

Online Instructor-led Training

Introduction to Process Gas Chromatography

General Information

Course Code: PIA-PAOILOPTIA1
Length: 10 Hours

Audience

This class is intended for individuals seeking to gain a conceptual understanding of process gas chromatography and associated hardware. The course will provide the student with the fundamental principles of chromatographic parts and their inter-relationships. The operation and maintenance of Siemens Process Gas Chromatographs are taught in later courses.

Profile

1.9 CEUs (Continuing Education Credits)

This course introduces the student to process gas chromatography theory and technology.

This is a live, instructor led, on-line course delivered in 2 hour learning modules through an innovative web application. Students are encouraged to complete assigned lab exercises during and after each session to reinforce the learning modules throughout the week. A professional Siemens instructor will also be available to answer student questions outside of scheduled class times.

Objectives

Upon completion of this course, the student shall be able to:

- Identify the various hardware components used in a Process Gas Chromatograph and know their general functions.
- Conceptually setup a Sample System using the custom documentation.
- Conceptually adjust column-valve times based on chromatograms and oven plumbing diagrams.
- Conceptually adjust peak times and integration windows to measure the correct peaks.
- Conceptually troubleshoot general problems in a Process Gas Chromatograph.

Topics

1. Chromatographic Principles
 - a. Sample Systems
 - b. Columns
 - c. Sample Valves
 - d. Column Valves
 - e. Detectors
 - f. Integration
 - g. Applications
2. Sample Systems
 - a. Probes
 - b. Speed Loops
 - c. Stream Switching
 - d. Gas Systems
 - e. Liquid Systems
 - f. Liquid Vaporizing
3. Chromatograph Column Theory
 - a. Stationary and Mobil Phases
 - b. Packed and Capillary Columns
 - c. Adsorption and Partition Columns
4. Valve Operation and Maintenance
 - a. Sample injection
 - b. Column switching
 - c. Plunger Valves
 - d. Quill Valves
5. Detector Operation and Maintenance
 - a. Thermal Conductivity
 - b. Flame Ionization
 - c. Flame Photometric
6. Temperature Control
 - a. Heaters
 - b. Probes
 - c. Over Temperature
7. Component Integration
 - a. Identifying Components by attenuation
 - b. Measuring Components Digitally
 - c. Integration technics
 - d. Calibration
8. Analytical Techniques
 - a. Backflush with 6 and 10 port valves
 - b. Heartcut with 6 and 10 port valves
 - c. Trap / Bypass
 - d. Reverse Column Step
 - e. Parallel Chromatography