Wind Power Plants with Double Feed Induction Generator

AEL-WPP

① Unit: AEL-WPP. Wind Power Plants with Double Feed Induction Generator

Key features:

➢ **Advanced Real-Time SCADA.**

➢ **Open Control + Multicontrol + Real-Time Control.**

➢ **Specialized EDIBON Control Software based on LabVIEW.**

➢ **Projector and/or electronic whiteboard compatibility allows the unit to be explained and demonstrated to an entire class at one time.**

➢ **Capable of doing applied research, real industrial simulation, training courses, etc.**

➢ **Remote operation and control by the user and remote control for EDIBON technical support, are always included.**

➢ **Totally safe, utilizing 4 safety systems (Mechanical, Electrical, Electronic & Software).**

➢ **Designed and manufactured under several quality standards.**

➢ **Optional ICAI software to create, edit and carry out practical exercises, tests, exams, calculations, etc.**
  Apart from monitoring user's knowwledge and progress reached.

➢ **This unit has been designed for future expansion and integration. A common expansion is the EDIBON Scada-Net (ESN) System which enables multiple students to simultaneously operate many units in a network.**

OPEN CONTROL
+
MULTICONTROL
+
REAL TIME CONTROL

POWERED BY
LabVIEW™

www.edibon.com
⤷PRODUCTS
  ⤷40.- ELECTRICITY

For more information about Key Features, click here

PDF Adobe

You Tube

GENERAL DESCRIPTION

The AEL-WPP is used to investigate the design and operation of modern wind power stations. The AEL-WPP consists of a prime motor that moves a double-feed induction generator (as a generator for the wind power plant).

This power station includes a SCADA Control Systems which allows the following:

In one hand the SCADA allows the user to configure the desired wind curve for the experiment. Once the wind curve is configured and the user starts the experiment, the Software controls automatically the AEL-SERIN/CA-1K motor to generate the same wind curve configured by the user.

In the other hand the SCADA allows to visualize the most important signals of the systems (rotor current, stator current, line voltage, dc bus voltage of the back to back inverter…) and allows to visualize the most important measurements of the system (value of the rotor active power and reactive power, stator active power and reactive power, total active and reactive power, speed of the generator shaft…).

The software also allows the user to save the experiment data, to analyze the results after the test, through a data visualizer included with the software. The data format of the saved files are compatible with Microsoft excel.

This application can be combined with other applications of generation, transmission/distribution and load systems areas.

The AEL-WPP includes the following modules:

- EMT8DF.   Double Feed Induction Generator.

- N-DFGC.   Double-feed Generator Control Module.

- N-FRT.   Fault Ride Through Module.

- N-BTBINV.   Back to Back Inverter.

- N-SERIN/CA-1K.   Computer Controlled Advanced Industrial Servo systems Trainer (for AC Motors).

- AEL-WPP/CCSOF.   Computer Control+Data Acquisition+Data Management Software (SCADA).

Optional software:

- WSS.   Wind Sim Software.

Optional learning software:

In addition, Edibon provides optional software (AEL-WPP/ICAI) to reinforce knowledge about this field. This software is formed by:

- ECM-SOF.   EDIBON Classroom Manager (Instructor Software).

- ESL-SOF.   EDIBON Student Labsoft (Student Software).

The application AEL-WPP is mounted on the following racks:

- N-RACK-M (3 units).

- N-RACK-B (3 units).

This unit is supplied with the EDIBON Computer Control System (SCADA), and includes: The unit itself + Computer Control, Data Acquisition and Data Management Software Packages, for controlling the process and all parameters involved in the process.

With this unit there are several options and possibilities:
- Main items: 1, 2, 3 and 4.
- Optional items: 5, 6 and 7.
Let us describe first the main items (1 to 4):

① **AEL-WPP. Unit.**

The trainer includes the following modules:

• EMT8DF. **Double Feed Induction Generator.**

Main motor:

Nominal power: 1kW

Nominal voltage: 3x 400/230 VAC Y/ Δ

Frequency: 50/60 Hz

Number of poles: 2

RPM: 3000 rpm

Nominal current: 1,7/3 A Y/ Δ

Asynchronous Three-Phase generator with double feed:

Nominal power: 1.5kW

Nominal voltage: 3x 400/230 VAC Y/ Δ

Frequency: 50/60 Hz

Number of poles: 2

RPM: 3000 rpm

Nominal current: 2,5/4,4 A Y/ Δ

EMT8DF

• N-DFGC. **Double-feed Generator Control Module.**

Operation of the double-feed asynchronous generator in subsynchronous and supersynchronous operating mode.

Autonomous control of reactive and active power, frequency, voltage, etc.

Automatic mains synchronisation.

Connection to control the back-to-back inverter (N-BTBINV).

Connection to control the prime motor (AEL-SERIN/CA-1K).

Connection voltage: 3 x 400V, 50…60Hz.

N-DFGC

• N-FRT. **Fault Ride Through Module.**

This module simulates different faults in the transmission lines:

Investigating the response of wind power plants to system faults.

Exploring symmetrical fault scenarios.

