



MODERN ELECTRIC FURNACE STEELMAKING

A PRACTICAL TRAINING SEMINAR



ABOUT THE PROGRAM

This course covers safety, the basics of electrical and mechanical features of electric arc furnaces, refractories, and the role of raw materials. The program will explore the fundamentals of electric furnace steelmaking technology, the use of energy inputs, the steelmaking process, electrodes and environmental concerns for electric steelmaking. Attendees will also have the opportunity to learn how their operation compares to industry benchmarks, and to hear about the latest developing technologies. The midpoint of the conference includes a plant tour followed by an expert roundtable and reception with an open forum to discuss questions and challenges. Attendees with a focus in specialty steelmaking will have the opportunity to attend a special breakout session to discuss decarburization, degassing and desulfurization, various refining processes, equipment and operations, an overview of ingot casting, and practical aspects of bottom pouring.

2-6 FEBRUARY 2015
CLEVELAND, OHIO, USA
WYNDHAM CLEVELAND AT PLAYHOUSE SQUARE

SCHEDULE OF EVENTS

MONDAY, 2 FEBRUARY 2015

4-6 p.m.

Registration

5-6 p.m.

Welcome Reception

TUESDAY, 3 FEBRUARY 2015

7 a.m.

Registration and Continental Breakfast

8 a.m.

CHARTER STEEL - CLEVELAND

STEVE SPETH, CHARTER STEEL

8:30 a.m.

SAFETY - PAST, PRESENT, FUTURE

JOHN PANCONI, BISCO REFRACTORIES INC.

MORE INFORMATION AT
AIST.ORG/TECHNOLOGYTRAINING

9:30 a.m.

Break

9:40 a.m.

CHEMISTRY OF EAF STEELMAKING

LARRY HEASLIP, INTERFLOW TECHSERV INC.

The chemistry of steelmaking, with particular reference to the electric arc furnace (EAF), is presented in a manner that is designed to interest, involve, and inform both those persons having little or no background or previous training in the chemical metallurgy of steel production, as well as those persons who do have such background. The topics covered will relate to the interactions between the thermal behavior, physical behavior, and chemical behavior of liquid steel and slag during the melting, alloying, and removal of undesirable elements from steel, with the goal of improved understanding of the practices and procedures that are undertaken in an EAF shop to produce heats of quality liquid steel ready for casting.

10:50 a.m.

Break

11 a.m.

CHEMISTRY OF EAF STEELMAKING (CONT'D)

LARRY HEASLIP, INTERFLOW TECHSERV INC.

Noon

Lunch

1 p.m.

CHEMISTRY OF EAF STEELMAKING (CONT'D)

LARRY HEASLIP, INTERFLOW TECHSERV INC.

2:15 p.m.

Break

2:30 p.m.

CHEMISTRY OF EAF STEELMAKING (CONT'D)

LARRY HEASLIP, INTERFLOW TECHSERV INC.

3:30 p.m.

Break

3:45 p.m.

CHEMICAL AND ELECTRICAL ENERGY INPUTS AND EAF PERFORMANCE

SAM MATSON, CMC AMERICAS

The performance of the EAF depends on the timing and coordination of both electrical and chemical energy. Methods will be illustrated to improve the coordination.

WEDNESDAY, 4 FEBRUARY 2015

7 a.m.

Registration and Continental Breakfast

8 a.m.

PART I: EAF DESIGNS AND OPERATIONS

JEREMY JONES, CIX LLC

9 a.m.

Break

9:10 a.m.

PART II: EAF TECHNOLOGIES – THE PATH TO EAF OPTIMIZATION

JEREMY JONES, CIX LLC

10:20 a.m.

Break

10:30 a.m.

LADLE METALLURGY FURNACE – LMF

HELMUT OLTMANN, NUCOR STEEL-BERKELEY

11:30 a.m.

Lunch

Noon

TOUR OF CHARTER STEEL – CLEVELAND



4:30 p.m.

