TRAINING TITLE

CCC ANTI-SURGE CONTROLS SERIES 3: OPERATIONS, MAINTENANCE, AND IMPLEMENTATION

Training Duration

5 days

Training Venue and Dates

ME129	**CCC Anti-Surge Controls Series 3: Operations, Maintenance, and Implementation**	**5**	**21-25 Apr. 2025**	**$5,500**	**DUBAI, UAE**

In any of the 4 or 5-star hotels. The exact venue will be informed later.

Training Fees

- **$5,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Lunch**

Training Certificate

Define Management Consultants Certificate of course completion will be issued to all attendees.

TRAINING DESCRIPTION

The CCC Anti-Surge Controls Series 3: Operations, Maintenance, and Implementation Course is designed to provide professionals in the oil, gas, and petrochemical industries with a deep understanding of Anti-Surge Control systems, focusing on operations, maintenance, and effective implementation. Anti-surge systems are essential for maintaining compressor stability and protecting machinery from surge conditions, which can lead to catastrophic failures. This course covers the principles, configuration, and operation of CCC (Compressor Control Company) anti-surge controls, offering practical insight into how these systems prevent compressor surges, optimize compressor performance, and ensure safe operations.

TRAINING OBJECTIVES

By end of course participants will be able to understand

- Understand Anti-Surge Control Principles: Learn the underlying principles of surge protection and anti-surge control systems used in compressors.
- Implement CCC Anti-Surge Controls: Gain knowledge of how to implement and configure CCC Anti-Surge control systems for optimal performance.
- Operate Anti-Surge Controls: Master the operation of anti-surge control systems in real-time settings, including adjustments, monitoring, and troubleshooting.

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- Perform Maintenance on Anti-Surge Systems: Learn the best practices for maintaining anti-surge control systems, including calibration, diagnostics, and routine checks.
- Troubleshoot Surge and Control Issues: Understand how to diagnose and resolve operational issues related to anti-surge controls and compressors.
- Optimize Compressor Performance: Learn techniques to optimize compressor performance by minimizing energy consumption and improving surge protection.

WHO SHOULD ATTEND?

- Compressor operators and technicians
- Process and control engineers
- Maintenance engineers and supervisors
- Instrumentation and automation engineers
- Mechanical engineers
- Control system engineers
- Safety and reliability engineers

COURSE PROGRAM

Day 1: Introduction to Anti-Surge Control and Compressor Basics

- **Overview of Surge and its Impact**
  - Understanding surge phenomena in centrifugal compressors
  - Causes and consequences of surge: mechanical damage, reduced efficiency, and safety hazards
  - Importance of surge protection in compressor systems
- **Anti-Surge Control Fundamentals**
  - Basic principles of anti-surge control systems
  - Overview of the CCC Anti-Surge control system
  - How anti-surge systems operate to prevent surge conditions
- **Compressor Performance and Control**
  - Understanding compressor maps and surge lines
  - The relationship between flow, pressure, and surge points
  - Compressor operating ranges and the role of anti-surge systems in maintaining stability

Day 2: Implementing CCC Anti-Surge Controls

- **System Configuration and Setup**
  - Key components of the CCC Anti-Surge control system: controllers, sensors, and valves

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  - System layout and integration with existing compressor control systems
  - Setting up anti-surge control parameters for different compressor types
- **Control Strategies and Logic**
  - Exploring different control strategies for surge protection: proportional, integral, derivative (PID) control
  - Cascade control in anti-surge systems
  - Implementing and configuring anti-surge protection for different flow conditions and operating environments
- **Setting Anti-Surge Control Parameters**
  - Input and output configuration for anti-surge controllers
  - Setting alarm limits and shutdown parameters
  - Practical configuration exercises using a CCC Anti-Surge control system interface

Day 3: Operating Anti-Surge Control Systems

- **Real-Time Operation of Anti-Surge Systems**
  - Understanding how to monitor anti-surge system performance in real-time
  - Visualizing compressor operation using system trends and data points
  - Interpreting anti-surge data: flow rates, discharge pressures, and surge lines
- **Adjusting Control Settings**
  - How to adjust anti-surge control parameters during normal and transient operating conditions
  - Optimizing surge margins during varying load conditions
  - Performance tuning: fine-tuning PID control parameters for better surge protection
- **System Monitoring and Troubleshooting**
  - Identifying common operating issues: instability, oscillations, and control loop failures
  - Using diagnostic tools and system logs to monitor system health

