MTBM

SOLAR PV SYSTEM DESIGN & INSTALLATION TRAINING

MTBM Group Sdn. Bhd. (1600656-M)

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Course Title: Solar PV System Design & Installation Training

Course Validity: 2 Days

Validity: Not Applicable

HRD Corp Scheme: Claimable

INTRODUCTION

This training provides comprehensive knowledge and hands-on understanding of solar photovoltaic (PV) system design, sizing, installation, and commissioning. It covers the fundamental principles of solar energy, components of a PV system, site assessment techniques, system sizing methodologies, electrical design (string sizing, inverter selection, cable sizing), and Malaysia's regulatory requirements (SEDA, ST, NEM 3.0). Participants will be guided through practical design exercises, shading analysis fundamentals, installation safety requirements, and best practices for PV system performance monitoring. Upon completion, participants will be able to design, evaluate, and supervise the installation of a safe and compliant solar PV system.

OBJECTIVE(S):

- Understand the principles of solar energy and PV system operation
- Identify PV system components and their functional roles
- Perform site evaluation, shading assessment, and structural suitability checks
- Conduct PV system sizing, energy yield estimation, and array configuration
- Select appropriate inverters, cables, protection devices, and mounting systems
- Understand Malaysia's regulatory and compliance requirements (SEDA, ST, NEM)
- Perform testing, commissioning, troubleshooting & performance monitoring
- Apply documentation, quality assurance and installation best practices

TARGET GROUP(S):

- Engineers, technicians & maintenance personnel
- Solar PV installers and contractors
- Facility managers & energy/utility officers
- Sustainability & ESG teams
- Construction and M&E professionals
- Individuals or companies implementing renewable energy projects

ENTRY REQUIREMENT(S):

- Able to read, write and communicate verbally in Malay/English

TOPIC(S):

1. Introduction to Solar PV Technology & Renewable Energy
2. PV System Components (Modules, Inverters, BOS, Mounting, DC/AC Protection)
3. Solar Fundamentals: Irradiance, Tilt Angle, Orientation & Loss Factors
4. Site Assessment, Shading Analysis & Roof Structural Evaluation
5. PV System Design: Sizing, Array Configuration & Energy Yield Calculation
6. Inverter Selection, String Sizing, Cable Sizing & Protection Devices
7. Installation Requirements: Rooftop, Ground-Mount & Safety Practices
8. Malaysia Regulations: SEDA Grid-Connected Guidelines, ST Standards, NEM 3.0
9. Testing, Commissioning, Troubleshooting & Performance Monitoring
10. Documentation, Quality Assurance, Maintenance & Best Practices

LIST OF REFERENCE BOOK(S):

- SEDA Malaysia – Grid-Connected Solar PV System Guidelines
- Suruhanjaya Tenaga (ST) Electrical Installation Standards
- NEM 3.0 Technical Guidelines
- International Electrotechnical Commission (IEC) Solar PV Standards
- PV Module & Inverter Manufacturer Manuals
- Solar PV Installation & Safety Standards

LIST OF TEACHING AID(S):

- LCD projector
- Computer
- Whiteboard with accessories

METHODOLOGY(S):

- Lecture
- Group discussion
- Hands-on design exercises
- PV design simulation demonstration
- Installation walkthrough & practical examples

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TRAINING SCHEDULE

Day 1

Time	Activity / Topic
8:30 am – 9:00 am	Registration & Introduction
9:00 am – 9:45 am	Topic 1: Introduction to Solar Energy & PV Technology
9:45 am – 10:30 am	Topic 2: PV System Components & Configurations
10:30 am – 10:45 am	**Morning Tea Break**
10:45 am – 11:30 am	Topic 3: Solar Irradiance, Tilt, Orientation & Performance Factors
11:30 am – 12:30 pm	Topic 4: Site Assessment & Shading Analysis Techniques
12:30 pm – 1:30 pm	**Lunch Break**
1:30 pm – 2:30 pm	Topic 5: PV System Sizing & Array Configuration
2:30 pm – 3:30 pm	Topic 6: Inverter Selection, String Design & Cable Sizing
3:30 pm – 3:45 pm	**Afternoon Tea Break**
3:45 pm – 5:00 pm	Practical Exercise: PV Design Calculation & Energy Yield Estimation

TRAINING SCHEDULE

Day 2

Time	Activity / Topic
8:30 am – 9:00 am	Recap of Day 1 & Q&A
9:00 am – 9:45 am	Topic 7: Rooftop & Ground-Mount Installation Requirements
9:45 am – 10:30 am	Topic 8: Malaysia Regulations (SEDA, ST, NEM 3.0)
10:30 am – 10:45 am	**Morning Tea Break**
10:45 am – 11:30 am	Topic 9: Testing, Commissioning & Troubleshooting
11:30 am – 12:30 pm	Monitoring & Performance Evaluation Tools
12:30 pm – 1:30 pm	**Lunch Break**
1:30 pm – 2:30 pm	Documentation, Safety, Quality Assurance & Reporting
2:30 pm – 3:30 pm	Common Issues, NCs & Best Practices in Solar PV Projects
3:30 pm – 3:45 pm	**Afternoon Tea Break**
3:45 pm – 5:00 pm	Final Practical Design Review, Q&A & Closing