

COURSE OVERVIEW FE0853

Refractory Technology & Applications in Steel Making Plants

Course Title

Refractory Technology & Applications in Steel Making Plants

Course Reference

FE0853

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs



Course Date/Venue

Session(s)	Date	Venue
1	May 31-June 04, 2026	Crowne Meeting Room, Crowne Plaza Al Khobar, an IHG Hotel, Al Khobar, KSA
2	August 30-September 03, 2026	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE
3	December 13-17, 2026	Meeting Plus 9, City Centre Rotana, Doha Qatar

Course Description



This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.



Refractory technology has changed significantly in recent years as new monolithic materials have replaced brick in many industries. Vibratable and pumpable castables with superior properties, as well as significantly improved brick, ceramic fiber products, and other items, make optimum refractory selection complex. Advanced construction methods must be utilized if these improved materials are to achieve their maximum service life.



This course is designed to provide participants with a detailed and up-to-date overview of refractory technology and applications in steel making plants. It covers the identification and classification of various types of refractory; the thermal, chemical and mechanical properties of refractory; the refractory application in steel making plant; the refractory behavior in SMP working condition; the special shapes of refractory used in SMP; and the refractory installation and thermal stability of refractory in SMP.

During this interactive course, participants will learn the refractory with slag contact in EAF & LRF; the criteria of refractory selection in SMP; the contamination of steel by refractory; the refractory manufacturing and reduction decomposition of MgO and SiO₂; and the factors affecting corrosion resistance including quality and cost-control.

Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain an in-depth knowledge on refractory technology and application in steel making plants
- Identify and classify the various types of refractory
- Discuss the thermal, chemical and mechanical properties of refractory
- Carryout refractory application in steel making plant and describe the refractory behavior in SMP working condition
- Recognize the special shapes of refractory used in SMP and apply refractory installation
- Describe the thermal stability of refractory in SMP including the refractory attack with slag contact in EAF and LRF
- Identify the criteria of refractory selection in SMP and the contamination of steel by refractory
- Apply refractory manufacturing and reduction-decomposition of MgO and SiO₂
- Identify the factors affecting corrosion resistance including the quality and cost-control

Exclusive Smart Training Kit - H-STK®



*Participants of this course will receive the exclusive “Haward Smart Training Kit” (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of refractory technology and applications in steel making plants for those who are responsible for refractory material design, application, installation and inspection.

Course Fee

Al Khobar	US\$ 10,000 per Delegate + VAT . This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Dubai	US\$ 10,000 per Delegate + VAT . This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Doha	US\$ 10,500 per Delegate. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Haward's certificates are accredited by the following international accreditation organizations: -

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British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

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The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:



Mr. Michael Linck, MBA, BBA, is a Senior Piping & Mechanical Engineer with over 30 years of practical experience in the Oil, Gas, Petrochemical and Power industries. His expertise covers Refractory Inspection, ASME Post Construction Code, Inspection Planning, Fitness-for-Service, Damage Mechanisms & Repair of Vessels, Tanks, Piping & Process Equipment, Pipeline Pigging, Pipeline Integrity Assessment, Corrosion Monitoring, Control, Prevention and Inspection, Screw Compressors, Building & Facilities Maintenance Management, Maintenance Planning, Maintenance Auditing & Benchmarking, Risk Management Program (RMP), Reliability, Availability & Maintability (RAM), Material Cataloguing, planning and implementation of small to large boiler projects, insulation, scaffolding, installation, operation and inspection of steel, cement, petrochemical and power industries, both new installations and aftermarket service projects. Currently, he is the VP of Operations for Refractory Repair Services as well as the President of LINCK REFRACTORY INTERNATIONAL SERVICES, taking full charge of all refractory and mechanical maintenance related operations.

Earlier in his career life, Mr. Linck held numerous significant and challenging positions as the **Commissioning Specialist, Maintenance Specialist, Contract Specialist, Site Manager, General Manager, Project Manager, Branch Manager, Construction Manager, Manager and Contract Site Service Representative** in several international companies such as **Foster Wheeler, NV Gouda Vuurvast, Insultec Ltd., National Refractories Clay Alumina Specialties, Thermo Tech, Turnaround Maintenance Inc., Solar Industries and Anco Industries.**

Mr. Linck has a **Master's and Bachelor's degree in Engineering** from the **North Texas University and University of Dallas** respectively. He is **certified as an API 936 Refractory Personnel, a Certified API 982 Refractory Inspector** early in 2003 as well as holds or has held state contracting licenses related to heavy construction and engineering in West Virginia, Mississippi, Louisiana, Oklahoma and Arizona

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures
- 20% Practical Workshops & Work Presentations
- 30% Hands-on Practical Exercises & Case Studies
- 20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.



Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

0730 – 0800	<i>Registration & Coffee</i>
0800 – 0815	<i>Welcome & Introduction</i>
0815 – 0830	PRE-TEST
0830 – 0930	Introduction
0930 – 0945	<i>Break</i>
0945 – 1045	Refractory Concepts Identification
1045 – 1200	Refractory Classification & Types of Refractories
1200 – 1215	<i>Break</i>
1215 – 1300	Refractory Properties (Thermal Properties)
1300 – 1420	Refractory Properties (Chemical & Mechanical)
1420 – 1430	Recap
1430	<i>Lunch & End of Day One</i>

Day 2

0730 – 0930	Refractory Application in Steel Making Plant (SMP)
0930 – 0945	<i>Break</i>
0945 – 1045	Refractory Behaviour in SMP Working Condition
1045 – 1200	Special Shapes of Refractory Used in SMP
1200 – 1215	<i>Break</i>
1215 – 1420	Refractory Installation (Practice & Theory)
1420 – 1430	Recap
1430	<i>Lunch & End of Day Two</i>

Day 3

0730 – 0930	Thermal Stability of Refractory in SMP
0930 – 0945	<i>Break</i>
0945 – 1045	Thermal Stability of Refractory in SMP (cont'd)
1045 – 1200	Refractory Attack with Slag Contact in EAF
1200 – 1215	<i>Break</i>
1215 – 1420	Refractory Attack with Slag Contact in LRF
1420 – 1430	Recap
1430	<i>Lunch & End of Day Three</i>

Day 4

0730 – 0930	Criteria of Refractory Selection in SMP
0930 – 0945	<i>Break</i>
0945 – 1045	Criteria of Refractory Selection in SMP (cont'd)
1045 – 1200	Contamination of Steel by Refractory in Tundish
1200 – 1215	<i>Break</i>
1215 – 1420	Notes on Refractory Manufacturing
1420 – 1430	Recap
1430	<i>Lunch & End of Day Four</i>

Day 5

0730 – 0930	<i>Reduction-Decomposition of MgO and SiO₂</i>
0930 – 0945	<i>Break</i>
0945 – 1045	<i>Factors Affecting on Corrosion Resistance</i>
1045 – 1200	<i>Quality & Cost Control</i>
1200 – 1215	<i>Break</i>
1215 – 1300	<i>Free Discussion</i>
1300 – 1400	<i>Course Conclusion</i>
1400 – 1415	POST-TEST
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-



Course Coordinator

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