



Renewable energies are energy sources that are continuously being replenished by natural processes that occur on human timescales. In contrast, fossil fuels (coal, natural gas, oil) require millions of years of geological processes to form. Our resources of fossil and nuclear fuels (e.g. uranium) are limited.

Regenerative energies, on the other hand, are virtually in exhaustible. Wind energy is a form of solar energy. Solar PV Cells energy (or Solar power) describes the process by which wind is used to generate electricity. Solar PV Cells converts the Solar energy into electrical power. DC to AC inverters are used to convert DC energy derived from PV Cells in AC energy or AC Power Supply.

Solar power, as an alternative to burning fossil fuels, is plentiful, renewable, widely distributed, clean, produces no greenhouse gas emissions during operation, consumes no water, and uses little land. The net effects on the environment are far less problematic than those of non-renewable power sources. Solar farms consist of many individual PV Cells, which are connected to the electric power transmission network.

Specifications

DC meter panel (2 Nos)

- 0-200V DC Voltmeter
- 0-5A DC Ammeter (CT Input 5A)

Single Phase Multifunction meter panel

- Bidirectional Multifunction
- LCD/LED display, Aux supply 230V, 45-65 Hz, 5W
- V, A, Hz, Pf, KVA, KW, KWH

MPPT Charger Controller Panel

- Rated Voltage 12-24V, 20A.
- Battery (2 No's) Lead acid type with 12V,100Ah current
- Battery % Charging and Solar ON/OFF indication.

Training System includes

- 50Wp / 100Wp / 250Wp solar panel: 2 Nos.,
- Solar Battery (C10 type) 100Ah: 2 Nos.,
- PWM based MPPT Charge Controller: 1 No.
- Inverter: 500VA

Solar Inverter Panel

- 500VA inverter system
- Input DC voltage 12/24V DC.
- Output Voltage 230V AC.

Accessories

- Rheostat, Gravity Hydro Meter, 4mm Shrouded patch chord.

Note: Specifications are subject to change.

Tesca Technologies Pvt. Ltd.

IT-2013, Ramchandrapura Industrial Area, Sitapura Extension,
Near Bombay Hospital, Vidhani Circle, Jaipur-302022, Rajasthan, India,
Tel: +91-141-2771791 / 2771792; Email: info@tesca.in, tesca.technologies@gmail.com
Website: www.tescaglobal.com

Control Panel

- Capacity: 500VA, Input Voltage: 190~260V AC,
- Output Voltage on Mains mode: same as input,
- Output Voltage on UPS mode: 210~245V,
- Output Frequency on UPS mode: 50Hz \pm 0.1Hz,
- Output waveform on Mains mode: same as input,
- Output waveform on UPS mode: Modified Sine wave,
- Battery Charging Current: 12A,
- Efficiency at full load: > 80%,
- UPS Overload / UPS Short circuit: Yes,
- Technology: Microcontroller Based Design,
- Soft ON/OFF Switch

All input & output are terminated in 4mm shrouded connector, Should provide 4mm banana cable for experiments. Performs analysis of temperature and dust effect on Solar Power Generation Microcontroller based Inverter technology.

Experiments

- Study of I-V Characteristics of solar cell.
- Study of series combination of solar cells.
- Study of parallel combination of solar cells.
- Study of dependency of solar cell I-V characteristics on light intensity.
- Study of shading effect on solar cell parameters.
- Study of battery charging & discharging characteristics.
- Study of the efficiency of battery.
- Study of finding MPPT by varying the resistive load across the PV panel.

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