Exploring asymmetrical fault scenarios.

Adjusting controller parameters.

The grid fault simulator has the following features:

Adjustable power failure durations from 50ms to 500ms.

4-level, adjustable voltage drop for all phases.

Symmetrical and asymmetrical grid faults can be set up.

Adjustable start angle fault-ride-through analysis.

Touch screen display.

Connector voltage: 3 x 400V, 50…60Hz.

N-FRT

• N-BTBINV. **Back to Back Inverter.**

This module integrates a back to back inverter used to extract power from the double fed induction generator rotor. Besides, it integrates a braking chopper to protect the DC BUS.

The back to back inverter is controlled by the N-DFGC module.

N-BTBINV

Complete Technical Specifications (for main items)

- N-SERIN/CA-1K. **Computer Controlled Advanced Industrial Servosystems Trainer (for AC Motors).**

    The AEL-SERIN/CA-1K allows to generate wind curves configured by the user through the AELWPP/CCSOF software.

    The AEL-SERIN/CA-1K trainer consists on an Control Interface module connected to a three-phase motor and a computer (AEL-PC). The control interface has an 20-bits incremental encoder that controls the speed, position and torque of the motor.

    The USB communication between the control interface and the PC provides the AEL-SERIN/CA-1K the possibility of commanding the motor from the PC and visualize the most important signals of the motor: Velocity, Position and Torque Control.

    Control Interface module:

    3 Digital outputs:

        Each output has a green LED that indicates if the output is active or not.

        Encoder outputs:

            Two pair of outputs (CH A Out, CH B Out and their respective denied outputs) that are TTL signals of incremental position generated by the encoder feedback. These signals indicate the direction of rotation of the motor.

            One pair of outputs (CH Z Out and their denied) that TTL works as marker of pulses. This signal indicates the motor speed.

        Relay output: this output is a relay, and it belongs together with the output 4 that it can be in the software inside the I/O digital label.

        3 Analog outputs: can be controlled by software to be a certain valve of the internal variables.

        6 Digital inputs: digital inputs for those signals that are introduced to enable the different available functions in the software.

        6 Buttons: they are good to enable the digital inputs. When the button is pressed, the digital Input will be activated, making what has been defined by the software.

        6 Switches: they have the same function as the buttons, but with the only difference that they are switches and, therefore, maintain the position fixed (open or closed).

        Switch outfitter of digital inputs: there is a switch that enables the digital inputs. When the green LED is on, the inputs will be enabled.

        Analog input: this input allows an analog use directly of the user. It is an A/D input.

        1 Potentiometers. 1 Digital encoder.

        Reset button: this button is used to reset the motor driver after setting a new configuration.

    Motor:

        3-Phase AC motor, 2 kW, 5 A, 5000 rpm, 400 Vac., 19.1 Nm., IP67, 20 bits (1048576 resolution) incremental encoder.

    N-SERIN/CA-1K/CCSOF: Computer Control+Data Acquisition+Data Management Software:

        Compatible with actual Windows operating systems. Graphic and intuitive simulation of the process in screen. Compatible with the industry standards.

        Registration and visualization of all process variables in an automatic and simultaneous way. Flexible open and multicontrol software, developed with actual windows graphic systems, acting simultaneously on all process parameters. Management, processing, comparison and storage of data. Comparative analysis of the obtained data, after the process and modification of the conditions during the process.
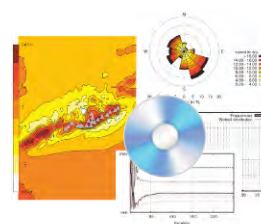
- WSS. **WindSim Software. (OPTIONAL, not included in the minimum supply)**

    The WindSim is an application that allows simulating, analyzing and studying the development and operation of the wind farms. The WinSim is a modern wind farm design tool, that aid the user with the complex analysis of equations of fluid mechanics involved in the study and optimization of the wind farms. WindSim software is based on computational fluid dynamics (CFD) that combines advanced numeric processing with compelling 3D visualization. The WindSim includes the getting started manual that guide to the user to explore the entire potential of this tool.

- **All necessary cables to realize the practical exercises are included.**

AEL-SERIN/CA-1K

N-SERIN/CA-1K/CCSOF

AEL-WPP/CCSFOF

The complete unit includes as well:

Advanced Real-Time SCADA.

Open Control + Multicontrol + Real-Time Control.

Specialized EDIBON Control Software based on LabVIEW.

Projector and/or electronic whiteboard compatibility allows the unit to be explained and demonstrated to an entire class at one time.

Capable of doing applied research, real industrial simulation, training courses, etc.

Remote operation and control by the user and remote control for EDIBON technical support, are always included.

Totally safe, utilizing 4 safety systems (Mechanical, Electrical, Electronic & Software).

Designed and manufactured under several quality standards.

Optional ICAI software to create, edit and carry out practical exercises, tests, exams, calculations, etc.
Apart from monitoring user's knowwledge and progress reached.

This unit has been designed for future expansion and integration. A common expansion is the EDIBON Scada-Net (ESN) System which enables multiple students to simultaneously operate many units in a network.

