

## MICRO-WIND POWER PLANT



*Non contractual photo*

**SERVICE :**

**DIMENSIONS : 2200 X 1100 X 1700 MM**

**WEIGHT : 280KG**

### REFERENCE : MP5000

A micro-wind turbine is a power plant that uses wind energy to produce electricity on a small scale. This electricity can be used to power isolated sites or be returned to a public distribution network. Its operating principle consists in transforming the kinetic energy of the wind into electrical energy thanks to a permanent magnet alternator. The electric power produced depends on the speed of the wind. This one is simulated on the bench by an electric motor.

#### Educational Objectives :

- Analysis of industrial components (alternator, geared motor, inverter, rectifier, voltage regulator, power analyzer ...)
- Component performance study
- Energy balance: a measure of the energy consumed and produced.
- Measurement of voltages and currents in various points of the circuit
- Study of two types of network coupling
- Highlighting the electrical laws
- Display continuously and as curves on a touch screen. Data acquisition via USB. A PC can be connected to it.

#### Technical specifications :

- A permanent magnet alternator (neodymium / iron / boron) specific for wind turbine applications.
- A geared motor with electric motor. The geared motor is encapsulated in a box to limit noise
- A chassis made of stainless steel tubes welded and mounted on wheels.
- An IP55 electrical cabinet containing the electronic components:

- A touch screen
- A connection module with a PC
- An automat
- A frequency converter for the speed control of the geared motor.
- A power analyzer allowing to visualize: voltage, power, cosine phi and integrating three transformers of intensity.
- Two energy meters (production and consumption)
- Two capacitor banks
- An inverter
- A rectifier
- A converter (battery charge)
- Measuring points accessible on the front panel: voltage and current (3)
- Connections for current probe and voltage probe
- Differential circuit breakers, fuses
- On / Off button
- Emergency stop button
- A user outlet
- USB socket

**The central unit can be used in mode :**

**Direct use and battery charging :** the energy produced can be used

directly on the user socket or to charge a battery (not included)

**Network coupling :**

**Direct coupling :** The coupling of the generator on the distribution network is done if it is pushed beyond its synchronization speed. It provides energy that is only injected into the network.

**Coupling via an inverter :**

The generator can be coupled to the grid via an inverter. The energy produced is injected into the network and can be used on a user socket.

**Supplied accessories :**

Clamp ammeter / Voltmeter; A laptop with data acquisition software.

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