

Course No. 1363

Commissioning, Start-up & Shutdown Training Course

**COMMISSIONING, START-UP & SHUTDOWN & OPERATIONAL
READINESS**
INDUSTRIAL ENGINEERING, MAINTENANCE & OPERATIONS

DURATION

5 Days

DELIVERY

Classroom



Course Overview

The Commissioning, Start-up & Shutdown Training Course is a specialized professional program designed to develop the technical, operational, and management capabilities required to plan and execute commissioning, start-up, shutdown, and restart activities across industrial facilities and complex operating environments. The program provides an integrated understanding of the full operating cycle, from system preparation and commissioning through controlled start-up, stable operation, planned shutdown, maintenance execution, and safe return to service.

Commissioning, start-up, and shutdown activities are among the most critical stages in the lifecycle of industrial facilities. They require close coordination between operations, maintenance, engineering, commissioning, safety, quality, and contractor teams while managing complex equipment, interconnected systems, operational constraints, and strict safety requirements. A structured approach helps organizations reduce operational risks, improve resource utilization, prevent avoidable delays, and maintain greater control over critical transitions.

The course covers the essential activities associated with commissioning, start-up, shutdown, and restart, including planning, readiness assessment, system inspection, equipment preparation, testing, controlled energization, start-up sequencing, operating parameter monitoring, abnormal condition management, safe shutdown, maintenance and inspection activities during shutdown, and verification of readiness before restart. The program also addresses the relationship between shutdown management, maintenance planning, reliability, asset management, and operational continuity.

Particular emphasis is placed on managing interfaces between different teams, controlling operational risks, applying permit-to-work and energy isolation requirements, managing simultaneous operations, controlling changes, and handling technical and operational issues. Participants will also examine practical approaches to decision-making during critical conditions and methods for effective communication between field teams, control rooms, supervisors, managers, and supporting functions.

Through practical applications, case studies, exercises, and workshops, participants will develop the ability to prepare commissioning, start-up, and shutdown plans, assess readiness, monitor performance, manage risks and deviations, coordinate multidisciplinary activities, and support safe and stable operations. The Commissioning, Start-up & Shutdown Training Course supports

organizations in improving asset reliability, operational discipline, risk management, maintenance coordination, and the effectiveness of planned shutdown and restart activities.

Objectives

- Analyze the complete commissioning, start-up, shutdown, and restart lifecycle and identify the major activities, interfaces, and decision points throughout the training program.
- Develop integrated commissioning, start-up, and shutdown plans aligned with technical, operational, maintenance, production, and safety requirements.
- Evaluate equipment, systems, operational teams, documentation, and support resources for readiness before commissioning, start-up, or planned shutdown.
- Apply structured methods for system inspection, equipment preparation, start-up sequencing, shutdown execution, and readiness verification.
- Design practical operating and shutdown checklists and procedures that support safe and controlled execution of critical activities.
- Improve coordination between operations, maintenance, engineering, commissioning, safety, quality, inspection, and contractor teams.
- Strengthen the application of permit-to-work, energy isolation, simultaneous operations, and operational risk controls during commissioning and shutdown activities.
- Assess technical and operational risks associated with start-up, shutdown, restart, equipment failure, and abnormal conditions and establish appropriate mitigation measures.
- Implement practical methods for monitoring performance, identifying deviations, and responding to operational issues during commissioning, start-up, and shutdown.
- Develop effective approaches for managing outstanding work, technical observations, changes, and operational constraints that may affect readiness or restart schedules.
- Align shutdown activities with maintenance, inspection, reliability, asset management, and operational continuity requirements.
- Prepare structured restart plans and verify equipment, systems, procedures, and operational teams before returning the facility to normal operation.

Who Should Attend

This course is designed for operations managers, commissioning managers, start-up managers, shutdown and turnaround managers, maintenance managers, project managers, engineering managers, operations engineers, commissioning engineers, process engineers, mechanical engineers, electrical engineers, instrumentation and control engineers, reliability engineers, maintenance planners, shutdown planners, field engineers, supervisors, and technical specialists involved in commissioning, start-up, shutdown, and restart activities.

The program is also suitable for contractor managers, quality and inspection professionals, health and safety specialists, operational readiness personnel, asset management professionals, project controls specialists, and team leaders responsible for coordinating critical operating and maintenance activities. It provides particular value to executives, senior managers, and decision makers responsible for operational continuity, facility readiness, production risks, maintenance execution, shutdown governance, and authorization of restart activities.

Government entities, ministries, public sector organizations, oil and gas companies, energy providers, utilities, petrochemical organizations, manufacturing companies, industrial facilities, and other asset-intensive organizations can benefit from this training when implementing new facilities, major maintenance programs, planned shutdowns, commissioning projects, or restart initiatives requiring disciplined coordination and operational control.

