5-Day Cement Industry Training Course
In

CEMENT MANUFACTURING PROCESSES PRODUCTION (SITE VISIT)

Cairo - Egypt, 03 – 07 Aug. 2026

COURSE LEVEL: INTERMEDIATE

COURSE OVERVIEW:

The manufacturing of cement is a high-volume industrial endeavor that requires the seamless integration of mechanical, thermal, and chemical processes. This course defines the production workflows that govern a modern plant, focusing on the optimization of each stage to ensure maximum throughput and efficiency. By studying the continuity of the production line, participants will understand how to manage the transition from raw quarry materials to high-grade clinker and finished cement.

The scope of this training is centered on the operational management of production assets, including the coordination of maintenance windows and the optimization of equipment uptime. It covers the technical nuances of the dry process, the management of intermediate stocks, and the logistical challenges of high-capacity manufacturing. Furthermore, the course addresses the role of production scheduling in meeting market demand while maintaining the stability of the kiln and grinding circuits.

Coverage includes the principles of process automation, the management of specific energy consumption, and the protocols for operational safety. Through a comprehensive site visit, participants will observe the real-time dynamics of a production environment, from the high-speed crushing units to the massive rotary kiln and the automated packing plant. Attendees will gain the practical insight required to lead production teams and drive operational excellence across the entire manufacturing facility.

COURSE OBJECTIVES:

After completion of this course, the participants will be able to:

- Define the sequential stages of the cement production process and their interdependencies.
- Identify key production metrics such as kiln reliability and mill utilization rates.
- Optimize the production schedule to balance energy costs and market demand.
- Explain the role of raw material homogenization in ensuring production stability.
- Monitor the efficiency of preheater and calciner operations for peak performance.
- Manage the production of clinker through precise burner and kiln control.
- Evaluate the performance of various cooling technologies for clinker production.
- Coordinate the operation of cement grinding circuits to maximize daily output.
- Implement production-based safety protocols for high-risk industrial tasks.
- Use data from the Distributed Control System (DCS) to identify production bottlenecks.

- Analyze the impact of fuel and raw material quality on total production volume.
- Prepare detailed production reports and downtime analysis for management.

TARGET AUDIENCE:

This course is designed for Production Supervisors, Shift Lead Engineers, Operations Managers, Plant Technicians, and Industrial Engineering Specialists.

TRAINING COURSE METHODOLOGY:

A highly interactive combination of lectures, discussion sessions, and case studies will be employed to maximize the transfer of information, knowledge, and experience. The course will be intensive, practical, and highly interactive. The sessions will start by raising the most relevant questions and motivating everybody to find the right answers. The attendants will also be encouraged to raise more of their questions and to share in developing the right answers using their analysis and experience. There will also be some indoor experiential activities to enhance the learning experience. Course material will be provided in PowerPoint, with necessary animations, learning videos, and general discussions.

The course participants shall be evaluated before, during, and at the end of the course.

COURSE CERTIFICATE:

National Consultant Centre for Training LLC (NCC) will issue an Attendance Certificate to all participants completing a minimum of 80% of the total attendance time requirement.

COURSE OUTLINE / COURSE CONTENT:

MODULE 1: PRODUCTION MANAGEMENT FUNDAMENTALS

- Introduction to the cement production lifecycle.
- Key Performance Indicators (KPIs) for modern manufacturing.
- The structure of the production department and staff roles.
- Understanding "Total Productive Maintenance" (TPM) in cement.
- The impact of production stability on overall plant profitability.

MODULE 2: QUARRY AND CRUSHING PRODUCTION

- Production planning for limestone extraction and hauling.
- Calculating crusher throughput and managing secondary crushing.
- Belt conveyor logistics: transporting massive volumes to the plant.
- Managing raw material stockpiles and inventory turnover.
- Dust suppression and safety in the primary production zone.

MODULE 3: RAW MILLING AND HOMOGENIZATION

- High-capacity raw grinding: Vertical Roller Mills vs. Ball Mills.
- Production impacts of raw meal fineness and moisture content.
- Operation of the blending silo: achieving chemical consistency.
- Managing power consumption in the raw milling department.

- Troubleshooting production interruptions in the feed system.

MODULE 4: PREHEATER AND CALCINER OPERATIONS

- Maximizing heat exchange efficiency in the preheater tower.
- Production benefits of high calcination degrees in the calciner.
- Managing the "induced draft" (ID) fan for optimal gas flow.
- Identifying and preventing coatings and blockages in cyclones.
- Fuel dosing and combustion control in the pre-calciner.

MODULE 5: THE ROTARY KILN: THE PRODUCTION ENGINE

- Kiln speed and its relationship to material filling degree.
- Managing the thermal load and the burning zone temperature.
- Production challenges: managing kiln rings and "snowmen."
- Main burner optimization for various fuel types.
- Monitoring kiln health through shell temperature and torque.

MODULE 6: CLINKER COOLING AND PRODUCTION QUALITY

- Grate cooler operations: balancing air flow and bed depth.
- Heat recovery for secondary and tertiary air streams.
- Impact of clinker temperature on downstream production.
- Maintenance of the clinker breaker and transport systems.
- Production logistics: clinker storage and dispatch options.

MODULE 7: CEMENT GRINDING PRODUCTION

- Production strategies for Ordinary Portland and Blended cements.
- Managing the "circulating load" for maximum mill throughput.
- Role of high-efficiency separators in production speed.
- Using grinding aids to increase production rates.
- Cement cooling and silo management for high-volume dispatch.

MODULE 8: PACKING AND DISPATCH LOGISTICS

- High-speed rotary packers and automatic palletizing systems.
- Bulk loading production: maximizing tanker turnaround.
- Managing the supply chain from the plant to the customer.
- Quality checks during the final production stage.
- Warehouse management and inventory control strategies.

MODULE 9: ENERGY EFFICIENCY IN PRODUCTION

- Calculating specific power consumption (kWh/ton).
- Heat balance and energy loss identification in the kiln.
- Production benefits of Waste Heat Recovery (WHR) systems.
- Reducing "false air" ingress to improve production efficiency.
- Managing production during peak and off-peak energy hours.

MODULE 10: PRODUCTION SAFETY AND ENVIRONMENT

- Safe work practices for high-temperature production areas.
- Managing dust and gas emissions during peak production.
- Emergency shutdown procedures and production recovery.
- Compliance with environmental permits and production limits.
- Risk assessment for mechanical and chemical production hazards.

MODULE 11: SITE VISIT: OBSERVING THE PRODUCTION FLOW

- Guided walkthrough of the plant from raw feed to packing.
- Observation of the Central Control Room (CCR) operations.
- Review of the daily production meeting and shift handover.
- Inspection of the kiln, mills, and dispatch facilities.
- Q and A session with the Production Manager on-site.

MODULE 12: COURSE WRAP-UP AND ASSESSMENT

- Case study: Identifying and solving a production bottleneck.
- Final exam on cement production processes.
- Group discussion on the future of "Smart Production."
- Closing remarks and course feedback.