



With this equipment the behavior of a windmill is emulated in a practical and didactic way. An electrical motor does the times of the turbine of a windmill to move the DC generator, which transforms the transmitted mechanical energy to the axis into electrical energy.

The generated DC feeds the inverter which transforms this in AC with the suitable frequency, in our case 50 Hz, and other characteristics necessary to be able to connect to the public grid.

The equipment is designed to be very visual and work in an intuitive way, the operation of the set is understood quickly, not only knowing the elements of which it consists, but having also to connect the different modules by means of provided wires.

This is obtained by means of the disposition of the equipment in schematic and connectable panels.

From the computer with touch screen (provided) we can control the operation of the equipment and obtain the reading of all the necessary variables for the analysis of the system.

## EN 04.3 - GRID CONNECTED DC WINDMILL GENERATOR TRAINER

### LEARNING OBJECTIVES

- Study of the operation and the disposition of a windmill energy generation system connected to the public grid.
- Generation of the characteristic curves of the generator:
  - DC based on the speed of rotation.
  - Torque based on the generated current.
  - Power based on the speed of rotation.
- Calculation of the constants; torque-current and voltage-speed of rotation of the generator.
- Generation of the curves of efficiency; Electrical power towards the network-mechanical power.
- Determination of the optimal operation points with variable atmospheric conditions.
- Generation of the characteristic curve; power-speed of wind.
- Analysis of the energy output to the public grid.

### TECHNICAL DATA

#### CHARACTERISTICS

- Aluminum Structure
- DC permanent magnets generator
- 0.75 Kw Asynchronous motor
- Windmaster 500 Inverter
- 1.1 Kw Frequency variator
- Protection of connection to the mains module
- Data acquisition module with software
- Includes computer with touch screen

#### DIMENSIONS:

- Structure generator-motor: 710x215x270 mm.
- Structure panel modules: 870x515x940 mm.

### REQUIREMENTS

- Input: 230V/50Hz.