Power Generation Principles & Applications

Course Number

10301

Course Duration

5 days

Audience

This course is designed for Solar Field Employees and Customer Operators and Maintenance Technicians who are required to commission, configure, operate, and maintain Solar-supplied Generator Packages.

Prerequisites

Students should have successfully completed a Solar Operations and Maintenance Principles course on a generator package or have equivalent experience. Knowledge of the Solar Turbotronic 3 or Turbotronic 4 control system would be an advantage.

Course Description

Participants review the basic concepts of electrical power generation along with the controls and protection needed for generators. The different types of load and power are described along with the principles of load sharing for both real and reactive load. The control system configurations for various operational scenarios such as generators running in isolation, with other generators, and when connected to an infinite bus are determined during class exercises. Overviews are given of the major components of a generator system including voltage regulation, fuel control governors, switchgear, and transformers. The major steps of commissioning a generator and the checks required are also described. The course also covers the principles and operation of a typical Solar Power Management System.

Course Objectives

Upon successful completion of this course the student will be able to:

1. State the function of each of the primary devices in the generator system
2. Describe the operating principles of a brushless generator
3. Describe the methods of sharing both real and reactive load
4. Determine the control system configuration options for various generator operating scenarios
5. List and describe the major checks required during generator package commissioning
6. Describe the principles and operation of a typical Solar Power Management System

Reference Material

1. Power Generation Principles and Applications Student Workbook
2. Power Management System Operations Student Workbook
3. Ugly's Electrical References handbook