

About the Program

Developed and presented with the talented resources of the Continuous Casting Technology Committee, this informative program targets the heart of steelmaking: the frontline operator. The key focus of the program is to discuss the practical aspects of casting slabs, billets and blooms, while introducing the theoretical concepts. By achieving the proper teaching balance, attendee understanding of the process is ensured without the need for a technical background. This course is a must for the progressive, informed and educated steelmaker of the future!

Who Should Attend

This training seminar has been designed for the frontline casting employee. It would also be beneficial to individuals newly assigned to work in the casting area, suppliers of casting consumables and services, as well as others wishing to review major variables that impact the quality of as-cast products. The presentations will be geared toward general casting principles, with all machine types represented.

Registration Fees

Advance registration by 5 September 2023: Member US\$945, Non-member US\$1,195. Registration fee after 5 September 2023: Member US\$1,045, Non-member US\$1,295. Registration fee includes breakfast and lunch Tuesday and Wednesday, reception Wednesday, breakfast Thursday, plant tour with bus transportation, and a course workbook or flash drive including presentations.

Hotel Accommodations

A block of rooms has been reserved at Belterra Casino Resort. Please call the hotel at +1.812.427.7777 by 25 September 2023 to secure the AIST discount rate of US\$139 per night for single/double occupancy.

Professional Development Hours

This course may qualify for up to 14 Professional Development Hour (PDH) credits. Each attendee will receive a certificate listing the quantity of PDH credits earned for the course. This course is not approved for PDH credits in New York, Florida, North Carolina and Oklahoma.

Attention Non-Members

Non-member registration fees include membership in AIST through 31 December 2024. Membership is not automatic. A completed membership application must be returned to AIST.

Organized By

AIST's Continuous Casting Technology Committee.

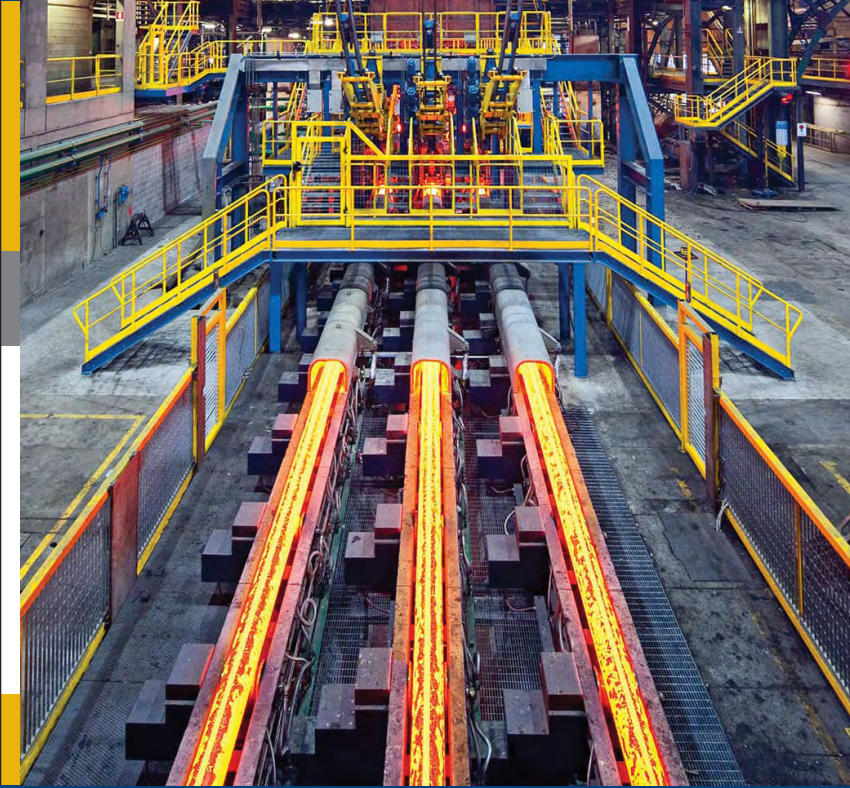
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Continuous Casting A Practical Training Seminar

17-19 October 2023

Belterra Casino Resort
Florence, Ind., USA

Plant Tour: Nucor Steel Gallatin

AIST.org

Monday, 16 October 2023

4–6 p.m. **Registration**

Tuesday, 17 October 2023

7 a.m. **Registration and Breakfast**

8 a.m. **Historical Perspective of Continuous Casting With Design and Technology of Slab and Long Products**
Darrell Sturgill, IMERYS Steelcasting USA Inc.

9:15 a.m. **Break**

9:30 a.m. **Principles of Mold Flux Technology — An Operator's Guide to Continuous Casting Flux**
Darrell Sturgill, IMERYS Steelcasting USA Inc.
An overview of mold flux technology for continuous casting. Flux properties, functions, selection criteria and application practices for optimal steel quality.

