Alternative Energy

Chapter 5 Part 1: PV Stand-alone system

by
Mohd Shawal Jadin
Faculty of Electrical & Electronic Engineering
mohdshawal@ump.edu.my

Chapter Description

- Expected Outcomes
  - able to design simple PV stand-alone system

- References
  - Stand-alone Solar Electric Systems: The Earthscan Expert Handbook for Planning, Design and Installation by Mark Hankins, Earthscan, 2010.

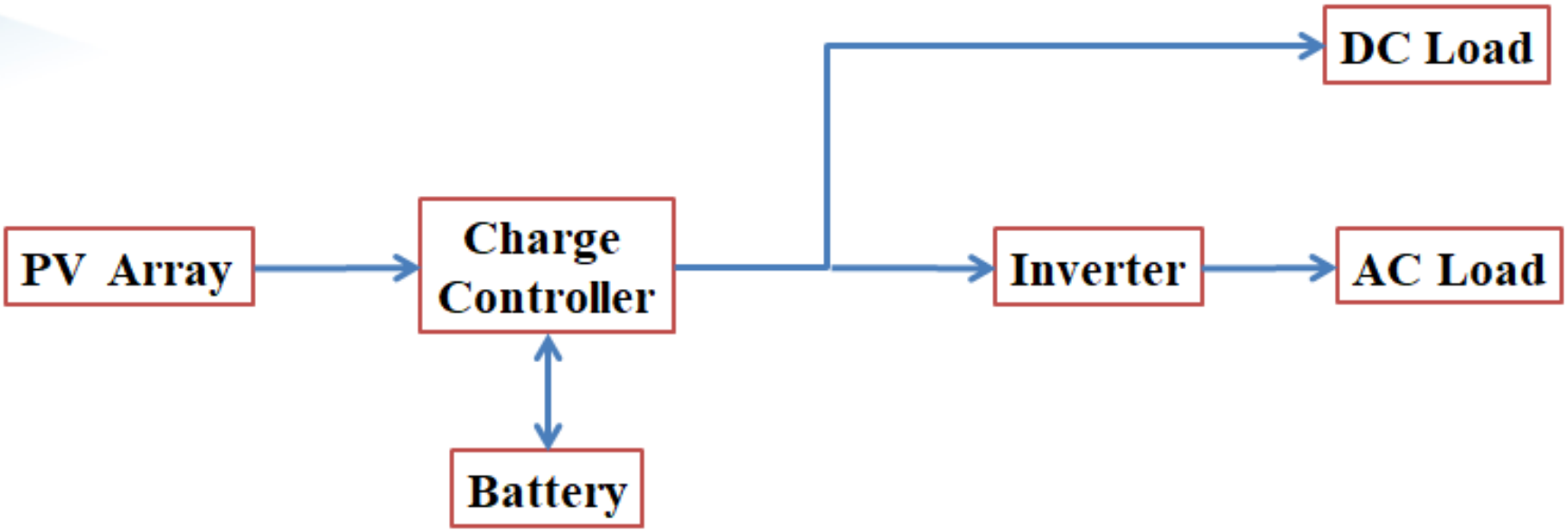
Sub-Topic

- Introduction
- Load Assessment
- System sizing
- System configuration and wiring
- System Protection
- System Maintenance

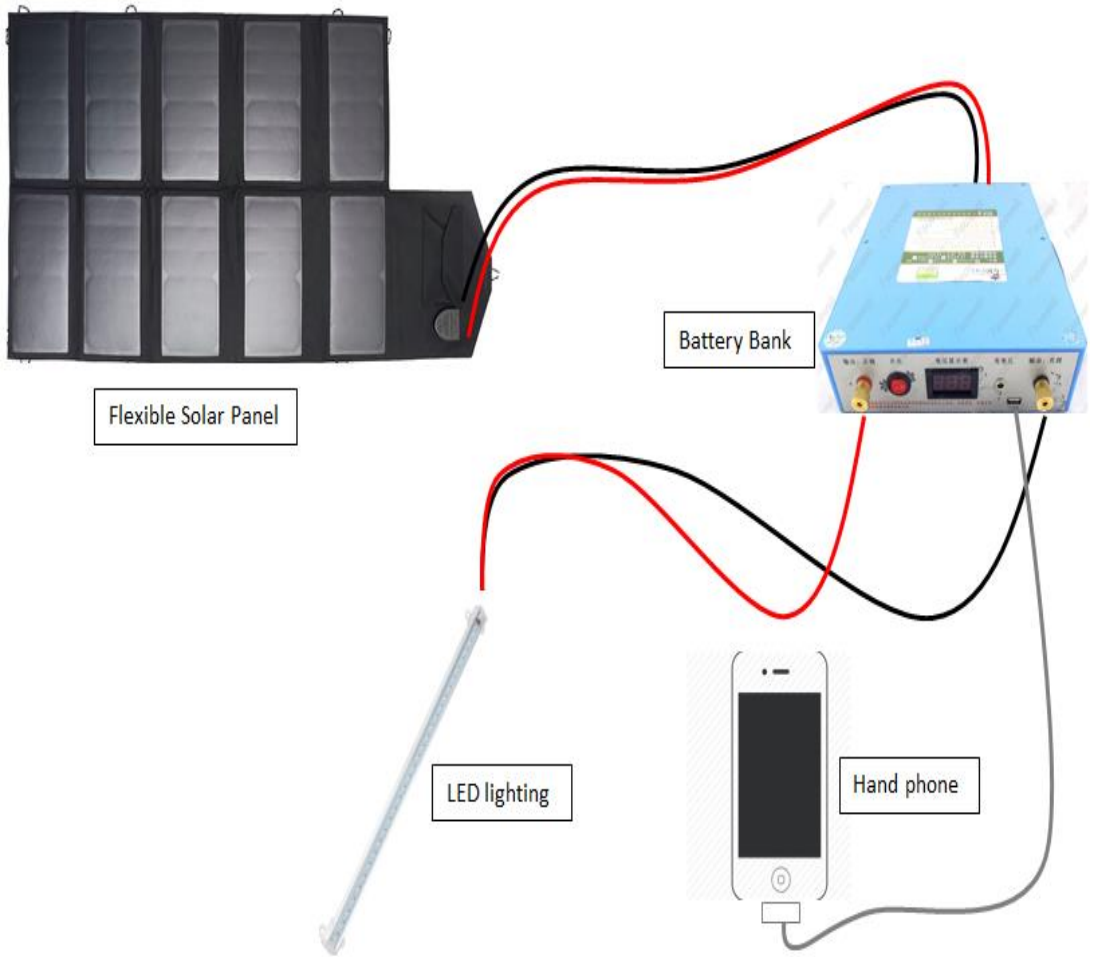
Introduction

- Stand-alone PV system: the system does not connect to the main grid
- Stand-alone PV system varies in size from as small as calculator or watch to remote buildings or spacecraft.
- If the electrical loads is to be supplied independently of solar insolation, the generated energy have to be stored by using battery.

Introduction Cont..



Introduction Cont..



Limitation of sizing the PV stand-alone system

The main problem with sizing are as follows:

- The weather records for the site may not be detailed enough to do an accurate calculation of the module output
- Since the weather records are a summary of the past, they can only suggest what may happen in the future when the solar system is operating
- It is difficult to predict accurately how much electricity will be used each day.

Introduction Cont..

There have some consideration before installing a PV stand-alone system:

1. Load Assessment
2. System sizing
3. System configuration and wiring
4. System Protection
5. System Maintenance

Thank You