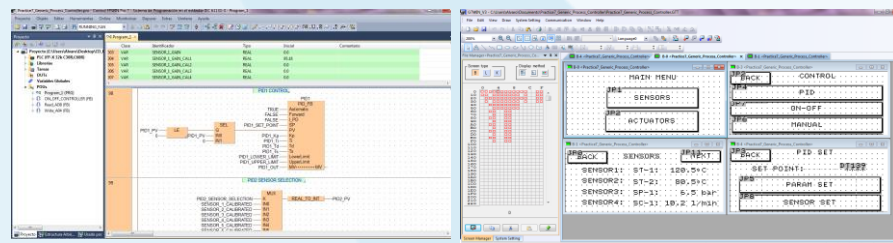
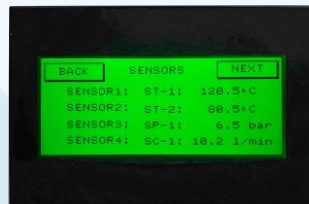
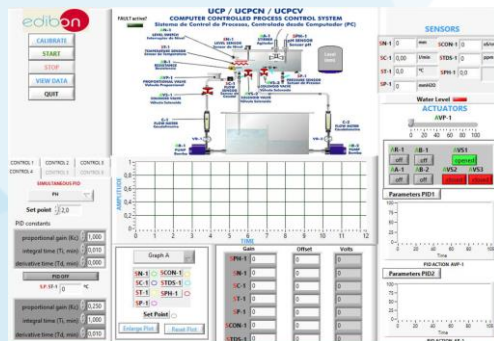
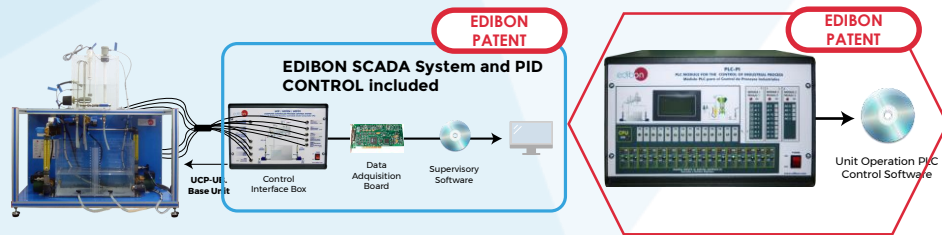


3. Examples of the SCADA System and expansions.

3.2 SCADA + PLC Control (Real Industrial System).

SCADA EXPANSION

PLC – Programmable Logical Controller. Real Industrial System



PLC Additional practices:

- 1.- Control of the unit process through the control interface box without the computer.
- 2.- Visualization of all the sensors values used in the unit process.
- 3.- Calibration of all sensors included in the unit process.
- 4.- Hand on of all the actuators involved in the unit process.
- 5.- Realization of different experiments, in automatic way, without having in front the unit. (This experiment can be decided previously).
- 6.- Simulation of outside actions, in the cases hardware elements do not exist. (Example: test of complementary tanks, complementary industrial environment to the process to be studied, etc.).
- 7.- PLC hardware general use and manipulation.
- 8.- PLC process application for the unit.
- 9.- PLC structure.
- 10.- PLC inputs and outputs configuration.
- 11.- PLC configuration possibilities.
- 12.- PLC program languages.
- 13.- PLC different programming standard languages.
- 14.- New configuration and development of new process.
- 15.- Hand on an established process.
- 16.- To visualize and see the results and to make comparisons with the unit process.
- 17.- Possibility of creating new process in relation with the unit.
- 18.- PLC Programming exercises.
- 19.- Own PLC applications in accordance with teacher and student requirements.

Teaching advantages:

- The student can work at SCADA mode and/or PLC mode.
- Many processes in Industry use SCADA + PLC.
- Quick and clear use of SCADA + PLC.