② **AEL-WPP/CCSOF. Computer Control + Data Acquisition + Data Management Software:**

The three softwares are part of the SCADA system.

Compatible with actual Windows operating systems. Graphic and intuitive simulation of the process in screen. **Compatible with the industry standards.**

Registration and visualization of all process variables in an automatic and simultaneous way.

Flexible, open and multicontrol software, developed with actual windows graphic systems, acting simultaneously on all process parameters.

Management, processing, comparison and storage of data.

It allows the registration of the alarms state and the graphic representation in real time.

Comparative analysis of the obtained data, after the process and modification of the conditions during the process.

Open software, allowing the teacher to modify texts, instructions. Teacher's and student's passwords to facilitate the teacher's control on the student, and allowing the access to different work levels.
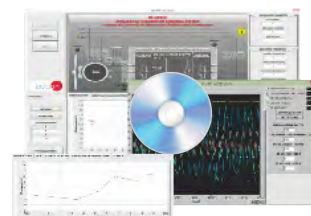
This unit allows the 30 students of the classroom to visualize simultaneously all the results and the manipulation of the unit, during the process, by using a projector or an electronic whiteboard.

③ **Cables and Accessories**, for normal operation.

④ **Manuals:**

This unit is **supplied with 7 manuals**: Required Services, Assembly and Installation, Control Software, Starting-up, Safety, Maintenance & Practices Manuals.

AEL-WPP/CCSOF

∗References 1 to 4 are the main items: AEL-WPP + AEL-WPP/CCSOF + Cables and Accessories + Manuals are included in the minimum supply for enabling normal and full operation.

EXERCISES AND PRACTICAL POSSIBILITIES TO BE DONE WITH THE MAIN ITEMS

1.- Identifying elements and devices.

2.- Supply and modules signals wiring.

3.- Commissioning of trainer.

4.- Analyzing the system states: Starting and Loading the DC bus.

5.- Identifying modulation inverter start back to back.

6.- Stop sequence Double Feed Induction Generator.

7.- Study of the double-feed asynchronous machine with subsynchronous speed.

8.- Study of the double-feed asynchronous machine with supersynchronous speed.

9.- Studying the operating response when there are faults on the grid ("fault ride-through").

Other possibilities to be done with this Unit:

10.- Many students view results simultaneously.

To view all results in real time in the classroom by means of a projector or an electronic whiteboard.

11.- The Computer Control System with SCADA allow a real industrial simulation.

12.- This unit is totally safe as uses mechanical, electrical and electronic, and software safety devices.

13.- This unit can be used for doing applied research.

14.- This unit can be used for giving training courses to Industries even to other Technical Education Institutions.

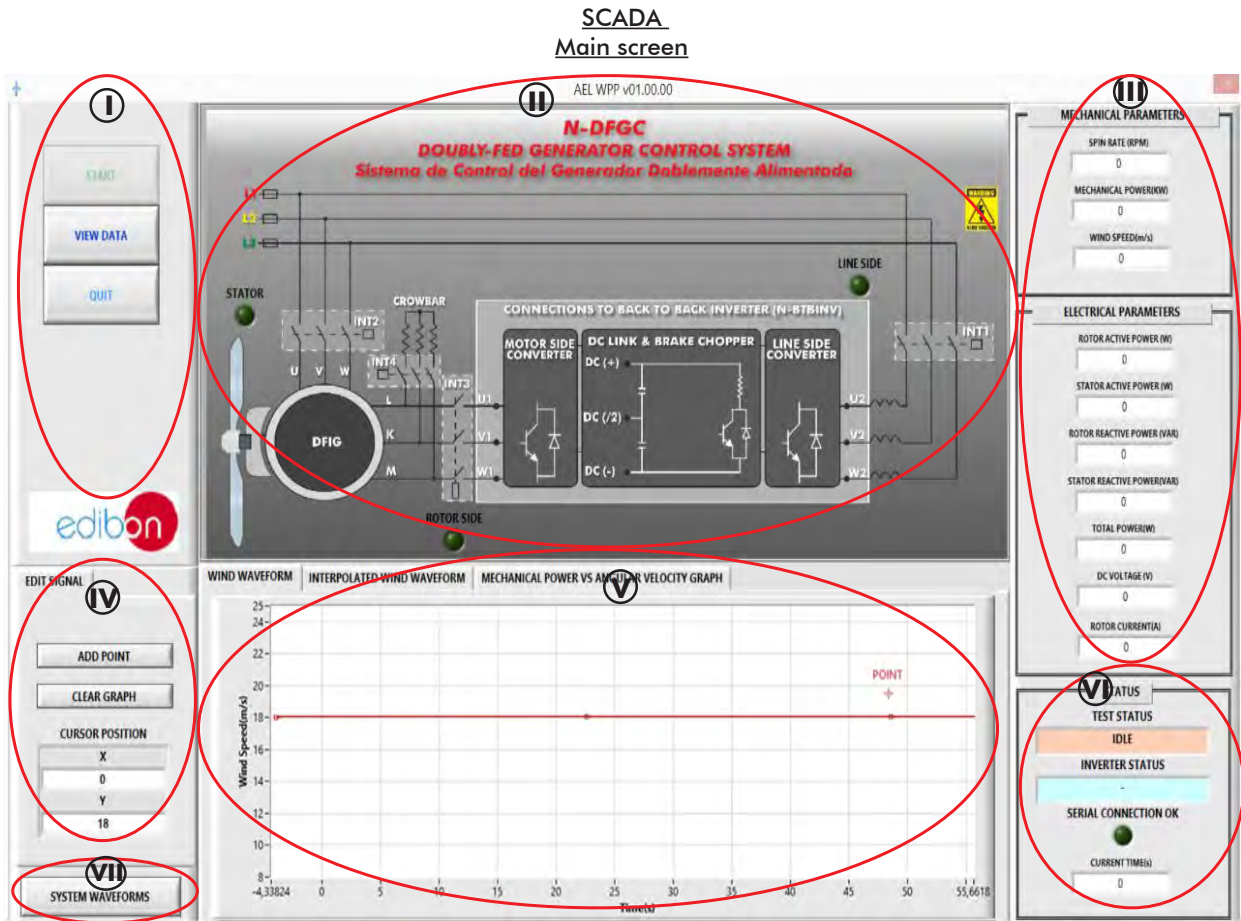- Several other exercises can be done and designed by the user.

