

# PRU Package and Turbo-tronic Control Systems Features and Function

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## Course Number

**Various**

## Course Duration

**5 days**

## Audience

This course is specifically designed for Solar Package Refurbishment and Upgrade (PRU) customers who have some existing knowledge and experience of Solar turbo-machinery packages. The course will primarily support PRU projects comprising an upgrade to the Turbo-tronic 4 or 5 Control System and associated equipment upgrades (fuel valves, actuators, fire system, vibration system, etc).

## Prerequisites

Students should have experience of operating and maintaining Solar turbo-machinery packages prior to the package upgrade project.

## Course Description

Since typical PRU customers will have some experience of the Solar package and control system, they may not require the two-week training program that normally accompanies a new package installation. This course will close the gap between what they know already, and the new components and systems installed as part of the PRU project. The end goal is for the students to have the required knowledge to operate and maintain the package in its new configuration.

The course can be divided into two sections:

## Module 1 – Package Systems Overview – 2 days

It is assumed that the students have a thorough working knowledge of the turbo-machinery package and sub-systems. We will recap the purpose, function and operational sequences of each of the sub-systems, and draw particular attention to any changes made to system or component installation or function as part of the PRU project.

### List of lessons:

1. General Package Description
2. Engine
3. Start System
4. Lube System
5. Fuel System
6. Generator or Compressor
7. Seal System (CS only)
8. Control System
9. Operating Procedures

## Module 2 – Turbotronic Control System Features and Function – 3 days

Lessons have been extracted from the Turbotronic 4 and 5 Control System Operations training course. Some lessons have been omitted based on the students' assumed prior knowledge and experience of previous versions of Solar's control systems. In addition, some student exercises have been retained, but abbreviated. Most of the omitted material is available as an appendix, to provide flexibility in the course delivery.

### List of lessons:

10. Introduction to Software Apps
11. Offline Program Monitoring
12. Logix Project Familiarization
13. Turbotronic Program Architecture
14. Hardware / Software Interface
15. Troubleshooting Methods
16. Online Functions
17. Appendix – Boolean Logic
18. Appendix – Ladder Logic and the Basic Instruction Set

## Course Objectives

On completion of this course, the student will be able to:

### Module 1 – Package Systems Overview

State the purpose of the package and each of the package subsystems

List and describe the major components in the package and package subsystems

Describe the operational sequences of the package subsystems

List and describe the impact of the PRU project on each of the package subsystems

### Module 2 – Turbotronic Control System Features and Function

Describe the purpose and function of the Turbotronic 4 or Turbotronic 5 Control System, and the major components that comprise the system

List the purposes of the various software applications and tools in a Solar project

Describe the layout and conventions of a Solar project in RSLogix 5000 / Logix Designer

Demonstrate the ability to connect and communicate with the Controller

Describe the control system features that can assist in basic troubleshooting

Demonstrate the ability to access a Turbotronic 4 or Turbotronic 5 project online for monitoring and troubleshooting purposes

## Course Materials And Equipment

The course includes a combination of instructor-led discussions, demonstrations and audio-visual illustrations to effect optimal transfer of information. The student workbook is used as a reference and study guide for the student. The instructor may provide additional materials, such as system schematics, drawings, and illustrations to augment and reinforce the concepts related in the classroom, and to provide PRU project specific information.

Module 2 includes some use of Field Programming Units (FPU's) and Turbotronic 4 or Turbotronic 5 Control System Simulators.