Advanced Insulation and Refractory Materials and Work Execution Course

Venue Information

Venue: London UK

Place:

Start Date: 2026-11-24

End Date: 2026-11-28

Course Details

Net Fee: £4750.00

Duration: 1 Week

Category ID: CACETC

Course Code: CACETC-63

Syllabus

Course Syllabus

Course Description

This training course is designed to give a detailed discussion of the subject of refractory technology as related to high-temperature requirements for different industries. The course will emphasize on the practical aspects of refractory selection, installation, and repair techniques in a number of industrial applications. In order for the course material to suit participants with or without formal training and/or scientific background in the subject, the course will be delivered such that most of technical terms and concepts will be clarified by both scientific definition and examples. The course material will be prepared so that easy follow-up of the lectures and subject in general is achieved. The course is divided into nine main areas: Principles of hot processes and their requirements, Properties of refractory materials (mechanical, thermal and corrosion resistance), Refractory compositions and structures and their

Course Objective

- To familiarize participants with the main concepts and technical terms of industrial refractory materials.
- To explain to participants the different types of hot processes and their requirements.
- To explain to participants the different types of industrial refractories
- To explain to participants how to relate process requirements to refractory properties (mechanical, thermal, electrical and chemical/corrosion).
- To provide participants with the basic knowledge and skills for selection of different refractory materials based on process requirements.
- To introduce participants to different manufacturing methods applied to refractory materials and their installation techniques.
- To explain to participants how refractory materials respond to different service conditions and issues related to their quality and reliability.

Who Should attend?

Design engineers, process engineers, maintenance engineers and personnel, refractory supervisors and refractory personnel, product development engineers and managers, mechanical engineers, metallurgists, Inspection people, quality control engineers and technicians and people involved buying and installing refractories.

Course Outline

Introduction

- Technical Perspectives
- Historical Perspectives

Foundations of Hot Processing

- Computational Quantities and Conversion Factors
- Hot Processing Temperatures and Their Measurement
- Process Chemistry and Environments

Foundations of Refractory Application

- Contemporary Hot Processing Equipment
- Continuous Types – Vertical
- Continuous Types – Horizontal
- Batch Types – Circular
- Batch Types – Rectangular
- Other Refractory Applications

Principles of Thermal Stability

- Melting Points of Substances
- Melting of Oxide Mixtures

- Gibbs Free Energies
- Refractory Alteration by Oxidation-Reduction

Principles of Corrosion Resistance: Hot Liquids

- Liquid Penetration and Dissolution-Corrosion
- Factors Governing Penetration
- Factors Governing Dissolution

Principles of Corrosion Resistance: Hot Gases and Dusts

- Atmospheric Penetration and Condensation
- Dusts: Deposition and Abrasion
- Conclusion: Principles of Working Refractory Construction

The Working Refractory Product Line

- Classification of Working Refractories
- Maximum Service Temperatures
- Maximum Service Temperatures
- Corrosion Resistance
- Qualifications for Working Refractory Service

The Insulating Refractory Product Line

- Applications and Application Criteria
- Classification of Insulating Refractories
- Physical Form and Installation of Linings

Refractory Practice

- Refractory Qualifications in Review
- Refractory Practice from Qualifications
- Catalogue of Refractory Practice

Design Properties: Thermal and Electrical

- Reversible Thermal Expansion
- Permanent Deformation
- Specific Heat
- Thermal Conductivity
- Electrical Conductivity

Design Properties: Mechanical

- Elasticity and Plasticity
- Mechanical Characterization of Refractories
- Illustrative Mechanical Properties of Refractories

- Forming of Masonry and Special Shapes
- Agglomeration for Sintered Grain
- Drying and Firing of Refractories
- Quality Assurance in Manufacture

Refractory Installation and Maintenance

- Structural Engineering
- Masonry Construction
- Installation of Monolithics

Course Conclusion