Learning Outcomes

- By the end of the course, participants will be able to:
- Explain the principles, stages, and management requirements of commissioning, start-up, shutdown, and restart activities.
- Develop integrated plans covering commissioning, start-up, shutdown, restart, responsibilities, readiness requirements, and key decision points.
- Evaluate the readiness of equipment, systems, personnel, documentation, materials, and resources before critical operating activities begin.
- Apply structured methods for equipment inspection, system preparation, testing, controlled energization, start-up, and shutdown.
- Develop effective checklists and operating controls for managing critical start-up and shutdown activities.

- Apply safe methods for energization, isolation, shutdown, and restart while maintaining operational control.
- Assess technical, operational, and safety risks during commissioning, start-up, shutdown, and restart activities.
- Analyze deviations, equipment failures, technical issues, and abnormal operating conditions and determine appropriate corrective actions.
- Coordinate multidisciplinary activities involving operations, maintenance, engineering, commissioning, safety, quality, and contractors.
- Manage simultaneous operations, changes, outstanding work, and technical observations that may affect shutdown or restart readiness.
- Develop practical restart plans and verify equipment and system readiness before returning the facility to service.
- Evaluate commissioning and shutdown performance and identify lessons learned and improvement opportunities for future activities.

Course Outline

DAY 01

Commissioning, Start-up, Shutdown, and Operational Readiness Fundamentals

- Fundamentals of commissioning, start-up, shutdown, and restart management
- Role of commissioning and shutdown activities within the facility lifecycle
- Transition from project completion to commissioning and operational readiness
- Principles of planned shutdown and outage management
- Roles and responsibilities of operations, maintenance, engineering, commissioning, and safety teams
- Identification of critical systems, equipment, and operating interfaces
- Readiness requirements before start-up and shutdown
- Development of integrated commissioning and shutdown strategies
- Interface management between project, operations, and maintenance functions

DAY 01 — CONTINUED

PRACTICAL APPLICATION

Developing an integrated lifecycle map for commissioning, start-up, shutdown, and restart activities within an industrial facility

DAY 02

Planning, Readiness, and Preparation for Start-up and Shutdown

- Planning pre-commissioning and pre-shutdown activities
- Assessment of equipment, systems, personnel, and resource readiness
- Review and preparation of start-up and shutdown procedures
- Identification of critical activities and priority equipment
- Preparation of materials, spare parts, tools, and specialist resources
- Workforce planning, shift arrangements, and operational coverage
- Permit-to-work and energy isolation requirements
- Management of outstanding work and technical observations
- Risk assessment and operational readiness reviews

PRACTICAL EXERCISE

Developing a comprehensive readiness plan for a planned start-up and shutdown

DAY 03

Start-up, Shutdown Execution, and Performance Control

- Start-up sequencing and controlled system energization
- Start-up of rotating and static equipment
- Operation of electrical, instrumentation, and control systems
- Monitoring pressure, temperature, flow, level, and other critical parameters
- Verification of alarms, interlocks, trips, and protective functions
- Principles of safe and controlled shutdown

DAY 03 — CONTINUED

- Managing simultaneous operations during shutdown
- Monitoring productivity, progress, and execution performance
- Managing deviations, delays, and operational problems

CASE STUDY

Managing a commissioning, start-up, and shutdown sequence and identifying critical control points

DAY 04

Risk Management, Troubleshooting, and Restart Preparation

- Identification and assessment of commissioning and shutdown risks
- Operational, technical, and process safety risk management
- Management of Change during start-up and shutdown
- Troubleshooting equipment and operational problems
- Root cause analysis of abnormal operating conditions
- Management of delays, additional work, and technical constraints
- Decision-making during unexpected or critical events
- Coordination between control room and field operating teams
- Verification of completed maintenance, inspection, and testing activities

PRACTICAL APPLICATION

Developing a response plan for a critical technical issue affecting shutdown or restart timing

DAY 05

Restart, Stabilization, and Continuous Improvement

- Planning and execution of safe facility restart
- Verification of equipment, system, documentation, and workforce readiness
- Review of maintenance, inspection, testing, and repair results
- Restart sequencing and coordination of equipment and systems

DAY 05 — CONTINUED

- Monitoring performance during the early stages of restart
- Managing initial operational issues following return to service
- Close-out of outstanding work and technical observations
- Preparation of commissioning, start-up, and shutdown completion reports
- Evaluation of performance against time, cost, quality, safety, and reliability objectives
- Lessons learned and continuous improvement opportunities
- Best practices for improving future commissioning, start-up, shutdown, and restart programs

FINAL WORKSHOP

Developing a complete Commissioning, Start-up & Shutdown Management Plan covering readiness, planning, risk management, execution, performance monitoring, safe shutdown, restart, handover, and operational stabilization

Register or Request More Information

Course page: <https://quest-training.com/courses/commissioning-start-up-shutdown-training-course>

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