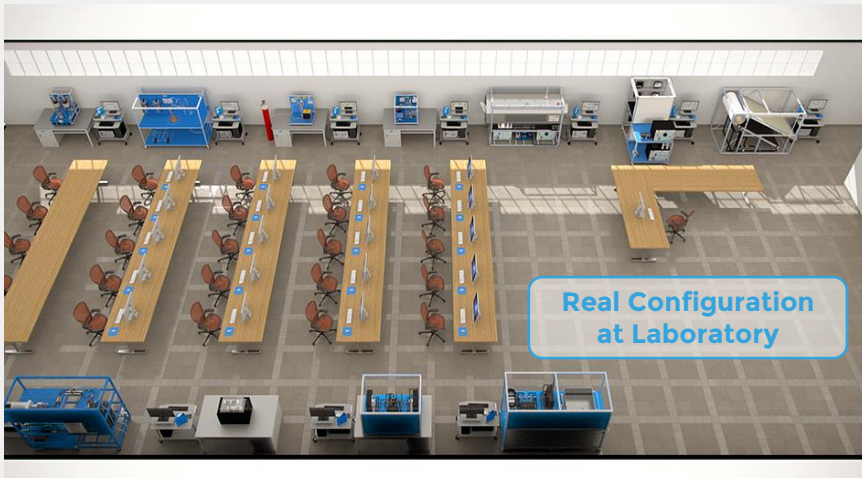
3. Examples of the SCADA System and expansions.

3.3 EDIBON Scada-Net System (ESN).

Example: Scada-Net System (ESN)
Laboratory: Renewable Energie



Real Configuration at Laboratory



Real Configuration at Laboratory

SCADA EXPANSIONS

Available SCADA-NET Systems with EDIBON units in the areas of:

- Physics.
- Electronics and Communications.
- Electricity.
- Energy.
- Renewable Energies.
- Fluid Mechanics.
- Thermodynamics.
- Process Control.
- Chemical Engineering.
- Food Technology.
- Environment.
- Biomedical.

15 TIMES LOWER COST PER STUDENT

ESN. References.

Country	Systems working	Systems ordered	Systems quoted
Pakistan	4	8	15
India	1	24	30
Peru	2	-	3
USA	1	-	2
Nigeria	1	-	29
Oman	1	-	-
Other 25 countries	-	-	300
Total:	10	32	379

3. Examples of the SCADA System and expansions.

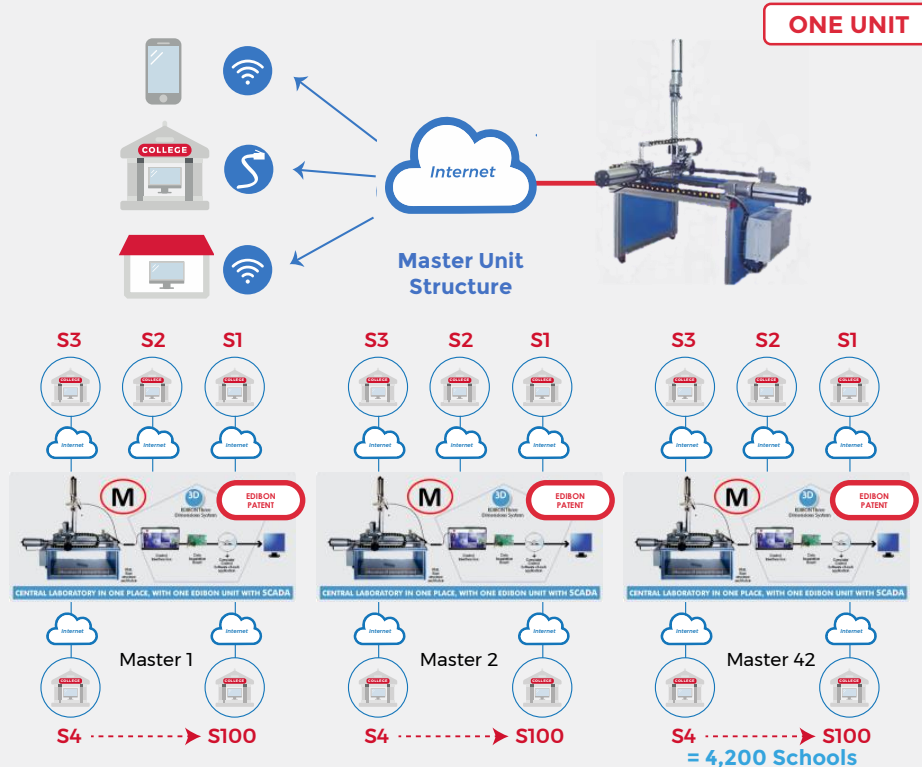
3.4 EDIBON Cloud Learning (ECL).

