



Rooftop Solar PV System Installers Training

TOPICS COVERED

Topic	Description
1. Basic solar PV system types	This session will explain the two components of solar energy and then focus on the different types of solar PV systems and the different sub-types within each. Basic solar terminology will also be explained.
2. Basic electricity	Gives some background about electricity and how it is related to solar PV systems.
3. Electrical workmanship	Basic knowledge and industry practices about electrical workmanship such as cable size calculations, physical cable routing, surge protection, lightning protection, grounding, etc.
4. PV modules	Explains how a PV module converts light to electricity and its basic components. Shows the effects of shading and light intensity. Performance measurements of a solar PV module.
5. Batteries and charging	Shows the different kinds of batteries and their pros/cons as well as the applications in solar PV systems.
6. Charge controller	Explains the function of a solar charge controller and the different types that are currently available. Why and how to choose one type over another, and how to choose the system voltage and their implications.
7. Inverter - battery	Shows the different types of battery inverters and their functions.
8. Inverter - grid	How a grid inverter is different from a battery inverter and what is anti-islanding.
9. Commissioning and performance verification	What to look for before turning on the system for the first time. Industry standard procedures for basic commissioning steps. Basic performance verification procedures to ensure the system is installed properly.
10. Maintenance	Regular maintenance procedures, what to look for during maintenance visits.

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11. Monitoring and inspection	Introduce the different major brand's monitoring system as well as third party monitoring systems. Knowledge about how to set up each type and the similarities and differences.
12. Troubleshooting	Troubleshoot common mistakes and failures.
13. Technical drawings	Introduce the different types of technical drawings (Mechanical, Electrical, and Civil) and how to read them. Understanding of the drawings and implementing the information conveyed in the drawings.
14. Common electrical drawing symbols	Understand the commonly used electrical symbols in drawings especially pertaining to installation drawings and electrical drawings.
15. 1-line and 3-line diagram	Explain the difference between 1-line and 3-line electrical diagrams and how to read them. Understand the information conveyed and use them as part of the installation document.
16. Common installation procedures	Generic installation procedures to ensure that participants understand the basics. Combined with specific information from the component's installation manual, there should be enough information to ensure a proper installation.
17. Brand specific installation procedures	Specific installation procedures of 4 brands: Phocos, Morningstar, SMA and Outback.
18. PV system field survey	This session will introduce the field survey procedures and how to perform them to select the right location for solar PV installations.
19. Electrical system design	Participants will design one of each type of solar PV system: <ul style="list-style-type: none"> - Small home system - Off grid system - Grid tied system - Grid tied with battery backup
20. Industry standards and safety practices	Introduce participants to international standards.
21. Local installation standards and safety codes	Introduce participants to local standards.
22. Safety procedures	Common safety procedures and protocols need to be taught, understood and followed diligently.
23. Project planning	Learn how to plan projects from logistics, manpower and scheduling. Important for installers to be able to estimate the amount of time it would take to finish a project.