INTEGRATED PHOTOVOLTAIC-WIND POWER KIT

Mod. PMWG-K/EV

INTRODUCTION

This kit represents the typical configuration of an integrated system for the exploitation of renewable energies, with energy production via horizontal axis wind power generator, used to convert the wind kinetic energy directly into mechanical energy, and via silicon photovoltaic cells enabling to transform solar energy into electricity.

TRAINING PROGRAM:

- Study of solar energy: calculation of the average power developed by the sun on a specific place
- Silicon cells
- Study of wind energy: calculation of the average power developed by the wind on a specific place
- The wind power generator: typical structure, installation, orientation. "Brushless" generator
- Energy balances (optional instruments required, refer to mod.s SORM and THAC at the end of the data sheet)
- Devices for energy storage and control of battery charge

TECHNICAL SPECIFICATIONS:

Horizontal axis wind power generator:

- Aluminium generator body
- 3 composite material blades (rotor diameter 1,17 m):
  - Energy output: approx. 30 kWh/month at 5.8 m/s (13 mph) average wind speed
  - Startup Wind Speed: 3.6 m/s (8 mph)
  - Survival wind speed: 49.2 m/s (110 mph)
- Permanent magnet brushless alternator
- Microprocessor-based controller:
  - Output voltage: 12 Vdc
  - Overspeed protection: electronic torque control
- Stainless steel supporting pole:
  - Length 1.5 m
  - Outer diameter: 48,1 mm
  - Mounting kit

Photovoltaic module:

- 120 W Peak power with maximum radiation
- Adjustable inclination framework mounted on castors

Charge controller for photovoltaic panels:
- Rated voltage: 12 Vdc
- Maximum current: 20 A

Buffer battery:
- Rated voltage: 12 Vdc
- Capacity: 100 Ah

Clamp meter:
- Voltage range (ac/dc): 0 to 600 V
- Current range (ac/dc): 0 to 200 A

Inverter:
- Continuous output power: 600 W
- Output peak power: 1200 W
- Input voltage: 12 Vdc
- Output voltage: 230 Vac - 50 Hz
- Output waveform: modified sine wave
- Stop for low battery charge
- Protection against: overload, short circuit, overtemperature

Dimensions

Rotor diameter:	1.15 m
Photovoltaic module:	67 x 120 x 155 cm
Overall weight:	140 kg

SUPPLIED WITH

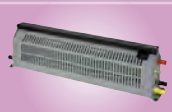
THEORETICAL-EXPERIMENTAL HANDBOOK

OPTIONAL (REF. ACCESS. AND INSTRUMENTS)

WIND POWER GENERATOR INDOOR OPERATION DEVICE Mod. WG-IM/EV
To operate the aerogenerator indoor

ELECTRIC BATTERY CHARGER Mod. EBCH
To recharge the buffer battery after a prolonged period of inactivity of the system

PORTABLE RHEOSTAT Mod. PRH-1
To draw the photovoltaic panel characteristic curve



SPOTLIGHT Mod. ACL220V
To be used as 220 Vac electric load

LAMP Mod. DCL12V
To be used as 12 Vdc electric load

SOLAR RADIATION METER Mod. SORM
To calculate the solar energy into electric energy conversion efficiency

CUP VANE AIR VELOCITY METER Mod. THAC
For the calculation of the wind energy into electric energy conversion efficiency