RECEPTION AND ROUNDTABLE DISCUSSION

HARRIET DUTKA, MAGNESITA REFRACTORIES; EUGENE PRETORIUS, NUCOR STEEL-BERKELEY; JEREMY JONES, CIX LLC; AND SAM MATSON, CMC AMERICAS

THURSDAY, 5 FEBRUARY 2015

7 a.m.

Registration and Continental Breakfast

8 a.m.

ELECTRICAL ENGINEERING 101

DENNIS KENEMUTH, GRAFTECH INTERNATIONAL LTD.

9 a.m.

Break

MORE INFORMATION AT
AIST.ORG/TECHNOLOGYTRAINING

9:15 a.m.

IMPORTANCE OF SCRAP AND RESIDUALS

DENNIS RODAL, ELG HANIEL METALS CORP.

Scrap is the key raw material in EAF steelmaking, and controlling residuals is essential to making quality steel.

10:15 a.m.

Break

10:30 a.m.

GAS/CARBON INJECTION SYSTEMS

MIKE GRANT, AIR LIQUIDE

This lecture will contain a practical scope describing the use of oxygen and gaseous fuels in the electric arc furnace. The importance and use of carbon injection will also be presented. The presentation will include the latest technologies of EAF burner, oxygen and carbon injection systems, as well as the general theory and strategy of their use. Implications of direct reduced iron (DRI) charging on industrial gas use will be discussed. A strong emphasis on the safe use of oxygen will be made.

Noon

Lunch

1 p.m.

EAF INDUSTRY PERSPECTIVE – PAST AND FUTURE

RAYMOND MONROE, STEEL FOUNDERS' SOCIETY OF AMERICA

Economic conditions have had a major impact on the capital investment requirements and demand for steel products. Understanding the impact of macro-economic policies and their legacy effects on the steel industry allows us to know how we got here and where we might be going in market demand for steel products and the development of EAF operations.

2:15 p.m.

Break

2:30 p.m.

THE BASICS OF ARC FURNACE REGULATION SYSTEM – HARMONICS, FLICKER, ELECTRODE CONSUMPTION AND POWER OPTIMIZATION

REINZI SANTIAGO, TENOVA CORE

This session will discuss the basic electrical control concept and major components of an electric arc furnace regulation system. It will give an emphasis on the system's performance as it relates to reduction of electrodes and energy consumption, harmonics and flicker.

3:45 p.m.

Break

4 p.m.

TAP-TO-CAST OPERATIONS

HARRIET DUTKA, MAGNESITA REFRACTORIES

FRIDAY, 6 FEBRUARY 2015

7 a.m.

Continental Breakfast

8 a.m.

EAF: GRAPHITE ELECTRODE MANUFACTURE AND USE

JERRY CASTLEMAN, SHOWA DENKO CARBON INC.

9 a.m.

EAF: OVERVIEW OF THE REFRACTORY TECHNOLOGY FROM THE MINI-MILL APPLICATION PERSPECTIVE

TOMAS RICHTER, NORTH AMERICAN REFRACTORIES CO.

The chemical, physical and application attributes will be presented for the refractories which are used during the electric arc furnace steelmaking process. The proper refractory selection will be summarized in relation to the operational and metallurgical parameters of the EAF process.

10 a.m.

Break

10:15 a.m.

ENVIRONMENTAL CONSIDERATIONS

DOUG ZULIANI, TENOVA GOODFELLOW

Noon

Conference Adjourn

REGISTRATION FEES

Advance registration by 19 December 2014: Member US\$1,095, Non-member US\$1,310. Registration fee after 19 December 2014: Member US\$1,195, Non-member US\$1,410. Registration fees include Monday welcome reception, Tuesday through Friday continental breakfast, Tuesday through Thursday lunch, continuous breaks, Wednesday reception, plant tour and a course workbook or flash drive including presentations.

MORE INFORMATION AT
AIST.ORG/TECHNOLOGYTRAINING

REGISTER NOW