10:15 a.m. **Break**

10:30 a.m. **Initial Solidification and Oscillation Mark Formation**
Brian Thomas, Colorado School of Mines
Fundamental mechanisms of the formation of oscillation marks, meniscus hooks and their associated defects are explained. The presentation includes visualizations of the phenomena during initial solidification, based on advanced computational models and plant measurements, and evaluation of the casting conditions which control them.

11:30 a.m. **Flow Control From Tundish to Mold**
Filipe Fabri, Vesuvius
This session will present the different refractories that control the liquid steel flow, how they interact with steel, how they can impact on quality, how to evaluate different designs through modeling, and the latest technologies and trends in the market, from flow control systems to automation and robotics.

Noon **Lunch**

1 p.m. **Sources of Reoxidation and Why to Avoid**
Ron O'Malley, Missouri University of Science and Technology
To produce high-quality cast products, steel must be protected from reoxidation. Reoxidation can occur in the ladle, in the secondary ladle metallurgy operation, and also in the transfer operations from ladle to tundish and tundish to the mold. Various techniques will be described that can be used to minimize reoxidation.

2 p.m. **Break**

2:15 p.m. **Continuous Casting — Breakouts and Breakout Prevention**
Andrew Gribben, SMS group Inc.
This presentation will discuss the primary causes of breakouts, breakout detection and prevention.

3:15 p.m. **Break**

3:30 p.m. **Caster Quality Defects and Their Potential Causes**
Ron O'Malley, Missouri University of Science and Technology
The surface and internal quality of continuously cast slabs and billets is intimately linked to the caster design and to the operating and maintenance practices employed in the continuous casting process. Common causes for five classes of continuous casting defects (longitudinal cracking, transverse cracking, slivers and lamination defects, internal cracking, and segregation defects) will be reviewed and linked to these design and practice influences.

5–7 p.m. **Ian Bakshi Memorial Panel Discussion and Reception**
Moderator: Jeff Brower, Primetals Technologies USA LLC
Panelists: Bill Schlichting, United States Steel Corporation; Rudolf Moravec, United States Steel Corporation; Ian Deeks, Nucor Steel-Arkansas; Greg Geist, Cleveland-Cliffs Cleveland Works LLC

Wednesday, 18 October 2023

7 a.m. **Breakfast**

8 a.m. **Mold Copper Alloys, Design and Influence of Operating Factors on Performance**
Warren Adolphe, SMS Concast Canada Inc. (Accumold)
Introduction to the material properties and requirement for molds used for the continuous casting of steel, including: the most common copper alloys, influence of mold design features, operating factors that impact mold life and typical mold issues experienced.

9 a.m. **Break**

9:15 a.m. **Mold and Copper Maintenance and Coating Technologies**
Chad Donovan, SMS group Inc.
This presentation will review the importance of and needs for caster mold copper coatings and general mold maintenance practices.

10:15 a.m. **Break**

10:30 a.m. **Caster Roll Maintenance and Overlay Technologies**
Jeff Brower, Primetals Technologies USA LLC
Caster roll and segment life can be significantly increased through the use of customized weld overlays and base materials. This session details the operational impact on caster rolls and technologies developed to improve roll performance.

11:30 a.m. **Lunch**

12:30 p.m. **Plant Tour of Nucor Steel Gallatin** 

4:30 p.m. **Return From Plant Tour and Adjour**

Thursday, 19 October 2023

7 a.m. **Breakfast**

8 a.m. **Billet and Bloom Caster Operations and Maintenance**
Ian Deeks, Nucor Steel-Arkansas, and Bill Schlichting, United States Steel Corporation
This presentation is a review of the lessons learned over the last 25 years in billet and bloom casting from a safety and operational viewpoint.

9 a.m. **Break**

9:15 a.m. **Caster Hydraulics — Failure Modes and Preventive Maintenance**
Mark Cook, Yates Industries Inc.
This discussion will cover cylinders used in casters, failure modes, preventive maintenance and effective cylinder reconditioning programs.

10 a.m. **Break**

10:15 a.m. **Nozzle Basics for Secondary Cooling in Casters**
Stephen Swoope, Delavan Spray Technologies, and Edward Grodecki, NALCO Water, An Ecolab Company
Overview of spray nozzles used in the casting processes with detailed technical information for the selection and maintenance products used in casting steel. The combination of fluid dynamics and nozzle design are key in creating an efficient cooling process to remove heat from the steel and generate a quality product with efficiency. From single- to two-fluid atomizers, nozzles are an integral part of the primary and secondary cooling system.

11:15 a.m. **Caster Bearings — Types or Bearings, Failure Modes and Preventive Maintenance**
Paul Brda, NSK Corp.
This discussion will focus on types of bearings in continuous casters along with maintenance practices and common failure modes.

Noon **Conference Adjour**



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