Solar Power System Fundamentals: System Technology, Understanding and Safety

The Solar Power System Fundamentals: System Technology, Understanding and Safety course is a simple and comprehensive introduction to grid-connect photovoltaic (PV) systems for homeowners, trades-persons, and anyone wishing to gain a sound fundamental understanding of PV systems.

This course provides a structured approach to studying the fundamentals of grid-connected photovoltaic (PV) systems. The resource is presented in topics; starting with the knowledge that is fundamental to understanding how solar systems work, then discussing the design, costs and installation and finally the maintenance of a solar system.

Introduction

What is solar power? Why is it useful? What is the difference between solar power and photovoltaics (PV)? What is the difference between a grid-connected PV system and a stand-alone PV system?

This section introduces solar power, specifically PV, answering all of the above questions and providing the foundation for understanding the rest of the course.

Introduction to Solar Power and PV Systems

This book contains an overview of solar power in general and introduces photovoltaic systems, the focus of this course.

Understanding Solar PV Systems

The first of three sections of this course. This section explains the key parts of a solar photovoltaic (PV) system.

Introduction to Understanding Solar PV Systems

This book introduces the key parts of a PV system which are then discussed in detail in the following books.

Solar Resource

This book outlines the terminology and information required to assess the level of sunlight that a solar module will receive and how to optimise this collection.

Photovoltaic Modules

This book outlines the terminology and explains the technology of PV modules. It also provides the necessary information to make an informed decision about selecting PV modules.

Grid-Connect Inverters
This book explains the purpose and operation of grid-connect inverters, as well as the different types of inverters available.

Balance of System Equipment
This book provides an overview of all of the 'Balance of System' equipment. It includes the mounting system, the cabling and the electrical protection.

Planning and Installing a Grid-Connected PV System
The second of three sections in the course. This section discusses what the home owner needs to consider before installing a grid-connected PV system, explains how to assess a system's economics, and outlines what to look for in an installation company.

Introduction to Planning and Installing a Grid-Connected PV System
This book introduces how the property owner can best plan for the installation of a grid-connected PV system.

System Expectations
This book looks at the expectations of the system owner and how the final system can meet these expectations.

Site Assessment
This book outlines important factors to consider when assessing a site for a PV system.

Introduction to Energy Efficiency
This book provides an overview of energy efficiency practices which can reduce the size and cost of the PV system

Economics of a PV System
This book explains the economics of a PV system; the potential gains, costs and calculating the financial returns

Choosing a Solar Retail Company
The book provides a guide of things to look out for when choosing a solar retail company to design and install a PV system.

After the Installation
This book outlines what the system owner should be aware of when the PV system has been fully installed.

Owning and Maintaining a PV System

The third of three sections in the course. This section outlines what a system owner needs to know about owning a PV system and the maintenance required. It includes an explanation of the proper shutdown procedure, a troubleshooting guide, and a guide for having non-solar contractors working around the PV system.

Introduction to Owning and Maintaining a PV System

This book introduces the responsibilities and procedures of owning and maintaining a solar PV system

The Shutdown Procedure

This book explains the correct procedure for shutting down the PV system, an important procedure for the system owner to understand.

Monitoring System Output

This book gives a rundown of monitoring system types and explains the typical figures that are given by a PV monitoring system.

Maintaining the System

This book gives a guide on the required maintenance of a solar PV system.

Is My System Working?

This book outlines the process for working out if the PV system is working properly and what to do when it is not.

Non-solar Contractors Onsite

This book explains what non-solar contractors need to know before doing work around the PV system as well as the decommissioning process.

Where to From Here?

Resources on further learning, additional reading, and getting help to resolve any disputes and issues.