SCADA EXPANSIONS

Example: Secondary Education

End Customer: Tamil Nadu Government (India)

EDIBON Cloud Learning (ECL) for Secondary Education



Complete System

M: 42 Master Schools.

S: 100 Satellite Schools for any Master School.

4,200 Satellite Schools.

210M€
4,2M€=50

Comparative COSTS

- One school estimated to be equipped = **50,000€**
4200 schools × 50,000€/school= **210M€**

- Cost using ECL

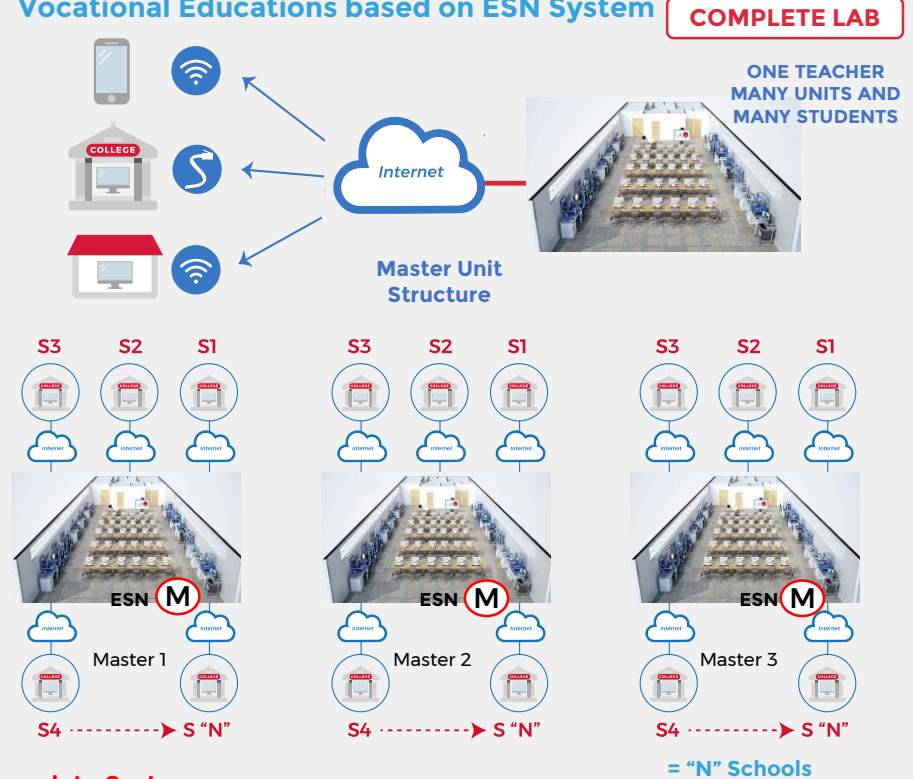
42 Master schools × 100,000€/Master School= **4,2M€**

THE ECL COST IS 50 TO 100 TIMES LOWER

Example: Higher, Technical and Vocational Educations

End Customer: Government of Kyrgyzstan

EDIBON Cloud Learning (ECL) for Higher, Technical and Vocational Educations based on ESN System



Complete System

M: 3 Complete Master Laboratories.
Several units with SCADA in any Master Laboratory.

S: "N" Satellite Training Centers in the country. Any student can use the system from home.

Comparative COSTS

- Complete Master Laboratory = **50M€**

- 3 Complete Master Laboratory = **150M€**

- ECL System for all units = **150M€**

The ECL + ESN cost AT LEAST 60 TO 100 TIMES LOWER depending the number of satellite schools.

4. Financing,

4.1 Financing Conditions.

**SOFT
FINANCING
AVAILABLE**

INTEREST

Approx. 0.2 %

PAYMENT

Approx. 30 years

GRACE PERIOD

Approx. 10 years



**WARRANTY
REQUIRED**

Requirements:

- Projects agreement between End Customer and EDIBON.
- Priority letter from COUNTRY FINANCIAL INSTITUTION.

EDIBON LONG EXPERIENCE





THANK YOU!