PORTABLE SOLAR POWER UNIT TYPE RESTITUTION NETWORK

This learning case allows the study of the return of photovoltaic energy on the national 230VAC 50Hz grid.
You can choose between two types of operation:
- total return of the energy produced
- return of the energy not consumed only.

A silkscreen represents the different components.
The components are to be connected with safety cables.
This case must be connected to a 45Vmin photovoltaic voltage source.
Input voltage between 50VDC and 500VDC.

EDUCATIONAL OBJECTIVES

- **Discover the different elements of a photovoltaic installation network restitution.**
- **Apprehend and understand the security elements present.**
- **Perform electrical measurements of the various quantities.**
- **Analyze & interpret the results.**
- **Study the performance and the effects related to the positioning of the panels**
- **Study the energy chain (production, use, resale, energy behavior).**
- **Wiring a photovoltaic installation with grid restitution.**

STUDENT + TEACHER PEDAGOGICAL FILE

ref. SOL-RES2

The SOL-RES2 solar power plant includes:
1 technical case.
2 photovoltaic panels on tilting frames of approximately 200Wp each.
1 solar cable 30 m to connect the panels to the case.
2 portholes to observe consumption.
1 set of safety cords.
1 power cord.

Composition of the technical case

- Impact resistant polypropylene case. It can be closed without unwiring the safety cords from the front panel. Lightweight and easily transportable using its handle.
- 2 photovoltaic connectors for connecting solar panels.
- 1 surge arrester.
- 1 solar circuit-breaker 10A.
- 1 disconnector to isolate the circuit of the solar panels from the technical case.
- 1 UPS 500W synchronizable on the network
- 1 On / Off switch for maintenance.
- 3 energy meters
- 1 disconnector to isolate the connection to the network.
- 1 voltage controller
- 1 bipolar 30mA differential circuit breaker
- 1 230VAC-750W 50Hz output on 4mm safety terminals
- 1 230VAC-750W 50Hz output on electrical outlet
- Dimensions: 580 x 460 x 205mm

Supplied with an educational file including

- A theoretical reminder on the different types of cells and photovoltaic energy.
- The detailed wiring diagram of the solar power plant.
- Complete theoretical and practical work in student / teacher notebook form.
- Complete instructions for each component.

Features of yhe panel

- Open circuit voltage: 46VDC
- Short-circuit current: 6.3A
- Optimum operating voltage: 37VDC
- Optimum operating current: 5.7A
- Maximum power: 215Wc (variation of ± 10% depending on the series)
- Sealed connections IP65 – 1000V on the rear of the panel.
- Type of cells: Monocrystalline silicon

Features of the frame

- Robust aluminum frame.
- Useful surface area of the cells 1.5m².
- Device for measuring the tilt angle
- Tilt adjustable from 5° to 70°
- Two ball joints with clamping levers for positioning the panel to the required tilt angle.
- Several SOL-200 can be coupled electrically to increase power.
- Light and easy to move.
  Dimensions Folded position: 1600 x 800 x 100mm - Weight 27kg
  (± 10% depending on the series)