



Solar PV Installer

Duration: 3 Months | QP Code: SGJ/Q0102 (L4)

Module 1: Environment, Health & Safety

152 hrs

Solar energy technologies harness the energy of solar irradiance to produce electricity. Currently, there are principally two technologies employed: photovoltaics (PV) and concentrating solar power (CSP) technologies. PV generates electricity using the conducting properties of certain chemicals most importantly silicon, through the photo-electric effect. CSP makes use of reflectors to focus sunlight on a small area, in order to generate steam that powers a thermal electric plant.

Topics Covered:

- Understand Occupational health & safety standards and regulations for installation of Solar PV system
- Identify the hazards associated with PV installations including electric Shock and its mitigations
- Diligently follow electrical safety procedures
- Identify and use the appropriate personal protective equipment including safety footwear, ear, and eye protection
- Follow the situations when personal protective equipment must be used
- The importance of keeping a tidy work area
- Trends and developments in the industry including new technology
- Work efficiently and check progress and outcomes regularly
- Different methods of Fire Extinguish & advance fire suppression System

Module 2: Basic Of Solar Energy And Electrical Concepts

152 hrs

Here one student should have a basic knowledge of basic/fundamental on electrical concepts, Basic laws, Circuit analysis so that one trainee can understand depth of this course easily.

Topics Covered:

- Understand Ohm's Law
- Understand the basics of electricity and electrical concepts
- Perform simple calculations to derive power and energy
- Explain and understand DNI, GHI and Diffused Irradiance & Irradiation
- Understand the movement of the sun and its effect on the performance of the plant
- Understand Terminology used in the Solar Industry
- Identify the different components of Solar PV system and understand the working and operations of different types of Solar PV systems
- Understand and acquire know-how of different Types, sizes and specifications of Modules, Solar Inverters, Charge Controllers, Cables, Conduits, Junction Boxes, Solar Batteries and allied accessories
- Read and interpret the manufacturing data specification sheets of different components
- Understand and acquire know-how of different types, sizes and specifications of foundations/footings
- Select the right footing/foundation as per site location including suitability of roof condition or soil
- Read and interpret various certification requirements of solar PV system components
- Identify and acquire the know-how of the different tools & tackles used for specific purpose in an installation of Solar PV system
- Acquire basic skills of communication, working effectively with others while respecting gender and disability concerns
- Oral/spoken communication skill & testing - voice and accent, voice clarity

Module 3: Site Survey For Solar PV Installation

40 hrs

House wiring consists of an electrical wiring system that distributes energy to be used in equipment and appliances around the house. It also involves the proper installation and operation of the electrical outlets, switches, breakers, meter base and different electrical circuits.

Topics Covered:

- Understand how to observe Sun path diagram and shading analysis
- Understand and assess the site conditions for safe installation of Solar PV system

- Identify the load to be connected to the Solar PV system
- Prepare load profile
- Engage with customers for any specific requirement and budget constraints, while identifying opportunities for deploying innovative energy solutions like plug & play system
- Calculate system size
- Calculate size of the system with basic mathematical tools

Module 4: Introduction Solar PV Installer

8 hrs

In this module students will learn about the basics of solar technology, how these solar technologies give them opportunity to make themselves self-sufficient, how the solar technology works in different geographical areas along with some knowledge on how to work in field with some hands-on practice.

Topics Covered:

- Demonstrate general Discipline in the classroom and during the training program
- Understand the role of Solar PV Installer and job opportunities
- Understand the advantages of doing this course
- Acquire basic reading capabilities to enable reading of signs, notices and/or cautions at site
- Soft skill & Interpersonal skill
- Grooming and Personal Hygiene
- Formal & Informal conversation

Module 5: Installation Of Electrical Components Of Solar PV Systems

64 hrs

Following topics are covered under the course.

Topics Covered:

- Read and Interpret the Single Line Diagram, Layouts, and drawings
- Read and interpret the Bill of Material to verify with the delivery of components on site and understand performing quality checks of material
- Understand and acquire know-how of installing the electrical components including inverter, batteries, junction boxes, energy meters and other electrical components along with performing preinstallation checks
- Identify and acquire know-how of installation of cables and conduits
- Understand Do's and Don'ts of DC wiring
- Identify and understand use of tools & tackles used for cable and conduit installation
- Understand Different types of Earthing and its installation
- Understand and identify significance and types of earth faults as per standards

Module 6: Test And Commissioning Of Solar PV Systems

56 hrs

Following topics are covered under the course.

Topics Covered:

- Describe and conduct the testing of all the solar components of the Solar PV system including fault finding and analysis including continuity checks, polarity check and other commissioning activities
- Understand Regulations & Standards for interconnection
- Describe the Commissioning process for the Solar PV System
- Problem solving & Decision making
- Basics of computer, Ms Word