edibon

Engineering and Technical Teaching Equipment

INTRODUCTION

Electrical transformer is a static electrical machine which transforms electrical power from one circuit to another circuit, without changing the frequency. Transformer can increase or decrease the voltage with corresponding decrease or increase in current. Basically a transformer consists of two inductive windings and a laminated steel core. The coils are insulated from each other as well as from the steel core.

ISO 9001: Quality Management (for Design, Manufacturing, Commercialization and After-sales service)

European Union Certificate (total safety)

Certificates ISO 14001 and ECO-Management and Audit Scheme (environmental management)

Certificate and Worlddidac Member

GENERAL DESCRIPTION

The Three-Phase Transformer Construction Kit "AEL-TPTC" has been designed to show the students how a three-phase transformer is constructed step by step. This application is provided with different parts of a three-phase transformer and the students will learn the manufacture processes.

Additionally it is recommended to acquire the power supply, winding machine and multimeter. On this way the students can manufacture themselves new coils and test the power transformer.

The AEL-TPTC includes the following elements:

- TPT01. Three-Phase Transformer 01.

- CHER. Tool box.

Additional and recommended modules and elements:

- N-VPS01. AC 3PH Vaiable Power Supply.

- MWMT. Manual Winding Machine for Motors and Transformers (to design coils).

- MED65. Digital Multimeter.

Expansion learning software:

In addition, Edibon provides expansion learning software (AEL-TPTC/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-TPTC can be mounted on rack (option A) or on rail (option B):

Option A:

This application needs the following racks:

- N-RACK-B.

Optionally the AEL-WBR. Electrical Workbench (Rack) can be supplied to place the rack/s.

Option B:

This application can be mounted on rail.

Optionally the AEL-WBC. Electrical Workbench (Rail) can be supplied to mount the modules.

The application includes the following elements:

• TPT01. **Three-Phase Transformer 01.**

    Three-phase transformer.

    Nominal supply voltage: 400 VAC (3PH).

    Nominal output voltage: 3 x 230 VAC (3PH+N).

    Nominal power: 1 kVA.

TPT01

• CHER. **Toolbox.**

    It contains the following tools:

        Allen key.

        Cross-head screwdriver.

        Flat-head screwdriver.

        Rubber hammer.

        Insulation tape.

        Soldering iron.

        Tin.

        Heat shrink.

CHER

Additional and recommended modules and elements:

• N-VPS01. **AC 3PH Vaiable Power Supply.**

    ON-OFF removable key.

    Input Voltage: 400 VAC, 3 PH + N.

    Output Voltage:

        0…450 VAC.

        0…240 VDC.

    Maximum current: 2 A.

    Frequency: 50/60 Hz.

    Wheel to regulate the voltage.

    Three lamps.

    Measurement commutators:

        One commutator to measure the voltage:

            6 positions: L1-N ; L2-N ; L3-N ; L1-L2 ; L1-L3 ; L2-L3

        One commutator to measure the current:

            3 positions: I1, I2, I3.

     Three-Phase supply hose with IP44 3PN+E 32 A 400 V connecting plug.

     Differential magnetothermal, 4 poles, 25 A, 300 mA AC 6 KA.

N-VPS01

• MWMT. **Manual Winding for Motors and Transformers.**

    Mechanical flywell.

    Winding templates.

    Spin counter.

MWMT

• MED65. **Digital Multimeter.**

    Digital multimeter of about 3 ½ digits, with double-jack ending cables of about 4 mm to facilitate interconnections.

    With this digital multimeter we will be able to measure:

        Voltage.

        Current.

        Resistance.

        Capacitors capacity.

        Temperature.

MED65

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

Cables and Accessories, for normal operation.

Manuals:

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

EXERCISES AND PRACTICAL POSSIBILITIES

1.- Step by step construction of a three-phase transformer.

2.- Study of different parts of a three-phase transformer.

Additional practical possibilities (with the additional and recommended modules and elements):

3.- Measurement of the transformer coils.

4.- Testing of the three-phase transformer after the construction.

5.- Measurement of the different voltages in the primary and secondary wounds.

6.- Designing different types of coils using a winding machine.

REQUIRED SERVICES

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

DIMENSIONS AND WEIGHTS

AEL-TPTC:

- Dimensions: 640 x 320 x 670 mm. approx.

  (25.19 x 12.59 x 26.27 inches approx.)

- Weight: 35 Kg. approx.

  (77 pounds approx.)

