Process Plant Commissioning, Startup, and Shutdown Training Course

30 Nov - 04 Dec 2026

Kuala Lumpur

5200 € (Per Person)

Ref: #ACE8888_197114

Course Introduction / Overview:

This course provides a comprehensive and systematic approach to the critical phases of a process plant's lifecycle: commissioning, start-up, and shutdown. These stages are pivotal for ensuring operational readiness, long-term reliability, and paramount safety. Mismanagement during these phases can lead to significant financial losses, project delays, and severe safety incidents. This program, offered by BIG BEN Training Center, is meticulously designed to equip participants with the essential knowledge and practical skills to manage these complex operations effectively. Drawing on industry best practices and established principles, such as those outlined by experts like M. D. Holloway in his foundational work "Process Plant Commissioning: A User's Guide," the curriculum delves into the entire process from mechanical completion to performance testing and final handover. Participants will learn to develop robust commissioning plans, execute flawless start-ups, and manage both planned and emergency shutdowns with precision. The training emphasizes a proactive approach to risk management, troubleshooting, and documentation, ensuring that assets are brought online safely and efficiently, and that turnarounds are executed to minimize downtime and maximize productivity, ultimately achieving operational excellence from day one.

Target Audience / This training course is suitable for:

- Commissioning and Start-Up Engineers.
- Plant and Operations Managers.
- Process Engineers and Technicians.
- Maintenance and Reliability Engineers.
- Project Managers and Project Engineers.
- Health, Safety, and Environment (HSE) Professionals.
- Control Room and Field Operators.
- Technical Supervisors and Team Leaders.

Target Sectors and Industries:

- Oil and Gas (Upstream, Midstream, and Downstream).
- Petrochemicals and Chemical Manufacturing.
- Power Generation (Conventional and Renewable).
- Pharmaceuticals and Biotechnology.
- Water and Wastewater Treatment Facilities.
- Mining and Minerals Processing.
- Heavy Manufacturing and Industrial Plants.
- Governmental bodies and regulatory agencies overseeing industrial operations.

Target Organizations Departments:

- Operations and Production.
- Engineering and Technical Services.
- Project Management and Execution.
- Maintenance and Asset Management.
- Health, Safety, and Environment (HSE).
- Quality Assurance and Quality Control (QA/QC).
- Process Safety Management.
- Planning and Scheduling.

Course Offerings:

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

- Develop comprehensive commissioning and start-up plans.
- Manage the transition from construction to pre-commissioning and commissioning.
- Implement robust safety procedures, including Lockout/Tagout (LOTO).
- Execute systematic checks and functional tests on plant equipment and systems.
- Lead a controlled and safe plant start-up sequence.
- Plan and manage scheduled plant shutdowns and turnarounds effectively.
- Respond to and manage emergency shutdown (ESD) scenarios.
- Conduct performance testing to verify plant operational parameters.
- Troubleshoot common issues during commissioning and start-up phases.
- Prepare and manage essential documentation for a smooth handover to operations.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be highly interactive, engaging, and practical, ensuring that participants can directly apply the learned concepts to their work environments. This course moves beyond theoretical lectures by incorporating a blended learning approach that includes detailed presentations, real-world case studies from various industries, and collaborative group workshops. Participants will engage in practical exercises focused on developing commissioning checklists, planning shutdown timelines, and conducting risk assessments for start-up procedures. Interactive sessions will encourage the sharing of experiences and challenges, fostering a rich learning environment where solutions are discussed and debated. The instructor will facilitate these discussions, providing expert feedback and guiding participants through complex problem-solving scenarios. This hands-on approach ensures a deep understanding of the subject matter and equips attendees with the confidence and competence to manage commissioning, start-up, and shutdown activities safely and efficiently upon their return to their respective organizations.

Course Agenda (Course Units):

Unit One: Fundamentals of Plant Commissioning and Project Management

- The Commissioning Process in the Project Lifecycle.
- Defining Key Terms: Pre-Commissioning, Commissioning, and Start-Up.
- Establishing Commissioning Objectives and Scope.
- The Role of the Commissioning Team and Stakeholder Management.
- Developing the Overall Commissioning Strategy and Philosophy.
- Integrating Commissioning into the Project Schedule.
- Safety Management Systems during Commissioning.
- Understanding and Managing Commissioning Risks.

Unit Two: Pre-Commissioning and Commissioning Execution Strategies

- Achieving Mechanical Completion and System Handover.
- Developing Detailed Pre-Commissioning and Commissioning Procedures.
- System and Subsystem Identification and Boundary Definition.
- Static and Dynamic Equipment Checks and Verifications.
- Piping and Vessel Cleaning, Flushing, and Pressure Testing.
- Instrument Loop Checking and Control System Verification.
- Electrical System Energization and Testing Procedures.
- Managing Punch Lists and Ensuring System Integrity.

Unit Three: Systematic Plant Start-Up and Initial Operations

- Developing the Plant Start-Up Sequence and Logic.
- Final Safety Reviews and Pre-Start-Up Audits (PSSR).
- Introduction of Process Fluids and Raw Materials.
- Managing Transient Operations and Process Stabilization.
- Ramp-Up to Design Capacity and Performance Monitoring.
- Troubleshooting Common Problems during Initial Start-Up.
- The Role of the Operations Team during the Start-Up Phase.
- Emergency Response Preparedness for Start-Up Scenarios.

Unit Four: Planning and Executing Plant Shutdowns and Turnarounds

- Types of Shutdowns: Planned, Unplanned, and Emergency.
- The Turnaround (TAR) Management Process and Lifecycle.
- Scope Development, Planning, and Scheduling for Shutdowns.
- Resource and Logistics Management for Turnaround Events.
- Executing Shutdown Activities Safely and Efficiently.
- Decontamination, Isolation, and Handover to Maintenance.
- Emergency Shutdown (ESD) Systems and Procedures.
- Post-Shutdown Review and Lessons Learned.

Unit Five: Performance Testing, Troubleshooting, and Final Handover

- Conducting Plant Performance and Acceptance Tests.
- Verifying Performance Guarantees and Operational Parameters.
- Advanced Troubleshooting Techniques for Process Plants.
- Managing and Resolving Post-Start-Up Issues.
- As-Built Documentation and Final Record Keeping.
- Developing the Final Commissioning Report.
- The Formal Handover Process to the Operations Team.
- Sustaining Operational Excellence Post-Handover.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

How can emerging digital technologies like AI and digital twins transform traditional commissioning and shutdown procedures to enhance predictive maintenance and operational safety?

What unique qualities does this course offer compared to other courses?

This course distinguishes itself by offering a holistic, lifecycle-based perspective on plant operations, seamlessly integrating the distinct yet interconnected phases of commissioning, start-up, and shutdown. Unlike programs that focus on a single phase, this training provides a comprehensive understanding of the critical transitions between them, emphasizing the strategic planning required to ensure continuity, safety, and efficiency. The curriculum is built upon a foundation of cross-industry best practices, presenting participants with a rich tapestry of case studies from sectors such as oil and gas, power generation, and pharmaceuticals. This approach allows for a deeper appreciation of universal principles while also addressing sector-specific challenges. Furthermore, the course places a significant emphasis on the human factor and safety culture, moving beyond mere procedural instruction to cultivate a mindset of proactive risk management and operational discipline. By focusing on the "why" behind the "how," it empowers participants not just to follow procedures, but to think critically, anticipate problems, and lead their teams with confidence through the most demanding stages of a plant's operational life.