

INTERMEDIATE COMPRESSION SYSTEM OPERATIONS

MCE019

COURSE DESCRIPTION

This comprehensive course provides mid-level engineers, technicians, and operators with the essential knowledge and practical skills required for intermediate compression system operations. Participants will delve into the principles, equipment, and processes involved in compression systems, covering a wide range of topics from fundamental concepts to advanced optimization strategies. Throughout the course, participants will explore the thermodynamics of compression, different types of compressors, key components of compression systems, and safety considerations. They will learn to operate, monitor, troubleshoot, and optimize compression systems efficiently, ensuring reliable performance and energy efficiency.

COURSE OBJECTIVES

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

- Understand compression system principles and components.
- Operate, monitor, and troubleshoot compression systems efficiently.
- Implement advanced control strategies for system optimization.
- Optimize performance and reduce energy consumption.
- Apply advanced maintenance techniques and evaluate upgrades.

WHO SHOULD ATTEND

- Mid-level engineers and technicians
- Professionals with basic knowledge of compression systems
- Operators looking to enhance their operational skills

COURSE DURATION

5 Working Days

COURSE OUTLINES

INTRODUCTION AND FUNDAMENTALS

1. Welcome and Course Introduction
 - Overview of course objectives
 - Introduction to instructors and participants
 - Course materials and resources

2. Review of Basic Compression Concepts

- Recap of basic compression principles
- Types of compressors (reciprocating, rotary, centrifugal)

3. Intermediate Principles of Compression Systems

- Thermodynamics of compression
- Compression ratios and efficiency
- Multi-stage compression processes

4. Key Components of Compression Systems

- Compressors and drivers
- Intercoolers and aftercoolers
- Piping and valves

5. Safety and Regulatory Considerations

- Operational safety protocols
- Environmental regulations
- Compliance and best practices

OPERATION AND TROUBLESHOOTING

6. Daily Operations and Monitoring

- Routine inspections and maintenance
- Key performance indicators (KPIs)
- Data logging and analysis

7. Troubleshooting Common Issues

- Identifying common operational problems
- Diagnostic tools and techniques
- Case studies of common failures and solutions

8. Advanced Control Strategies

- Automation and control systems
- Supervisory Control and Data Acquisition (SCADA)
- Remote monitoring and control

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OPTIMIZATION AND EFFICIENCY

9. Performance Optimization Techniques

- Methods to enhance compressor efficiency
- Optimizing energy consumption
- Load balancing and capacity control

10. Advanced Maintenance Strategies

- Predictive maintenance techniques
- Vibration analysis and condition monitoring
- Long-term maintenance planning

11. Upgrading and Retrofitting Systems

- Evaluating system upgrades
- Retrofitting for improved performance
- Cost-benefit analysis of upgrades

12. Practical Session: Efficiency Improvement

- Case studies on successful optimizations
- Group exercises on designing optimization plans

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