PRU Package and Turbotronic Control System Course Description

Course Name

PRU Package and Turbotronic Control System Features and Function

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 Turbotronic 5 or 6 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 is divided into two sections:

1. Module 1 – Package Systems Overview – 2 days
2. Module 2 – Turbotronic Control System Features and Function – 3 days

The course includes a combination of instructor-led discussions, demonstrations and audio- visual illustrations to effect optimal transfer of information. The course workbooks are used as a study guide and post-course reference. 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 simulated programming tasks for the Online Functions section. The programming tasks are completed using a three-stage “VUIT” digital activity (View / Under Instruction / Try). The steps are first demonstrated; the trainee completes the task with guidance, as necessary; and then has the opportunity to

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compete the task without guidance, as a verification of proficiency. These activities are normally completed as a group activity using the Instructor's laptop, while also ensuring active participation. All participants will be granted access to the digital activities via Solar's Learning Management System (LMS), and may therefore be able to complete the activities on a laptop or tablet that they bring to the class (this is contingent on internet access being available at the class location). Note that laptops are not provided by Solar for course participants. In addition, all participants will have access to these digital activities via Solar's LMS for a 12 month period following the class to allow for practice opportunities, and as a job aid when task completion is required.

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 in their pre-PRU project configuration. 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.

Objectives

1. State the purpose of the package and each of the package subsystems
2. List and describe the major components in the package and package subsystems
3. Describe the operational sequences of the package subsystems
4. List and describe the impact of the PRU project on each of the package subsystems

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 (TT5 or TT6)
9. Operating Procedures

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

Lessons have been extracted from the Turbotronic 5 and 6 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.

Objectives

1. Describe the purpose and function of the Turbotronic 5 or Turbotronic 6 Control System, and the major components that comprise the system
2. List the purposes of the various software applications and tools in a Solar project
3. Describe the layout and conventions of a Solar project in RSLogix 5000 / Logix Designer
4. Demonstrate the ability to connect and communicate with the Controller
5. Describe the control system features that can assist in basic troubleshooting
6. Demonstrate the ability to access a Turbotronic 5 or Turbotronic 6 project online for monitoring and troubleshooting purposes

List of Lessons

Turbotronic 5 (Course #10127)

1. Introduction to Software Apps
2. Offline Program Monitoring
3. Logix Project Familiarization
4. Turbotronic Program Architecture
5. Hardware / Software Interface
6. Troubleshooting Methods
7. Online Functions
   - Going Online
   - Loading Software
   - Navigating the Logic
   - Forcing Discrete Values
   - Forcing Analog Values
   - Making Online Edits
8. Ladder Logic and the Basic Instruction Set

Turbotronic 6 (Course #10128)

1. Control System Software and Tools
2. Project Architecture
3. Security
4. Logic – Tags and Tag Databases
5. Logic – Hardware / Software Interface
6. Logic – Processing Discrete Data
7. Logic – Processing Analog Data
8. Logic – Using Timers and Counters
9. Logic – Using Program Constants
10. Logic – Processing Alarms and Shutdowns
11. Logic – Function Block Logic
12. Logic – HMI Interface
13. Online Functions – Going Online
14. Online Functions – Loading Software
15. Online Functions – Navigating the Logic
16. Online Functions – Forcing Discrete Values
17. Online Functions – Forcing Analog Values
18. Online Functions – Making Online Edits
19. Ladder Logic and the Basic Instruction Set

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