REQUIRED SERVICES

- Electrical supply: three-phase, 380V./50 Hz. or 208V./60 Hz., 20 Kw.
- Computer.

DIMENSIONS AND WEIGHTS

AEL-WPP:

-Dimensions: 2000 x 400 x 2000 mm. approx.

(78.74 x 15.75 x 78.74 inches approx.)

-Weight: 100 Kg. approx.

(220 pounds approx.)

SCADA
Main screen

Ⓘ Main controls.

Ⓘⓘ Contactors status diagram.

Ⓘⓘⓘ Menu indicating the machines mechanical and electrical parameters.

Ⓘⓥ Menu to edit the wind profile of section 5.

Ⓥ Graph for editing and displaying the wind profile applied to the turbine, as well as the optimal power curve based on the turbine angular velocity.

Ⓥⓘ Menu of test status and serial communication with the unit.

Ⓥⓘⓘ Menu to display the date logging of signals adquired during the machine test.
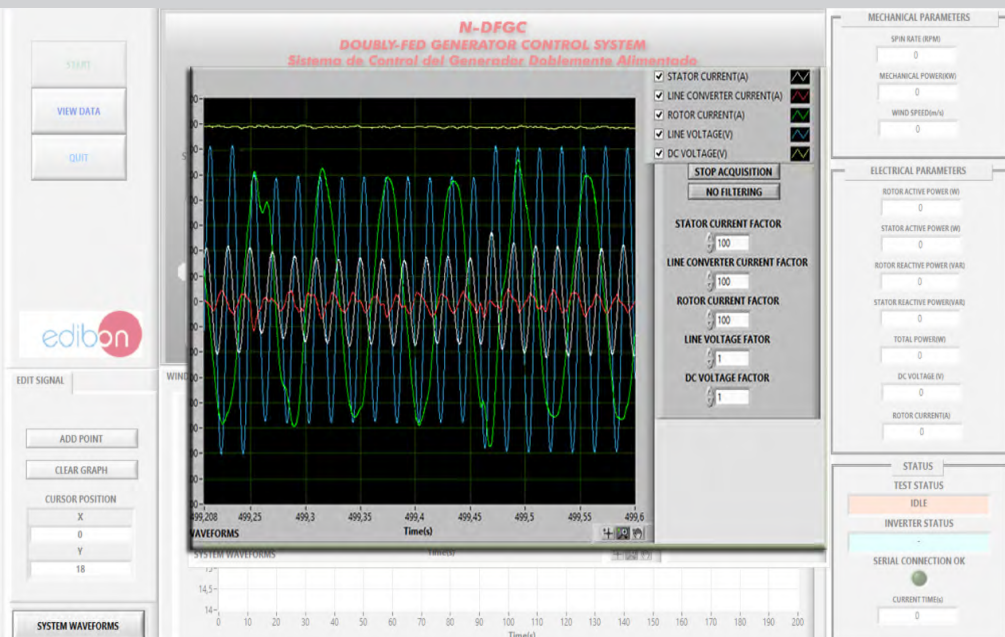
Edition screen of the wind curve points.
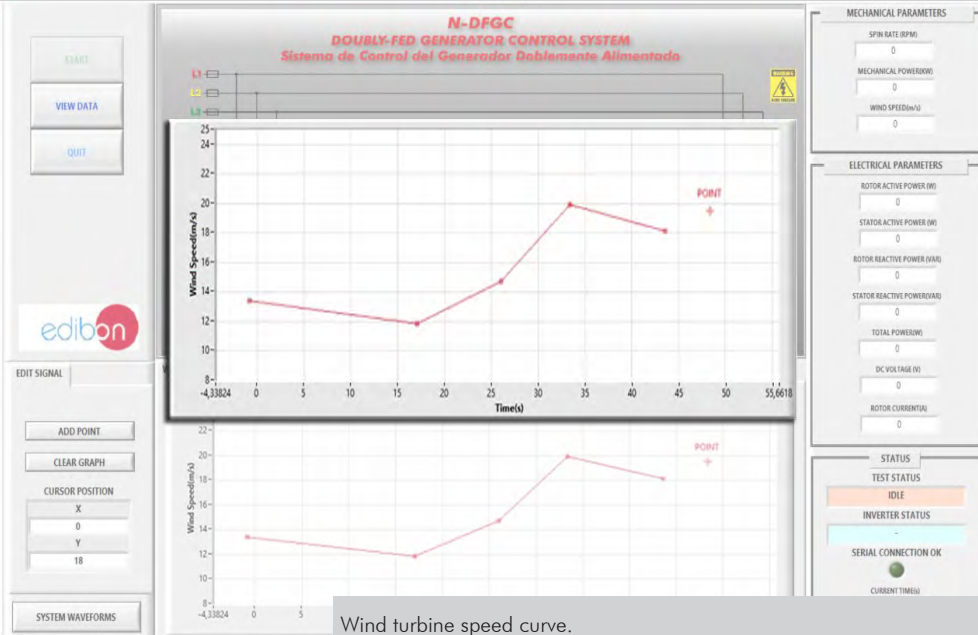
Wind turbine speed curve.
