



ME155: Lift Gas Compressor (Centrifugal Compressors Operations & Maintenance) Instrumentation & Mechanical

Training Description:

Centrifugal Compressors play a very essential role in many petrochemical and industrial plants. Centrifugal compressors, runs in general at very high speeds and are exposed to high temperature. The compressor operation is confined between the Surge and Stonewall limits. The compressor performance also is affected by the variation in operating conditions. Elevated temperature and large centrifugal stresses make the gas turbine operating under very critical conditions requires very complicated monitoring and protection systems. Accurate instrumentation, monitoring, troubleshooting and maintenance programs are essential for maintaining and increasing the available time of the machines. Understanding and learning Centrifugal compressors more deeply help smooth and free trouble operation.

This training course on will address the design, performance, operation limits, control system, instrumentation, maintenance and the latest troubleshooting techniques of centrifugal compressors and the parameters affecting the above.

This training course will highlight

- Description of the equipment's internal and external part and its function
- Diagnosis and analysis of equipment Failures and troubleshooting
- Maintenance strategies
- Effective inspection, measurements and which parameter to test
- Preventive and predictive maintenance methods
- Analysis performances for vibration, oil analysis and bearing failure detection

Training Objectives:

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

- ✓ Understanding and learning lift gas centrifugal compressors more deeply help smooth and free trouble operation
- ✓ Learn the latest techniques to lift gas centrifugal compressor condition monitoring and maintenance
- ✓ Familiarize the different types of gas compressors and their application
- ✓ Deepen the understanding of the limits of the compressor operation
- ✓ Read and calculate the performance curves of compressor
- ✓ Familiarize with the control and protection systems of centrifugal compressor systems
- ✓ Familiarize the start and shut down of the compressor properly
- ✓ Recognize the essential of compressors
- ✓ Learn the latest techniques to compressor condition monitoring
- ✓ Acquire the proactive techniques like alignment, balancing, vibration and oil analysis
- ✓ Pick up methods of troubleshooting and maintaining
- ✓ Highlight the importance of the maintenance planning
- ✓ Familiarize different compressor designs
- ✓ Learn how different design parameter affects the machines performance and operation

Training Designed for:

This course is intended for Operation and Maintenance Operators, Supervisors & Technicians, Facility Engineers, Utility Engineers, Anyone requiring a working level knowledge of rotating equipment &

compressors as well as Technical professionals dealing with condition monitoring, reliability and integrity analysis.

Training Requirement:

“Hand’s on practical sessions, equipment and software will be applied during the course if required and as per the client’s request.”

Contents can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course as per client’s learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Program:

FIVE DAYS:

- ❖ PRE-TEST
- ❖ Compressor Introduction
- ❖ Lift Gas compressor Overview
- ❖ Centrifugal Compressors Operations and Maintenance
- ❖ Compression Methods
- ❖ Positive-Displacement and Rotodynamic Compressors
- ❖ Introduction to Aerodynamics and Positive Displacement Compressors
- ❖ Definition of Compressor
- ❖ Comparison between Positive Displacement and Rotodynamic Compressors
- ❖ Types of Positive Displacement Compressors
- ❖ Relative Compressions of various Compressors Types
- ❖ Consideration in Compressors Selection
- ❖ Principles of Centrifugal Compressors
- ❖ Centrifugal Compressors Technology
- ❖ Centrifugal Compressor Design and Construction
- ❖ Function of Compressor Components
- ❖ Compressor Casing
- ❖ Casing
- ❖ Diaphragms
- ❖ Nozzles
- ❖ Compressor Rotor
- ❖ Shaft
- ❖ Impellers
- ❖ Balancing Piston
- ❖ Thrust Collar
- ❖ Compressor Arrangements and Control
- ❖ Compressor Arrangements
- ❖ Auxiliary Systems
- ❖ Centrifugal Compressor Performance & Control
- ❖ The Performance Curves
- ❖ Compressor Map

- ❖ Limits of Flow Rates
- ❖ Surge Line and Stone Line
- ❖ Limits of Operating Speed
- ❖ Compressor Operation
- ❖ The Compressor Permissive to Start
- ❖ Typical Compressor Valve Arrangement
- ❖ Prestart Valve Positions
- ❖ Purge Cycle
- ❖ The Anti-surge Control Valve Position
- ❖ Normal Start-up
- ❖ Normal Shutdown
- ❖ Emergency Shutdown
- ❖ Maintenance and Troubleshooting
- ❖ Preventive and Predictive Maintenance
- ❖ Principles of Troubleshooting
- ❖ Lubrication Systems
- ❖ Seals System
- ❖ Cleaning and Flushing
- ❖ Alignment and Balancing
- ❖ Condition Monitoring Systems
- ❖ Pressure and Temperature Measurements
- ❖ Effective Diagnoses Systems
- ❖ Vibration Analysis
- ❖ Auxiliary System Monitoring
- ❖ Instrumentation of temperature and pressure at inlet of centrifugal compressor
- ❖ Course Conclusion
- ❖ POST-ASSESSMENT and EVALUATION

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Gamification, Software & General Discussions
- Pre and Post Test

Training Fees:

TBA as per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Certificate(s):

CMCT Internationally recognized certificate(s) will be issued to each participant who completed the course.



Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:00	Recess (Prayer Break & Lunch)
13:00 - 14:00	Last Session

For training registrations or in-house enquiries, please contact:

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