GLOBAL TRAINING INSTITUTE

Operation Optimization: Troubleshooting Techniques



GTI - Coordination Office and International Relations (Accredited Programs)

Course Description

The Operation Optimization: Troubleshooting Techniques training course provides participants with a comprehensive understanding of various types of rotating equipment, including compressors, pumps, and turbines, as encountered in the oil and gas industry. This intensive program covers the principles of operation, optimal maintenance practices, diagnostics, and troubleshooting techniques, ensuring efficient and safe operations. Participants will learn essential design elements, including bearings, seals, and safety controls, to enhance the reliability and performance of rotating machinery.

Who Should Attend

This training course is ideal for:

- Technical personnel in charge of production.
- Maintenance and operation engineers.
- Equipment operators and supervisors.
- Engineering managers in the oil and gas, chemical, and process industries.

Course Objectives

By the end of this training course, participants will be able to:

- Understand the operation of various types of compressors, pumps, and turbines.
- Operate rotating equipment close to its design efficiency.
- Monitor the reliability and availability of compressors, pumps, and turbines.
- Combine operational range with cost-effectiveness.
- Select the best operation and maintenance strategies for rotating equipment.
- Troubleshoot common problems associated with compressors, pumps, and turbines.
- Utilize various troubleshooting tools and techniques effectively.

Course Content

Introduction to Rotating Equipment

- Overview of rotating equipment used in the oil and gas industry.
- Importance of safety requirements for start-up and operation.
- Key design elements of compressors, pumps, and turbines.

Troubleshooting Techniques

- Application of troubleshooting tools such as Pareto charts and the 5-why method.
- Use of cause and effect diagrams (fishbone) and failure modes and effects analysis (FMEA).
- Fault tree analysis (FTA) and software tools for troubleshooting.

Bearings and Their Troubleshooting

- Types of bearings, failure patterns, and operating symptoms.
- Inspection techniques and wear patterns analysis.
- Diagnostic approaches, including vibration spectrum analysis.

Pump Operation and Troubleshooting

- Classification of pumps and common operating issues like cavitation and turbulence.
- Troubleshooting strategies for pumps and system-related problems.
- Control of pump operation and capacity regulation.

Compressor Fundamentals and Maintenance

- Types of compressors and their specific maintenance needs.
- Key operational metrics and the role of lubrication in performance.
- Monitoring techniques and maintenance best practices for compressors.