MAWA EVENTS

Address: No. 857, Block A2. Leisure Commerce Square - No 9., 46150 Petaling Jaya, Selangor, Malaysia

Phone: +601116373203 | **Email:** info@mawaevents.net

TROUBLESHOOTING OF RAW MILLS AND KILNS

""Optimizing Cement Plant Operations through Practical Diagnosis and Process Solutions""

Schedule

Date	Venue	Fees (Face-to-Face)
04 – 08 Oct 2026	Manama, Bahrain	USD 3495 per delegate

► **Available delivery methods:** Face-to-Face & Online Training

Introduction

Raw mills and kilns are the backbone of cement manufacturing, directly affecting production efficiency, energy consumption, and product quality. Operational issues in these systems can lead to serious disruptions, increased maintenance costs, and reduced output. Effective troubleshooting and process optimization are essential to maintaining high performance, reducing downtime, and ensuring operational stability.

This intensive 5-day course provides a hands-on and technical approach to troubleshooting mechanical, process, and control problems in raw mills (vertical and ball) and rotary kilns. Participants will explore real plant scenarios, failure modes, performance analysis, and corrective actions—enabling them to identify root causes and implement solutions efficiently.

Objectives

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

- Understand raw mill and kiln operating principles, components, and control loops
- Identify mechanical, hydraulic, and process-related problems
- Diagnose abnormal process behavior and interpret operational data
- Apply corrective actions for common failures in grinding and pyroprocessing units
- Improve reliability, energy efficiency, and clinker quality through targeted interventions

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Why Attend

- Boost plant availability by reducing mill and kiln downtime
- Develop diagnostic skills to prevent major equipment failures
- Optimize process conditions for energy and quality improvements
- Apply structured troubleshooting techniques in real-world scenarios
- Strengthen coordination between operations, maintenance, and process departments

Target Audience

This program is designed for:

- Process Engineers and Kiln Operators
- Mechanical and Maintenance Engineers
- Control and Instrumentation Technicians
- Production Supervisors and Shift Leaders
- Cement Plant Technical Staff involved in operations or optimization

Individual Benefits

Key competencies that will be developed include:

- Troubleshooting procedures for vertical and ball raw mills
- Kiln process stability analysis and control adjustments
- Root cause identification of common failures (e.g., kiln runaways, vibrations)
- Preventive maintenance strategies for grinding and pyroprocessing equipment
- Interpretation of heat and mass balances, residue control, and oxygen profiles

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved reliability and performance of mills and kilns
- Reduced energy consumption and operational costs
- Fewer stoppages and faster diagnosis during breakdowns
- Better product consistency and reduced clinker variations
- Stronger collaboration between plant operations and maintenance units

Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- Strategy Briefings – Operating parameters, design tolerances, and control strategies
- Case Studies – Common fault scenarios and successful troubleshooting actions
- Workshops – Failure mode analysis, root cause mapping, and process simulations
- Peer Exchange – Experience sharing from cement plant professionals
- Tools – Process log templates, inspection checklists, and performance calculators

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Course Outline

DETAILED 5-DAY COURSE OUTLINE

Training Hours: 07:30 AM – 03:30 PM **Daily Format:** 3–4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1: Raw Mill Fundamentals and Problem Areas

- Module 1: Overview of Raw Mill Types and Operations (07:30 – 09:30) • Vertical vs. ball mills: design and performance differences • Feed materials, moisture control, and drying mechanisms
- Module 2: Common Failures in Raw Mill Operation (09:45 – 11:15) • Overheating, grinding inefficiency, and residue instability • Drive and separator system issues
- Module 3: Hydraulic and Mechanical Troubleshooting (11:30 – 01:00) • Hydraulic pressure loss, vibration, and bearing issues
- Module 4: Workshop – Diagnosing Mill Vibration (02:00 – 03:30) • Root cause analysis of abnormal mill noise and vibration

Day 2: Mill Optimization and Control Loops

- Module 5: Process Variables and Control Strategy (07:30 – 09:30) • Differential pressure, separator speed, and feed rate logic
- Module 6: Optimization of Grinding Performance (09:45 – 11:15) • Improving output, reducing rejects, and power consumption
- Module 7: Preventive Maintenance Practices (11:30 – 01:00) • Inspection points, lubrication, and wear pattern monitoring
- Module 8: Workshop – Mill Process Audit Simulation (02:00 – 03:30) • Analyzing mill logs and proposing improvements

Day 3: Kiln Systems – Operation and Monitoring

- Module 9: Rotary Kiln Process Overview (07:30 – 09:30) • Heat transfer zones, clinker formation, and process sensitivity
- Module 10: Abnormal Kiln Conditions and Causes (09:45 – 11:15) • High free lime, rings, snowman formation, and flame instability
- Module 11: Kiln Shell and Refractory Issues (11:30 – 01:00) • Hot spots, refractory damage, and ovality monitoring
- Module 12: Workshop – Flame and Coating Analysis (02:00 – 03:30) • Reading kiln profiles and adjusting burner settings

Day 4: Kiln Troubleshooting and Recovery Actions

- Module 13: Kiln Drive and Alignment Problems (07:30 – 09:30) • Girth gear, pinion wear, and misalignment indicators
- Module 14: Kiln Control Loop and Automation (09:45 – 11:15) • Temperature control, oxygen profiles, and clinker quality metrics
- Module 15: Emergency Shutdown and Restart Procedures (11:30 – 01:00) • Controlling cooldown, purge cycles, and ramp-up strategy
- Module 16: Workshop – Kiln Interlock Simulation (02:00 – 03:30) • Designing response plans for abnormal kiln behavior

Day 5: Integration, Process Stability and Final Audit

- Module 17: Heat and Mass Balance Interpretation (07:30 – 09:30) • Fuel input vs. clinker output evaluation • Efficiency indicators and benchmarking
- Module 18: Root Cause Analysis for Process Disturbances (09:45 – 11:15) • Troubleshooting using 5 Whys, Ishikawa, and FMEA
- Module 19: Course Wrap-Up – Integrated Process Review (11:30 – 01:00) • Sample mill and kiln performance review report
- Module 20: Final Feedback and Certification (02:00 – 03:30) • Action planning, peer exchange, and certificate distribution

Certification

Participants will receive a Certificate of Completion in Troubleshooting of Raw Mills and Kilns, validating their capability to identify, analyze, and resolve complex mechanical and process issues in cement manufacturing operations.

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Why Choose MAWA Events

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