مركز المستشار الوطني للتدريب
National Consultant Centre For Training
YOUR GATE TO HANDS-ON TRAINING

5-Day Cement Industry Training Course
In

CEMENT PLANT ASSETS REHABILITATION AND REVAMPING

Cairo - Egypt, 08 – 12 June 2026

COURSE LEVEL: ADVANCED

COURSE OVERVIEW:

Asset rehabilitation and revamping are critical strategies for extending the life of aging cement plants and upgrading them to modern standards of efficiency and environmental compliance. This course defines the technical processes of assessing, redesigning, and modernizing major equipment such as kilns, mills, and coolers. It provides a strategic roadmap for "Brownfield" projects where the goal is to maximize production capacity while utilizing existing infrastructure.

The scope of this training involves the evaluation of "Structural Integrity" and "Mechanical Residual Life" of assets that have been in operation for decades. It covers the technological upgrades required to convert old kilns to "Pre-calciner" systems and the revamping of ball mills with high-efficiency separators. Furthermore, the course addresses the integration of advanced automation and digital twins to bring legacy plants into the "Industry 4.0" era.

Coverage includes detailed modules on "Capacity Bottleneck Analysis," "Energy Efficiency Audits," and the replacement of obsolete control systems. Participants will explore the financial and technical "Feasibility Studies" required to justify a revamping project vs. a new "Greenfield" investment. Through the study of project management for complex retrofits, attendees will gain the expertise to lead modernization programs that reduce carbon footprints and restore the profitability of older cement assets.

COURSE OBJECTIVES:

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

- Conduct a "Condition Assessment" of aging cement plant assets.
- Identify "Production Bottlenecks" in the kiln and mill circuits.
- Evaluate the "Feasibility" of upgrading a kiln to pre-calciner technology.
- Design a revamping plan for "High-Efficiency Separators" in mills.
- Assess the "Structural Health" of reinforced concrete and steel structures.
- Implement "Modernization Upgrades" for clinker coolers (Grate to Cross-bar).
- Integrate "Alternative Fuel" feeding systems into existing kiln lines.
- Upgrade "Dust Collection" systems to meet new emission regulations.
- Replace obsolete "DCS/PLC" systems with modern automation platforms.
- Calculate the "Return on Investment" (ROI) for revamping projects.
- Manage "Complex Retrofit Projects" with minimal production downtime.

- Utilize "3D Scanning" and "Digital Twins" for revamping design.

TARGET AUDIENCE:

This course is intended for Project Managers, Plant Engineers, Technical Directors, and Operations Managers.

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: ASSET LIFECYCLE AND REVAMPING STRATEGY

- Identifying the "End-of-Life" signals for industrial equipment.
- Strategic options: Maintenance, Rehabilitation, or Replacement.
- The "Business Case" for revamping: Cost, Time, and Risk.
- Impact of "Environmental Regulations" on the need for upgrades.
- Overview of "Industry 4.0" opportunities in legacy plants.

MODULE 2: CONDITION ASSESSMENT AND DIAGNOSTICS

- Non-Destructive Testing (NDT) of kiln shells and mill trunnions.
- Structural auditing of silos and preheater towers.
- Energy and "Heat Balance" audits to identify losses.
- "Vibration and Stress" analysis of aging rotating machinery.
- Documenting the "Technical Baseline" before revamping.

MODULE 3: KILN SYSTEM MODERNIZATION

- Converting "Long Dry/Wet Kilns" to "Pre-calciner" systems.
- Upgrading the "Main Burner" for alternative fuel capability.
- Improving "Kiln Seals" to reduce false air and energy loss.
- Retrofitting "Preheater Stages" for better heat exchange.
- Modernizing the "Clinker Cooler" for higher heat recovery.

MODULE 4: MILLING CIRCUIT REHABILITATION

- Upgrading "Ball Mills" with high-efficiency separators.
- Conversion of "Open-circuit" to "Closed-circuit" grinding.
- Installation of "Pre-grinders" (Vertical Roller Mills or Roll Presses).
- Replacing "Internal Linings" and "Diaphragms" for better airflow.
- Optimizing the "Ball Charge" and "Power Distribution."

MODULE 5: EMISSIONS AND ENVIRONMENTAL UPGRADES

- Replacing "Electrostatic Precipitators" (ESP) with "Bag Filters."
- Installing "SNCR/SCR" systems for NOx reduction.
- Upgrading "Gas Cooling Towers" for better filter performance.
- Implementing "Bypass Systems" for volatile management.
- Noise reduction and "Fugitive Dust" control measures.

MODULE 6: ELECTRICAL AND AUTOMATION REVAMPING

- Migration from obsolete "PLCs" to "Distributed Control Systems" (DCS).
- Upgrading "Medium Voltage" (MV) drives and motors.
- Implementing "Expert Systems" for kiln and mill optimization.
- Replacing "Old Switchgear" and "Transformer" assets.
- Cyber-security considerations for upgraded plant networks.

MODULE 7: STRUCTURAL REPAIR AND REINFORCEMENT

- Techniques for "Concrete Jacketing" and "Carbon Fiber" wrapping.
- Repairing "Corroded Rebar" in industrial structures.
- Strengthening "Kiln Foundations" and "Pier Blocks."
- Structural upgrades for "Seismic Compliance" (SBC).
- Refurbishment of "Steel Conveyor Galleries" and "Silo Cones."

MODULE 8: ALTERNATIVE FUEL (AF) INTEGRATION

- Designing "Storage and Feeding" systems for RDF/Tires.
- Modifying the "Calciner" for increased AF residence time.
- Impact of AF on the "Existing Pyro-process" balance.
- Safety systems for AF handling (Fire and Explosion protection).
- Pilot testing and "Trial Runs" for new fuel types.

MODULE 9: PROJECT MANAGEMENT FOR REVAMPS

- Managing "Simultaneous Operations" (SIMOPS) during retrofits.
- Use of "3D Laser Scanning" for precise brownfield design.
- "Modular Construction" to minimize shutdown time.
- Risk management: "Unforeseen Conditions" in old plants.
- Commissioning and "Handover" of modernized assets.

MODULE 10: CAPACITY UPGRADE AND ROI EVALUATION

- Calculating the "Incremental Clinker" value from revamping.

- Payback period analysis for "Energy Efficiency" investments.
- Sustainability reporting: CO2 reduction per ton.
- Post-revamp "Performance Guarantee" testing.
- Course wrap-up and final technical project presentation.