Day 4: Maintenance and Calibration of Anti-Surge Systems

- **Preventive and Corrective Maintenance**
  - Maintenance requirements for CCC Anti-Surge control systems
  - Routine inspection and calibration procedures for sensors, controllers, and valves
  - Maintenance best practices for compressor and anti-surge systems
- **Calibration Techniques**
  - Methods for calibrating anti-surge sensors and controllers
  - Checking and calibrating flow and pressure transmitters
  - Verifying control loop performance post-calibration

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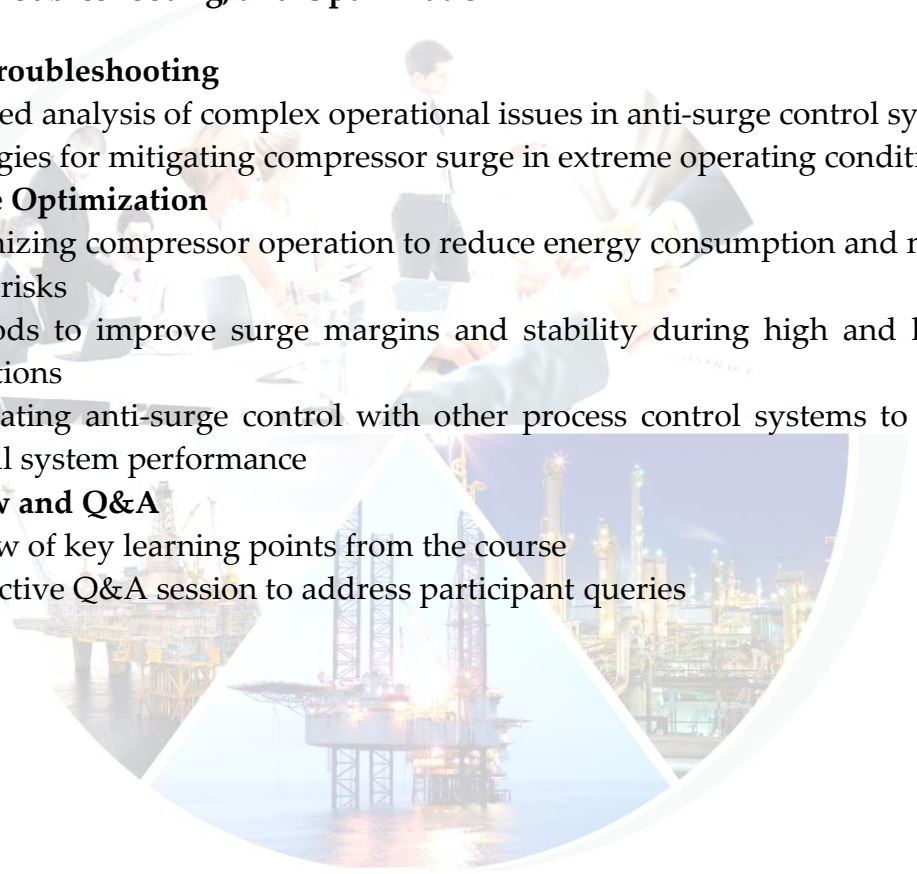
- **Troubleshooting and Diagnostics**
  - Diagnosing and resolving common anti-surge control issues
  - Identifying sensor failures, control loop malfunctions, and actuator problems
  - Advanced troubleshooting techniques using test equipment and diagnostics
- **Software Tools and System Updates**
  - Understanding the role of software in anti-surge control systems
  - Performing software updates and ensuring system compatibility
  - Using simulation software to predict and analyze surge conditions

Day 5: Advanced Troubleshooting, and Optimization

- **Advanced Troubleshooting**
  - Detailed analysis of complex operational issues in anti-surge control systems
  - Strategies for mitigating compressor surge in extreme operating conditions
- **Performance Optimization**
  - Optimizing compressor operation to reduce energy consumption and minimize surge risks
  - Methods to improve surge margins and stability during high and low load conditions
  - Integrating anti-surge control with other process control systems to improve overall system performance
- **Final Review and Q&A**
  - Review of key learning points from the course
  - Interactive Q&A session to address participant queries



NOTE:
Pre-& Post Tests will be conducted.
Case Studies, Group Exercises, Group Discussions, Last Day reviews, and assessments will be carried out.

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