Production Process Operations and Pipeline Pigging Management

20 September – 1 October 2027
Cape Town (South Africa)



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Introduction

This course provides an integrated understanding of production process operations and pipeline pigging activities within industrial environments. It combines the day-to-day responsibilities of process operators with the technical and operational requirements of pigging activities, helping participants understand how production stability, equipment performance, process monitoring, and pipeline maintenance function together within one operating system.

The course gives participants a clearer view of how field operations connect with safety requirements, standard operating procedures, technical follow-up, reporting practices, and coordination between operations, maintenance, and supervisory teams. It goes beyond presenting core concepts by also incorporating applied workplace scenarios and job-related exercises that help participants connect knowledge with actual operating conditions in industrial plants and pipeline systems.

Course Objectives

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

- Understand the role of the production process operator in industrial environments.
- Explain the relationship between production continuity, equipment reliability, and maintenance activities.
- Identify key process variables and monitor them during daily operations.
- Apply standard operating procedures during normal operation, start-up, and shutdown activities.
- Recognize abnormal operating conditions and take appropriate initial action.
- Understand the purpose and operational value of pipeline pigging activities.
- Distinguish between different pig types and select suitable options based on operating conditions.
- Identify the main components of pig launchers and receivers and understand their functions.
- Contribute to the planning and monitoring of pigging operations in coordination with relevant teams.
- Apply safety requirements during process operations and pigging activities.
- Prepare technical observations and operational reports accurately and clearly.
- Support continuous improvement through effective monitoring, documentation, and operational follow-up.



Course Outlines

Day 1: Introduction to Production Process Operations and the Industrial Environment

- Introduction to production process operations in industrial facilities.
- Understanding the operating cycle from process input to final output.
- Role of the operator in maintaining stable performance and production continuity.
- Relationship between safety, productivity, and operating discipline.
- Overview of industrial working environments and connected pipeline systems.
- Discussion of operating situations from real industrial environments.
- Exercise on identifying operator responsibilities during a work shift.

Day 2: Essential Equipment and Understanding the Operating System

- Introduction to the main equipment used in process and pipeline operations.
- Functions of pumps, valves, tanks, pipelines, and measuring devices.
- How equipment items interact within the operating system.
- Importance of understanding equipment functions for sound operating decisions.
- Tracing the operating path within a simplified production system.
- Discussion of situations related to the impact of equipment failure on performance.
- Applications based on reading basic operating diagrams.

Day 3: Process Variables and Performance Monitoring

- Understanding key variables such as pressure, temperature, flow, and level.
- Reading operating indicators and identifying normal operating limits.
- Relationship between variable changes and equipment performance.
- Importance of continuous monitoring in preventing failures and deviations.
- Analysis of different operating readings and their meaning.
- Recording technical observations in a clear and organized manner.
- Discussion of examples related to changes in operating performance.

Day 4: Standard Operating Procedures and Operating Discipline

- Concept of standard operating procedures and their importance in the workplace.
- Applying procedures during normal operation, start-up, and shutdown.
- Importance of following operating instructions and reducing performance variation.
- Role of communication between teams in ensuring correct execution of procedures.
- Reviewing an operating procedure and identifying its main steps.
- Simulating the start-up or shutdown of equipment within defined controls.
- Discussion of common operating errors and how to reduce them.



Day 5: Abnormal Conditions and Initial Operational Response

- Recognizing early signs of abnormal operating conditions.
- Causes of unstable readings and their effect on the system.
- Taking initial response actions within the limits of operating authority.
- Escalation procedures and communication with maintenance or control room personnel when needed.
- Review of operating situations involving high pressure, low flow, or temperature fluctuation.
- Identifying the correct initial action for each case.
- Documenting operating events and reporting observations professionally.

Day 6: Fundamentals of Pipeline Pigging

- Concept of pipeline pigging and its role in maintaining pipeline efficiency.
- Importance of pigging in improving flow and reducing deposits and internal problems.
- Difference between cleaning, maintenance, and inspection pigging activities.
- Identifying the situations that require a pigging operation within an operating program.
- Discussion of pigging applications in pipeline systems.
- Analysis of examples where pigging is required.
- Linking internal pipeline condition with the need for pigging activities.

Day 7: Pig Types and Launcher and Receiver Equipment

- Types of pigs based on design, material, and use.
- Selecting the suitable pig type according to line condition and operating requirements.
- Identification of launcher and receiver components.
- Functions of valves, launching chambers, receiving chambers, and associated isolation systems.
- Classification of pig types according to application.
- Review of an operating layout for a launcher and receiver unit and identification of its components.
- Discussion of challenges related to preparing a pigging operation before launching.

Day 8: Planning, Executing, and Monitoring Pigging Operations

- Steps involved in planning a successful pigging operation.
- Coordination between operations, maintenance, and supervisory teams before execution.
- Monitoring pig movement and the effect of pressure and flow on operation performance.
- Tracking operating indicators during pig travel inside the line.
- Preparing a simplified pigging operation plan.
- Reviewing operating data related to pig movement.
- Recording operational notes and execution results.



Day 9: Operating Safety and Handling Problems During Process and Pigging Activities

- Safety requirements during process operations and pigging activities.
- Isolation procedures, pressure control, and safe access to equipment.
- Identifying possible problems such as stuck pigs, leakage, or reduced flow.
- Initial handling of operating issues in line with approved procedures.
- Analysis of situations related to process hazards or pigging-related risks.
- Identifying risks and defining suitable control measures.
- Discussion of an operating case involving both a production problem and a pigging issue.

Day 10: Preventive Maintenance, Evaluation, and Continuous Improvement

- Relationship between preventive maintenance and operating readiness.
- Reviewing operating and pigging results to measure performance.
- Importance of technical records, shift handover, and accurate reporting.
- Role of continuous improvement in reducing shutdowns and improving system reliability.
- Preparing an operating report with technical observations and improvement recommendations.
- Comprehensive review of the full course content and how all areas connect together.
- Final evaluation based on integrated operating situations.

Why Attend This Course? Wins & Losses!

- Provides one connected understanding of production process operations and pipeline pigging activities.
- Strengthens the ability to monitor operating conditions and understand the impact of changing variables.
- Improves response capability when dealing with abnormal operating conditions.
- Develops professional understanding of pigging systems and launcher and receiver equipment.
- Supports safer work practices during both operations and maintenance-related activities.
- Improves coordination between operations, maintenance, and supervisory teams.
- Enhances the quality of documentation, reporting, and shift handover practices.
- Contributes to reducing downtime and improving production stability and pipeline performance.

Conclusion

This course has been developed as a complete 2-week training program that connects production process operations with pipeline pigging activities in a practical and well-structured way. Rather than treating the two topics as separate areas, the course presents them as linked parts of the same operating environment, where production, maintenance, reliability, and safety work together.

In this form, the course becomes more comprehensive and better balanced, with content progressing gradually from essential foundations to workplace application, from daily operations to equipment monitoring, problem handling, and performance improvement. This gives participants a stronger opportunity to build clear, connected knowledge that can be applied directly in real operating environments.

