

12. Renewable energy

Solar water pumping bench

Training objectives

- Finding out about the bench for drawing water and implementing it.
- Studying operation, parametrisation and maintenance work on the ATV312 Solar variable speed controller.
- Sizing the photovoltaic panels necessary to operate the bench.

Presentation

This bench reproduces an autonomous solar-powered pumping solution proposed by Schneider Electric, in areas where no connection to the electricity network is possible. The electrical energy supplied by photovoltaic panels powers a specific variable speed controller directly. The system operates without a battery, with the objective of providing a constant supply of water thanks to the sizing of the tank in the light of the quantities of water needed and the daily number of hours of sunshine.

To facilitate use as a training tool, this model is powered:

- Either by a field of PV panels with a 300 V DC output,
- Or by a 24 V DC laboratory power supply,
- Or by the 230 V AC mains power supply.

Description

Contents

Description	Quantity
Altivar 312 Solar 180 W variable speed controller	1
Centrifugal pump	1
High tank level limit switch with level sensor	1
Low tank level limit switch to simulate the water table	1
Pump on/off switch	1
Rotary knob to adjust the voltage	1
Pump on indicator light	1
Pump fault indicator light	1
Mushroom-head emergency stop button.	1
Power lead	1
Protective circuit breakers	

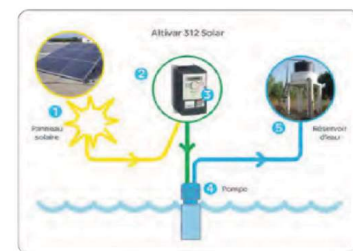
The bench requires two solar panels MD3BPPV to be linked to the 24 V DC input.

References

Description	Reference No.
WATER OF THE SUN bench for drawing water using solar power	MD3BPODS
Photovoltaic structure for micro-solar plant bench	MD3BPPV



SUN WATER



Principle

Decision aid

Sectors concerned

- Electrical engineering
- Energy

Designated skills

- Analysis
- Studying

Themes studied

- Power electronics
- Renewable energies