



# Industrial Refractory Lifecycle Management Course

27 – 31 December 2026  
Langkawi

## Industrial Refractory Lifecycle Management Course

**Ref:** 553\_142873 **Date:** 27 – 31 December 2026 **Location:** Langkawi **Fees:** 8000 Euro

### Overview

Industrial Refractory Lifecycle Management Course is a five-day intermediate course for refractory, maintenance, reliability, inspection, project, shutdown, contracting, and operations teams who leave with a Refractory Lifecycle Management Plan. Participants connect service conditions, lining design, material selection, anchors, joints, installation controls, dry-out, inspection, failure analysis, maintenance, and repair. The course converts isolated technical activities into controlled lifecycle decisions for high-temperature equipment. Agile Leaders Training Center presents industrial refractory lifecycle management through traceable engineering and quality controls.

### Who Should Attend

- Teams responsible for refractory lining design and material selection
- Functions planning shutdowns, installation work, maintenance, and reliability
- Personnel inspecting refractory materials, workmanship, and in-service condition
- Groups coordinating contractors, applicators, testing, and repair activities
- Operations teams managing furnaces, kilns, reactors, boilers, and hot-process equipment

The course assumes participants can interpret equipment drawings, material data sheets, inspection records, and work procedures, and it leaves out proprietary product approval, detailed vessel design, and certification examination preparation.

### Departments and Industries

The course supports departments and industries responsible for refractory-lined equipment performance and maintenance.

- Maintenance, reliability, inspection, and asset integrity
- Mechanical engineering, projects, shutdowns, and quality management
- Refining, petrochemicals, metals, cement, glass, and power generation
- Industrial furnaces, boilers, kilns, reactors, stacks, and transfer systems
- Contracting, refractory application, testing, and technical services

### Learning Objectives

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



- Analyze service conditions and define a refractory design basis
- Compare refractory materials, lining configurations, anchors, and joints
- Apply installation, curing, dry-out, and quality-control requirements
- Use inspection and testing evidence to classify lining condition
- Diagnose failure mechanisms and prioritize maintenance responses
- Build a Refractory Lifecycle Management Plan

## **Course Agenda**

### **Day 1: Service Conditions and Design Basis**

- Hot-Process Duty and Exposure Profile
- Thermal, Mechanical, Chemical, and Abrasion Load Matrix
- Refractory Function and Performance Requirement Map
- Lining Configuration and Thickness Decision Guide
- Refractory Design Basis Document

### **Day 2: Materials, Anchors, and Joints**

- Refractory Material Property Selection Matrix
- Monolithic, Brick, and Fiber System Comparison
- Anchor Material, Pattern, and Welding Control
- Expansion Joint and Interface Detail Checklist
- Material Qualification and Storage Control Plan

### **Day 3: Installation and Dry-Out Control**

- Installation Inspection and Test Plan
- Mixing, Water Addition, and Workability Record
- Casting, Gunning, Ramming, and Brickwork Method Controls
- Curing, Venting, and Dry-Out Schedule
- As-Installed Testing and Quality Dossier

### **Day 4: Inspection, Failure, and Repair**

- In-Service Refractory Condition Survey
- Defect Classification and Damage Map
- Thermal Spalling, Erosion, and Chemical Attack Analysis
- API Standard 982 Inspection and Assessment Path
- Repair Scope and Maintenance Priority Matrix



## Day 5: Refractory Lifecycle Practice

- Exercise: Build a Service Duty and Design Basis
- Exercise: Select a Lining, Anchor, and Joint System
- Exercise: Review Installation and Dry-Out Records
- Exercise: Diagnose Damage and Define a Repair Scope
- Capstone Exercise: Refractory Lifecycle Management Plan

## Practical Exercises

The course uses suggested activities to connect refractory engineering decisions with field controls and maintenance evidence.

- Suggested activity: define service loads, lining functions, configuration constraints, and acceptance criteria for a furnace or kiln scenario.
- Suggested activity: compare material properties, anchoring, joints, storage, mixing, and installation controls for a selected lining system.
- Suggested activity: classify cracking, spalling, erosion, chemical attack, and anchorage damage from inspection evidence.
- Suggested activity: integrate design basis, quality records, dry-out, condition findings, maintenance, and repair actions in a Refractory Lifecycle Management Plan.

## FAQs

### Who suits the industrial refractory lifecycle management course and what does it assume?

It suits teams designing, installing, inspecting, operating, maintaining, or repairing refractory-lined equipment and assumes they can interpret equipment drawings, material data, work procedures, and inspection records.

### How does refractory lifecycle management differ from refractory materials training?

Refractory lifecycle management links material behavior to design, installation, quality control, dry-out, condition assessment, maintenance, and repair, while refractory materials training concentrates on composition, properties, manufacture, and laboratory characterization.

### How are refractory lining materials selected?

Refractory lining materials are selected by matching temperature, thermal cycling, mechanical load, abrasion, chemical exposure, installation method, geometry, anchoring, joints, maintainability, and required performance.



## **What should a refractory installation inspection plan control?**

A refractory installation inspection plan should control material identification, storage, qualification, substrate condition, anchors, mixing, water addition, placement, joints, curing, samples, testing, repairs, dry-out, and records.

## **How is refractory damage assessed for repair?**

Refractory damage is assessed by mapping location and extent, identifying the mechanism, reviewing service and installation history, checking anchors and interfaces, judging functional impact, and defining an appropriate repair scope.

## **Conclusion**

Participants take back a Refractory Lifecycle Management Plan linking service duty, design basis, materials, anchors, joints, installation, dry-out, inspection, failure analysis, maintenance, and repair. It changes disconnected records into traceable acceptance and intervention decisions. The plan supports coordinated equipment care without replacing detailed engineering, specialist testing, or site authorization.