Association of Energy Engineers

SPVP
CERTIFIED SOLAR PV PROFESSIONAL

Certified Solar PV Professional Training Program Overview

Program Summary

The ideal candidate for the Certified Solar PV Professional (SPVP) Training Program is a professional working in the energy sector or related fields who is involved in the design, construction, operation, or financial management of large-scale PV installations or self-consumption solar systems.

The SPVP Training Program is designed to deepen participants' technical and financial understanding of photovoltaic (PV) systems. It covers the entire life cycle of PV installations—from design and construction to maintenance and financial strategy—addressing both large utility-scale projects and small self-consumption systems. The program ensures participants are well-prepared to handle technical, financial, and regulatory challenges in the solar energy sector.

At a Glance

- This training program prepares you to take the Certified Solar PV Professional (SPVP) exam.
- This course is held over 4 days.
- You earn 3.2 CEU | 32 PDH | 6.4 AEE Credits for completing this program.

Other Program Highlights

- Engage in practical examples that allow you to apply what you've learned and deepen your understanding of the material.
- Access valuable resources, including a course workbook and reference materials to support your learning.
- Interact with subject matter experts and professionals who will guide discussions on real-world applications of the training content.

Registration

For more information on available training courses, certification application process, exam registration, and associated fees, visit www.aeecenter.org/training

Certified Solar PV Professional Training Program
Overview

What You Will Learn

Through a blend of theoretical knowledge and practical application, this course provides in-depth understanding of key aspects such as solar resource assessment, equipment specifications, economic analysis, and operational best practices. By the end of this course participants will:

- **Master Solar PV System Design**
  Gain the ability to design solar energy systems for both residential/commercial and utility-scale applications. This includes understanding support structures, electrical configurations, and how to optimize energy production through efficient design.

- **Understand Solar Resource and Yield Calculations**
  Learn to accurately assess solar energy potential, considering atmospheric effects, tilt, orientation, and shading. You will also be proficient in using simulation tools to predict system performance.

- **Analyze Financial and Economic Aspects of Solar Projects**
  Develop the skills to conduct in-depth financial analyses, including calculating the levelized cost of electricity (LCOE), managing cash flows, evaluating component costs, and understanding the financial tools required for PV projects such as Power Purchase Agreements (PPA) and Engineering, Procurement, and Construction (EPC) contracts.

- **Understand Equipment and Technologies**
  Familiarize yourself with the latest advancements in photovoltaic modules, inverters, batteries, solar trackers, and alternative energy storage technologies. You will learn how to select and apply the right equipment for specific project needs.

- **Navigate Legal and Regulatory Requirements**
  Gain insight into the legal frameworks, policies, and regulations that govern solar PV installations, ensuring compliance and optimizing project success.

- **Develop Expertise in Operations and Maintenance (O&M)**
  Acquire practical knowledge on maintaining PV systems for optimal performance. You will understand quality assurance processes, system testing, and the best practices in plant operations, monitoring, and safety protocols.

- **Plan and Execute Complex Solar Projects**
  From business planning to system commissioning, you will be equipped to manage large-scale solar installations, ensuring that all technical and financial aspects are thoroughly considered for long-term success.

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Who Should Attend

This program is designed for professionals in the energy sector or related fields, such as:

- **Energy Managers:** Professionals responsible for overseeing energy strategies and seeking to integrate solar energy solutions into their operations.
- **Sales and Business Development Executives:** Individuals involved in promoting solar energy solutions who need a deeper understanding of the technical aspects and financial returns of PV systems.
- **Technical Specialists:** Engineers, designers, and project managers working on the installation, commissioning, and maintenance of PV systems, who aim to sharpen their skills in system design and performance optimization.
- **Financial Analysts and Investment Professionals:** Those evaluating the financial viability of solar energy projects, from cost analysis to financing options, and who need to understand the lifecycle economics of solar installations.
- **Renewable Energy Enthusiasts and Entrepreneurs:** Individuals or organizations looking to enter the solar energy market, seeking to build a solid foundation of knowledge to successfully launch or expand solar PV projects.

Participants should have a foundational understanding of energy systems and a strong desire to enhance their expertise in PV systems to improve the quality and financial viability of solar installations.

Our Instructors

Each member of our team of professional instructors are Subject Matter Experts who will deliver content professionally; provide live examples from their experience and focus on specific areas essential to energy efficiency. Their teaching and industry experience allows them to deliver information that is most relevant and of practical value to attendees.

Certification Eligibility

The prerequisites to qualify for the certification process consider the diverse education and experience applicants may have. Each candidate must meet the required criteria at www.aeecenter.org/spvp

Global Training Partners

For a complete list of AEE training partners visit our list of Approved AEE Training Partners Worldwide

Course Outline

- Introduction of Solar PV Energy
- Commercial & Industrial (C&I) Residential Solar Basics
- Utility Scale Basics
- Solar Resource and Yield
- Economic Analysis
- Equipment Description
- Electric Design & Works
- Structural Design & Mechanical Works
- Civil Design & Works
- Plant Operation and Safety

Certified Solar PV Professional Training Program
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Detailed Agenda

Introduction
- General introduction of solar PV energy
- Index solar irradiation
- Global emissions
- Energy diversification
- Integration capacity
- Fundamentals of the PV generation - The PV generator
- Life cycle - components and what is needed
- General description of installation - different plant configurations

Commercial & Industrial (C&I) Residential Solar Basics
- Development of business plan
- Life cycle
- Self-consumer and energy balance
- Off grid Systems and energy balance
- Support structures
- Legal aspects and policies & regulations

Utility Scale Basics
- Development of business plan
- Life cycle
- Mounting
- System tests
- Quality assurance
- Commissioning of PV System
- Operation and maintenance
- Guarantee and performance contracts
- Legal aspects and policies & regulations

Solar Resource and Yield
- Calculation of solar resource
- Atmospheric Effects
- Tilt
- Orientation
- Shading Effects
- Yield
- Simulation tools

Economic Analysis
- Investment characteristics
- Costs of components
- Cash flows
- Calculation of levelized cost of electricity
- Taxes, depreciation
- Financial tools
- Financing accounts
- PPA
- EPC

Equipment Description
- History and technology
- Photovoltaic module, current state of development of pv technology, and Cell types
- Support structures, requirements and considerations
- Solar trackers
- Electrical cables and connectors
- Inverters
- Controllers and optimizers
- Charge regulator
- Batteries
- Alternative technologies to store energy

Electric Design & Works
- The photovoltaic generator
- Inverters and charge regulators and optimizers
- Cabling
- Earth networks
- Batteries configuration
- Transformer
- DC and AC protections
- Network connection

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Structural Design & Mechanical Works
- Variable and permanent loads
- Support straps and trusses
- Joists to the floor
- Foundation
- Solar trackers - characteristics and types
- PV Solar Concentrators - characteristics and types

Civil Design & Works
- Land, Geographic Information Software
- Access and interior roads
- Medium voltage infrastructure
- Service trenches

Plant Operation and Safety
- Control system - SCADA and other technologies
- Operation and Maintenance
- Measurement & Verification
- Safety
- Security