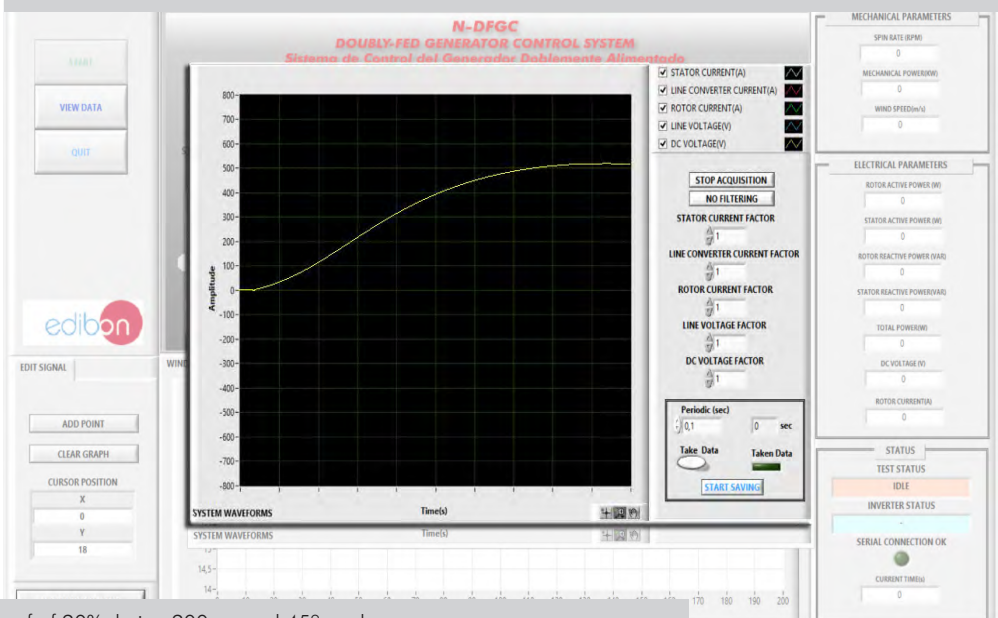
Graphic result obtained for a voltaje saf of 20% during 200 ms and 45° angle.

Additionally to the main items (1 to 4) described, we can offer, as optional, other items from 5 to 7.

All these items try to give more possibilities for:

a) Technical and Vocational Education configuration. (ICAI)

b) Multipost Expansions options. (Mini ESN and ESN)

<u>a) Technical and Vocational Education configuration</u>

⑤ **AEL-WPP/ICAI. Interactive Computer Aided Instruction Software System.**

This complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM-SOF) totally integrated with the Student Software (EDIBON Student Labsoft -ESL-SOF). Both are interconnected so that the teacher knows at any moment what is the theoretical and practical knowledge of the students.

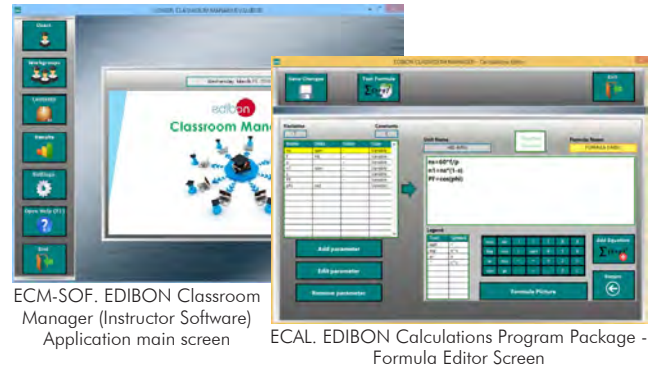This software is optional and can be used additionally to items (1 to 4).

