ThermoFisher SCIENTIFIC

Thermo Scientific System 21 Maintenance Training
Course Outline

Course Objectives

Throughout this course the maintenance technician will learn how to troubleshoot and maintain a Thermo Scientific System 21 gauging system using established techniques. The maintenance technician will be able to locate and solve both process and system problems with minimal support from Thermo Fisher Scientific. This course provides the maintenance technician with system knowledge through lecture, discussion, and hands on training.

Course Content

- System Overview
- Safety
- Ethernet Network
- Hardware Architecture
- Software Architecture
- Sensor Overview
- Scanner Frame
- Operator Console
- Auto Profile Control (APC)
- Alarms and Messages
- Troubleshooting and Diagnostics
- PC Anywhere

Prerequisites

The maintenance technician must have basic electrical and mechanical troubleshooting skills and be proficient in the use of a volt /ohmmeter. The candidate must know and understand the machine process and be able to read and comprehend schematic drawings, and convey detailed information over the telephone. Students may be required to sign a Secrecy Agreement relating to our sensor technologies.

Course Schedule

Training starts on Tuesday and runs through Thursday from 8:30 to approximately 4:30 with an hour for lunch (provided). Friday the instructor is available from 8:30 until 12:00 if the student desires additional training time.

Evaluation

Each attendee will take an examination covering safety issues and common troubleshooting procedures. Results of the exam will be available for customer review. Upon successful completion of the course, the attendee will receive a Certificate of Completion.

Courseware

Each attendee will receive all necessary materials in software format to complete the course. Hardcopies of materials will no longer be provided unless specifically requested and paid for in advance.

All attendees will be required to have a laptop computer to facilitate the training.

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Introduction

A brief discussion of course objectives and schedules, plus a tour of the manufacturing facilities. Review customer specific configurations and their impact on the training.

System Overview

Overview of the role that each major system component plays within the gauging system. An explanation the Thermo Scientific M21 and how it serves as a distributed processor within the System 21 architecture, general overview of a typical system layout and explanation of the interconnections.

Safety

Discussion of safety measures to be used when working in and around the equipment. This includes electrical and mechanical safety from both a personnel and equipment standpoint, Electrostatic Discharge Control (ESD) and Radiation Safety.

Ethernet Network

A description of the Ethernet network and its role in System 21. Identify methods to troubleshoot Ethernet faults.

Hardware Architecture

Identifies the parts of each system, sensor, frame, electronics, operator console, automatic profile control, etc. Describes how each component functions and its role in the system. Perform hardware diagnostics and troubleshooting hardware faults.

Software Architecture

Describes the software configuration and layout. Identify each program that runs within the system and its function. Discusses the relationship between hardware and software

Sensor Overview

An explanation of the functionality of the Thermo Scientific Beta Sensor and/or Full Spectrum Infrared (FSIR) Sensor is provided. This part is based on specific system configuration. The student will perform diagnostics and troubleshooting. A more detailed course is available for the FSIR customer; please contact Customer Service for further details.

Scanner Frame

The technician will learn about the sensor transport mechanism, scanner electronics (remote or self contained), and the various signals present in the scanner frame. The instructor will describe the Thermo Scientific Process I/O and how it functions. During this topic, the technician will have the opportunity perform diagnostics and troubleshooting using proven methods.

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Operator Console

The instructor will explain the functionality of the operator console. Also presented are detailed descriptions of the internal connections within the console. The technician will have the opportunity to perform diagnostics and troubleshooting using proven techniques.

Auto Profile Control (APC)

Upon completion of this topic, the technician will have a full understanding of the hardware and software associated with the Thermo Scientific APC; including, how the devices interact with one another. The technician will also be taught how to use the setup parameters in System 21 software.

Troubleshooting and Diagnostics

The technician will learn proven techniques used to troubleshoot & diagnose problems. The technician will also learn about the System 21 gauging system and how it can be utilized as a base for finding and correcting process problems.

System Support

The class instructor will discuss the documentation that is provided with the system. Also discussed will be the importance of accurate and up-to-date system performance logs. The instructor will detail how to get assistance while troubleshooting problems either via telephone or by using PC Anywhere to connect to Thermo Fisher via modem. The instructor will give information on how to order spare and replacement parts.

Review of course

The technician will be given the opportunity and time to ask and answer any questions or specific system issues. They will also be asked to complete a Course Critique for Quality Assurance, and will be given a brief quiz on the course materials.

Friday Morning Session

This optional session is used to provide some extra study time to any technician if necessary. The instructor will enhance or expand on any of the above topics of interest to the student.

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Course Registration

Classes are held at the Thermo Fisher facility located in Wilmington Massachusetts USA. Class sizes are limited, so reservations are on first come, first serve basis and must be made no less than two weeks before the scheduled class. For reservations contact the Customer Service Department at 1-800-366-2533 or FAX your request to (978) 667-4146, Attention: Training administrator

Course Cost

Cost is $2500.00 for first student, all other students billing on the same invoice and attending the same class at a $ 500.00 discount. **Course cost does not include travel and living expenses.**

Cancellations

There will be a cancellation fee of 20% applied to all students canceling within three weeks of a class and a 50% fee for all students neither attending nor cancelling the class. Failure to attend for customers using contracted training slots will result in forfeiture of the contracted training slot.

Rescheduling

Thermo Fisher Scientific reserves the right to reschedule a class if there are less than three participants.