AEL-TPTC/ICAI. Interactive Computer Aided Instruction Software System:
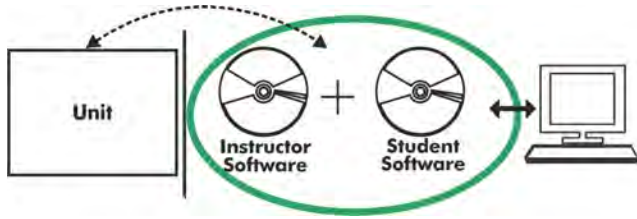
With no physical connection between unit and computer (PC), **this complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM-SOF) totally integrated with the Student Software (EDIBON Student Labsoft -ESL-SOF).** Both are interconnected so that the teacher knows at any moment what is the theoretical and practical knowledge of the students.
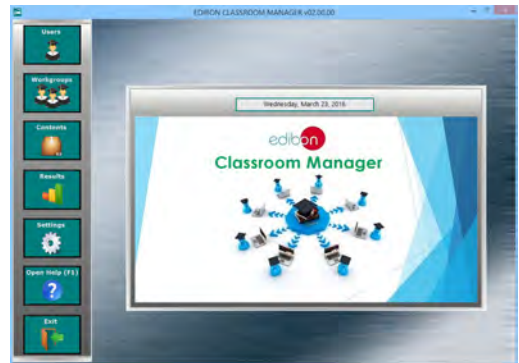
Instructor Software

- 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.**
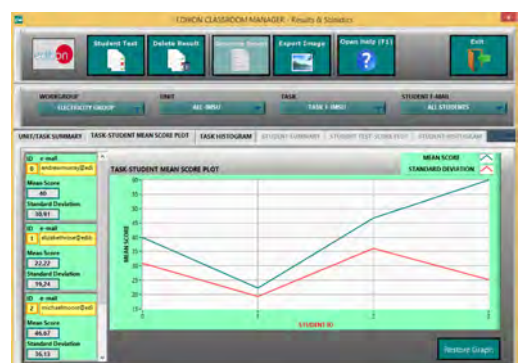

ECM-SOF. EDIBON Classroom Manager (Instructor Software)
Application Main Screen
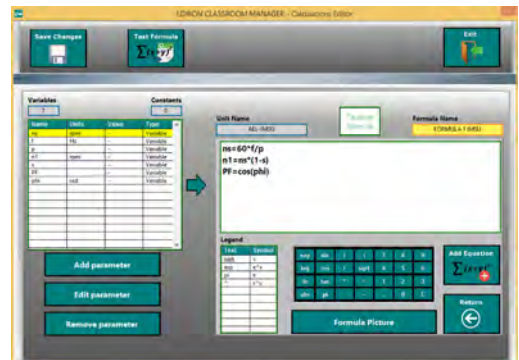
ECAL. EDIBON Calculations Program Package - Formula
Editor Screen
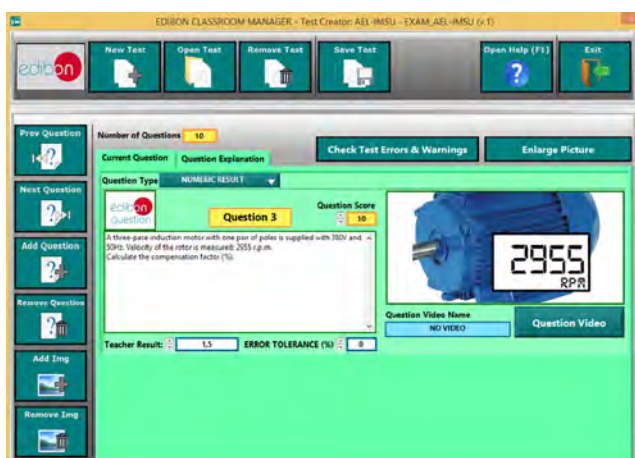
ETTE. EDIBON Training Test & Exam Program Package - Main Screen with
Numeric Result Question

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

Student Software

- 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.

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

EPE. EDIBON Practical Exercise Program Package Main Screen

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

www.edibon.com/en/files/expansion/ICAI/catalog

ERS. EDIBON Results & Statistics Program Package - Question Explanation
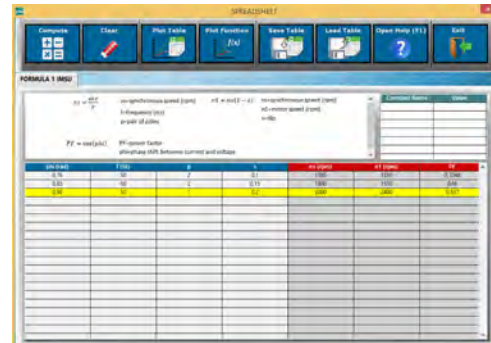
ECAL. EDIBON Calculations Program Package Main Screen

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