-**ECM-SOF. EDIBON Classroom Manager (Instructor Software).**

ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual students, workgroups, units, etc... so the teacher can know in real time the level of understanding of any student in the classroom.

Innovative features:

User Data Base Management.

Administration and assignment of Workgroup, Task and Training sessions.

Creation and Integration of Practical Exercises and Multimedia Resources.

Custom Design of Evaluation Methods.

Creation and assignment of Formulas & Equations.

Equation System Solver Engine.

Updatable Contents.

Report generation, User Progression Monitoring and Statistics.

-**ESL-SOF. EDIBON Student Labsoft (Student Software).**

ESL-SOF is the application addressed to the Students that helps them to understand theoretical concepts by means of practical exercises and to prove their knowledge and progression by performing tests and calculations in addition to Multimedia Resources. Default planned tasks and an Open workgroup are provided by EDIBON to allow the students start working from the first session. Reports and statistics are available to know their progression at any time, as well as explanations for every exercise to reinforce the theoretically acquired technical knowledge.

Innovative features:

Student Log-In & Self-Registration.

Existing Tasks checking & Monitoring.

Default contents & scheduled tasks available to be used from the first session.

Practical Exercises accomplishment by following the Manual provided by EDIBON.

Evaluation Methods to prove your knowledge and progression.

Test self-correction.

Calculations computing and plotting.

Equation System Solver Engine.

User Monitoring Learning & Printable Reports.

Multimedia-Supported auxiliary resources.

For more information see **ICAI** catalogue. Click on the following link:

www.edibon.com/products/catalogues/en/units/electricity/ICAI-Electricity/ICAI-Electricity.pdf

<u>Instructor Software</u>

ECM-SOF. EDIBON Classroom Manager (Instructor Software) Application main screen

ECAL. EDIBON Calculations Program Package - Formula Editor Screen

ERS. EDIBON Results & Statistics Program Package - Student Scores Histogram

ETTE. EDIBON Training Test & Exam Program Package - Main Screen with Numeric Result Question
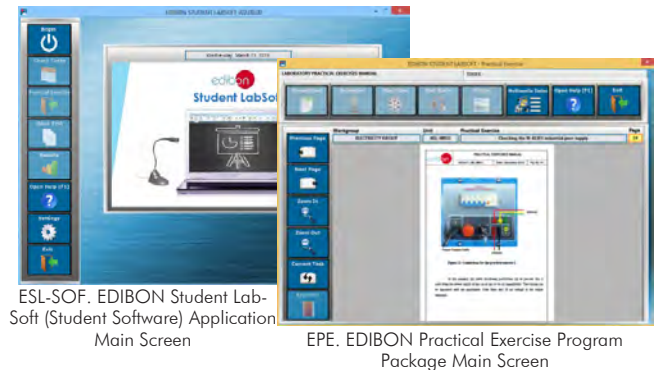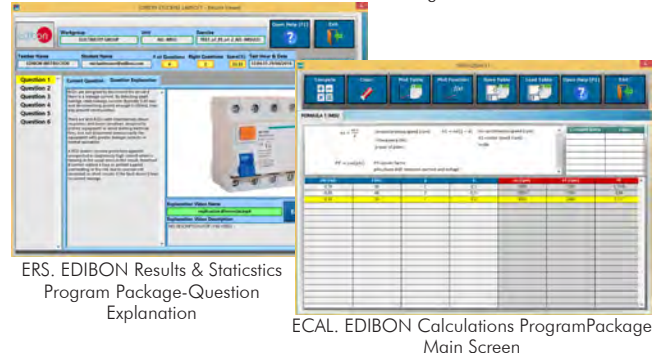
<u>Student Software</u>

ESL-SOF. EDIBON Student Lab-Soft (Student Software) Application Main Screen

EPE. EDIBON Practical Exercise Program Package Main Screen

ERS. EDIBON Results & Staticstics Program Package-Question Explanation

ECAL. EDIBON Calculations ProgramPackage Main Screen

⑥ Mini ESN. EDIBON Mini Scada-Net System.

Mini ESN. EDIBON Mini Scada-Net System allows up to 30 students to work with a Teaching Unit in any laboratory, simultaneously.

It is useful for both, Higher Education and/or Technical and Vocational Education.

The Mini ESN system consists of the adaptation of any EDIBON computer controlled unit with SCADA integrated in a local network.

This system allows to view/control the unit remotely, from any computer integrated in the local net (in the classroom), through the main computer connected to the unit. Then, the number of possible users who can work with the same unit is higher than in an usual way of working (usually only one).

Main characteristics:

- It allows up to 30 students to work simultaneously with the EDIBON Computer Controlled Unit with SCADA, connected in a local net.

- Open Control + Multicontrol + Real Time Control + Multi Student Post.

- Instructor controls and explains to all students at the same time.

- Any user/student can work doing "real time" control/multicontrol and visualisation.

- Instructor can see in the computer what any user/student is doing in the unit.

