

**ELECTRICAL SYSTEMS DESIGN AND GREEN POWER -
TRAINING CENTRE**

(An Industry Recognized Training Centre)

**TRAINING AND PRACTICE ON
SOLAR PV POWER INFRASTRUCTURE AND SOLUTIONS**

CONTENTS

MODULE-I

8 hrs

RENEWABLE ENERGY RESOURCES AND POWER GENERATION

- 1 Basics of Renewable Energy Resources and Power Generation
- 2 Solar Energy, Sun Paths & Collector Orientation
- 3 Capturing methods of Solar Energy
- 4 Applications of Solar Energy for Generating Heat and Electricity
- 5 Electric Power Generation through PV and Solar Thermal Technologies
- 6 Elements of Solar Power Infrastructures

MODULE-II

8 hrs

RESOURCE ASSESSMENT AND DESIGN OF SPVPGS

- 1 Types of Solar PV Power Generation System (SPVPGS)
 - a) Off Grid
 - b) Grid Connected
 - c) Standalone
- 2 Scheme of SPVPGS
- 3 Design Prerequisites
 - a) Solar Radiation and Global irradiation
 - b) Latitude and orientation of the building/ collector area
 - c) Estimation of kWp generation based on available area
 - d) Estimation of required area based on required kWp generation
 - e) Resource Assessment
- 4 Design of SPVPGS
 - a) Selection of PV Panels based on area and/ kWp
 - b) Allocation of PV Panels and Arrays
 - c) Sizing of PCU/Inverter
 - d) Battery Sizing
 - e) Sizing of Transformers

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MODULE-III

10 hrs

PROJECT DEVELOPMENT

- 1 Preparation of Electrical Layout
- 2 Bill of Material and Quantity Estimation
- 3 Preparation of Executive Summary
- 4 Detailed Project Report
- 5 Project Economics
- 6 Guidelines
 - a) CERC/SERC
 - b) MNRE
 - c) NEDCAP
 - d) DISCOMs
- 7 Exercises
 - a) Roof Top SPVPGS Design
For their own homes/ Spaces/ Occupancies including Battery and
Inverter Sizing
 - b) Grid Connected SPVPGS Design practice using PV Syst.
1MW/2MW/3MW

MODULE-IV

8 hrs

PRACTICAL DEMONSTRATION AND SITE VISIT

- 1 Practical Demonstration
 - a) Measurement of Global Irradiation using Solar Radiation Sensor
 - b) Estimation of Solar PV panel efficiency.
 - c) V-I Characteristics of Solar Panel
 - d) Series and Parallel Connection of Solar PV panels to improve/ increase
voltage and current ratings
 - e) String Performance Monitoring with and without Shading.
- 2 Site Visit

TOTAL

34 hrs