



VINAYAKA MISSION'S RESEARCH FOUNDATION
AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY, PAIYANOOR
RESEARCH CENTRE FOR RENEWABLE ENERGY TECHNOLOGY



STANDARD OPERATING PROCEDURE

Name of the Lab./facility	Research Centre for Renewable Energy Technology
Purpose	To provide training for students, research scholars and industrial personnel in Solar PV system and Wind Energy System using both experimental training set-up and real time parameters.
Scope	Experimental training of Wind Energy system for determining various parameters that can be obtained similar to real size operating system. Experimental training of solar PV system to obtain various parameters similar to the real size operating system. Provision of Real time solar and wind energy power for experimental and research purpose
Responsibility	Faculty i/c of the facility, HOD/EEE

STANDARD OPERATING PROCEDURE FOR SOLAR PV GRID TIED TRAINING SYSTEM

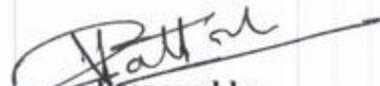
- To ensure the outdoor PV Panels provide required output, they should be cleaned using wet cloth.
- The connections should be given as per the experiment to be performed referring to the lab. Manual.
- Connections thus given shall be verified by the course instructor or lab in-charge
- To perform the experiment supply mains and PV Connector switch have to be switched on.
- Power supply to the power conditioning unit and virtual grid has to be switched on
- Output of the roof top solar panel has to be checked in the power conditioning unit.
- Experimental procedure to be followed as given in the manual
- Upon completion of the experiment the connections switch of the solar panel to be turned OFF, followed by turning OFF of power conditioning unit and the virtual grid.

PRECAUTIONS TO BE FOLLOWED

- During experimentation the autotransformer terminal output voltage is slowly increased when the capacitor bank is on.
- DC input MCB should be switched OFF while changing over the panel output switch for external use.
- Inductance should not be disconnected or changed when there is a current flow through it.
- Contact with live terminals should be avoided to prevent from electric shock.
- The capacitor bank knob should not be changed when the line is live.
- Ensure that maximum output does not exceed 300 VA.

RECORD TO BE MAINTAINED

- Laboratory Manual containing the experiments that can be performed with the equipment
- Maintenance Record


Prepared by


Approved by


Principal



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STANDARD OPERATING PROCEDURE FOR WIND ENERGY TRAINING SYSTEM

- Before performing the experimentation, visual inspection of prime mover (Artificial Wind Generating Unit) and the wind turbine should be done to ensure there are no physical damages.
- The connections should be given as per the experiment to be performed referring to the lab. Manual.
- Connections thus given shall be verified by the course instructor or lab in-charge
- To perform the experiment supply mains of the Variable Frequency Drive (VFD) unit have to be switched on.
- Frequency should be set at 2.0 Hz initially by setting the value and pressing the set button in the VFD Unit
- The mains power supply to power conditioning unit is turned ON

- The switch on the power conditioning unit is turned ON
- The three phase supply main of the Artificial Wind Generating unit is turned ON.
- Experimental procedure to be followed as given in the manual
- Upon completion of the experiment the frequency in the VFD should be brought to its initial value of 2.0 Hz.
- The power supply to the VFD Unit, power supply to the power conditioning unit and Artificial Wind generating unit should be switched OFF.

PRECAUTIONS TO BE FOLLOWED

- Always a safe distance from the artificial wind power generating unit and the turbine should be kept while performing the experiment
- Once the experiment is over, initial frequency of the VFD at 2.0 Hz should be set and machine should be stopped.
- Frequency of VFD should not be set above 9.0 Hz
- The experiment should be never performed alone

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STANDARD OPERATING PROCEDURE FOR STANDALONE PV SYSTEM

- Before operating the PV simulator, the PV Panels should be cleaned with soft cloth.
- The connections should be given as per the experiment to be performed referring to the lab. Manual.
- Connections thus given shall be verified by the course instructor or lab in-charge
- To perform the experiment supply mains have to be switched on.
- power supply to the controller board to be switched on
- The regulator lamps should be switched on with the individual switch present on the Solar Photovoltaic Module.
- The intensity of halogen lamps shall be adjusted using the regulator knob for variation of insolation
- Experimental procedure to be followed as given in the manual

- Upon completion of experiment the lamps on the Solar Photovoltaic Module shall be turned off first, followed by turning off of controller board and mains power supply.

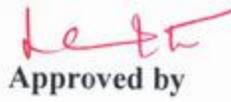
PRECAUTIONS TO BE FOLLOWED

- Short circuit of the battery terminals or any source terminals has to be avoided.
- The Halogen or PV Modules should not be moved during the experiment.
- The system should be switched off if the module temperature rises above 70 degree Celsius.
- Once the experiment is completed, first the lamps on the Solar Photovoltaic Module Stand are to be switched off, followed by controller board and mains.

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