- Continuous communication between the instructor and all the users/students connected.
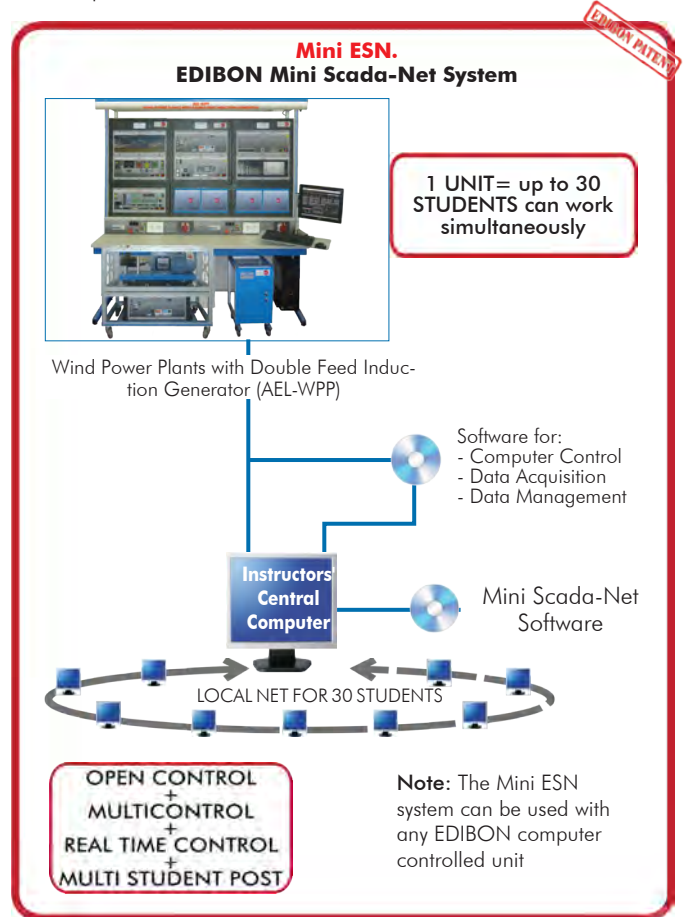
Main advantages:

- It allows an easier and quicker understanding.

- This system allows you can save time and cost.

- Future expansions with more EDIBON Units.

For more information see **Mini ESN** catalogue. Click on the following link:

www.edibon.com/products/catalogues/en/Mini-ESN.pdf

⑦ ESN. EDIBON Scada-Net System.

This unit can be integrated, in the future, into a Complete Laboratory with many Units and many Students.

Mini ESN.
EDIBON Mini Scada-Net System

1 UNIT= up to 30 STUDENTS can work simultaneously

Wind Power Plants with Double Feed Induction Generator (AEL-WPP)

Software for:
- Computer Control
- Data Acquisition
- Data Management

Mini Scada-Net Software

Instructors Central Computer

LOCAL NET FOR 30 STUDENTS

OPEN CONTROL
+
MULTICONTROL
+
REAL TIME CONTROL
+
MULTI STUDENT POST

Note: The Mini ESN system can be used with any EDIBON computer controlled unit

Main items (always included in the supply)

Minimum supply always includes:

① **Unit: AEL-WPP.** Wind Power Plants with Double Feed Induction Generator.

② **AEL-WPP/CCSOF. Computer Control + Data Acquisition + Data Management Software.**

③ **Cables and Accessories**, for normal operation.

④ **Manuals.**

*IMPORTANT: Under AEL-WPP we always supply all the elements for immediate running as 1, 2, 3 and 4.

Optional items (supplied under specific order)

a) Technical and Vocational configuration

⑤ AEL-WPP/ICAI. Interactive Computer Aided Instruction Software System.

b) Multipost Expansions options

⑥ Mini ESN. EDIBON Mini Scada-Net System.

⑦ ESN. EDIBON Scada-Net System.

① **AEL-WPP. Unit.**

The trainer includes the following modules:

• EMT8DF. Double Feed Induction Generator.

Main motor:

Nominal power: 1kW

Nominal voltage: 3x 400/230 VAC Y/ Δ

Frequency: 50/60 Hz

Number of poles: 2

RPM: 3000 rpm

Nominal current: 1,7/3 A Y/ Δ

Asynchronous Three-Phase generator with double feed:

Nominal power: 1.5kW

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Number of poles: 2

RPM: 3000 rpm

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• N-DFGC. Double-feed Generator Control Module.

Operation of the double-feed asynchronous generator in subsynchronous and supersynchronous operating mode.

Autonomous control of reactive and active power, frequency, voltage, etc.

Automatic mains synchronisation.

Connection to control the back-to-back inverter (N-BTBINV).

Connection to control the prime motor (AEL-SERIN/CA-1K).

Connection voltage: 3 x 400V, 50…60Hz.

• N-FRT. Fault Ride Through Module.

This module simulates different faults in the transmission lines:

Investigating the response of wind power plants to system faults.

Exploring symmetrical fault scenarios.

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Adjusting controller parameters.

The grid fault simulator has the following features:

Adjustable power failure durations from 50ms to 500ms.

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Symmetrical and asymmetrical grid faults can be set up.

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Touch screen display.

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• N-BTBINV. Back to Back Inverter.

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1 Potentiometers. 1 Digital encoder.

Reset button: this button is used to reset the motor driver after setting a new configuration.

Motor:

3-Phase AC motor, 2 kW, 5 A, 5000 rpm, 400 Vac., 19.1 Nm., IP67, 20 bits (1048576 resolution) incremental encoder.

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- All necessary cables to realize the practical exercises are included.

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It allows the registration of the alarms state and the graphic representation in real time.

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③ **Cables and Accessories**, for normal operation.

④ **Manuals:**

This unit is supplied with 7 manuals: Required Services, Assembly and Installation, Control Software, Starting-up, Safety, Maintenance & Practices Manuals.

Exercises and Practical Possibilities to be done with the Main Items

1.-Identifying elements and devices.

2.-Supply and modules signals wiring.

3.-Commissioning of trainer.

4.-Analyzing the system states: Starting and Loading the DC bus.

5.-Identifying modulation inverter start back to back.

6.-Stop sequence Double Feed Induction Generator.

7.-Study of the double-feed asynchronous machine with subsynchronous speed.

8.-Study of the double-feed asynchronous machine with supersynchronous speed.

9.-Studying the operating response when there are faults on the grid ("fault ride-through").

Other possibilities to be done with this Unit:

10.-Many students view results simultaneously.

To view all results in real time in the classroom by means of a projector or an electronic whiteboard.

11.-The Computer Control System with SCADA allow a real industrial simulation.

12.-This unit is totally safe as uses mechanical, electrical and electronic, and software safety devices.

13.-This unit can be used for doing applied research.

14.-This unit can be used for giving training courses to Industries even to other Technical Education Institutions.

- Several other exercises can be done and designed by the user.

a) Technical and Vocational Education configuration

⑤ AEL-WPP/ICAI. Interactive Computer Aided Instruction Software System.

This complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM-SOF) totally integrated with the Student Software (EDIBON Student Labsoft -ESL-SOF). Both are interconnected so that the teacher knows at any moment what is the theoretical and practical knowledge of the students.

-ECM-SOF. EDIBON Classroom Manager (Instructor Software).

ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual students, workgroups, units, etc...so the teacher can know in real time the level of understanding of any student in the classroom.

Innovative features:

　　User Data Base Management.

　　Administration and assignment of Workgroup, Task and Training sessions.

　　Creation and Integration of Practical Exercises and Multimedia Resources.

　　Custom Design of Evaluation Methods.

　　Creation and assignment of Formulas & Equations.

　　Equation System Solver Engine.

　　Updatable Contents.

　　Report generation, User Progression Monitoring and Statistics.

-ESL-SOF. EDIBON Student Labsoft (Student Software).

ESL-SOF is the application addressed to the Students that helps them to understand theoretical concepts by means of practical exercises and to prove their knowledge and progression by performing tests and calculations in addition to Multimedia Resources. Default planned tasks and an Open workgroup are provided by EDIBON to allow the students start working from the first session. Reports and statistics are available to know their progression at any time, as well as explanations for every exercise to reinforce the theoretically acquired technical knowledge.

Innovative features:

　　Student Log-In & Self-Registration.

　　Existing Tasks checking & Monitoring.

　　Default contents & scheduled tasks available to be used from the first session.

　　Practical Exercises accomplishment by following the Manual provided by EDIBON.

　　Evaluation Methods to prove your knowledge and progression.

　　Test self-correction.

　　Calculations computing and plotting.

　　Equation System Solver Engine.

　　User Monitoring Learning & Printable Reports.

　　Multimedia-Supported auxiliary resources.

b) Multipost Expansions options

⑥ Mini ESN. EDIBON Mini Scada-Net System.

EDIBON Mini Scada-Net System allows up to 30 students to work with a Teaching Unit in any laboratory, simultaneously.

The Mini ESN system consists of the adaptation of any EDIBON Computer Controlled Unit with SCADA integrated in a local network.

This system allows to view/control the unit remotely, from any computer integrated in the local net (in the classroom), through the main computer connected to the unit.

Main characteristics:

　　- It allows up to 30 students to work simultaneously with the EDIBON Computer Controlled Unit with SCADA, connected in a local net.

　　- Open Control + Multicontrol + Real Time Control + Multi Student Post.

　　- Instructor controls and explains to all students at the same time.

　　- Any user/student can work doing "real time" control/multicontrol and visualisation.

　　- Instructor can see in the computer what any user/student is doing in the unit.

　　- Continuous communication between the instructor and all the users/students connected.

Main advantages:

　　- It allows an easier and quicker understanding.

　　- This system allows you can save time and cost.

　　- Future expansions with more EDIBON Units.

The system basically will consist of:

　This system is used with a Computer Controlled Unit.

　　- Instructor's computer.

　　- Students' computers.

　　- Local Network.

　　- Unit-Control Interface adaptation.

　　- Unit Software adaptation.

　　- Webcam.

　　- Mini ESN Software to control the whole system.

　　- Cables and accessories required for a normal operation.

✱ Specifications subject to change without previous notice, due to the convenience of improvement of the product.

REPRESENTATIVE

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