Continuous Casting
A Practical Training Seminar
21–24 October 2019
Holiday Inn Downtown Memphis
Memphis, Tenn., USA

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.

Organized By
AIST’s Continuous Casting Technology Committee.

Registration Includes
Breakfasts and lunches 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 the Holiday Inn Downtown Memphis. Please call the hotel at +1.901.525.5491 by 30 September 2019 to secure the AIST discount rate of US$139 per night for single/double occupancy.

AIST Members
US$845 by 9 September 2019
US$945 after 9 September 2019

AIST Non-Members
US$1,090 by 9 September 2019
US$1,190 after 9 September 2019

Featured Plant Tour:
Nucor Steel–Arkansas or Nucor Steel Memphis Inc.
### Monday, 21 October 2019
4–6 p.m.
Registration

### Tuesday, 22 October 2019
7 a.m.
Registration and Breakfast

8 a.m.
**Historical Perspective of Continuous Casting**
Jack Young, Hatch Ltd.
A review of the development of continuous casting technology from introduction to the current status. In addition, the key components of the casting process are described.

8:45 a.m.
Break

9 a.m.
**Continuous Casting Design and Technology (Slab and Long Products)**
Dewey Humes, Primetals Technologies USA LLC
An overview of the mechanical equipment, process and technology of continuous casting.

10 a.m.
Break

10:15 a.m.
**Principles of Mold Flux Technology – An Operator’s Guide to Continuous Casting Flux**
Brian Thomas, Colorado School of Mines

11 a.m.
**Initial Solidification and Oscillation**
Mark Favaron

1 p.m.
**Sources of Reoxidation and Why To Avoid**
Sunday Abraham, SSAB Iowa Inc.
To produce high-quality cast products, steel must be protected from reoxidation. Reoxidation can occur in the ladle, at secondary ladle metalurgy 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.
**Breakouts and Their Prevention**
Bill Emling, SMS group Inc.
This presentation is based on the chapter in The Making, Shaping and Treating of Steel Casting Volume. A review will be given of various causes for caster breakouts and the systems used to alarm and prevent breakouts.

3:15 p.m.
Break

3:30 p.m.
**Caster Quality Defects and Their Potential Causes**
Ian Deeks, Nucor Steel–Arkansas
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, skivers and lamination defects, internal cracking, and segregation defects) will be reviewed and linked to the design and practice influences.

5 p.m.
Adjourn

### Wednesday, 23 October 2019
7 a.m.
Breakfast

8 a.m.
**Mold Copper Alloys, Mold Design and Influence of Operating Factors on Mold Life**
Ian Bakshi, KME America Inc.
Information will be presented on the requirements that molds must fulfill when used on a steel continuous casting machine, the copper alloys used, design details, various operation factors that affect mold life, and typical mold problems encountered.

9 a.m.
Break

9:15 a.m.
**Mold and Copper Maintenance and Coating Technologies**
Chad Donovan, SMS group Inc.
Discussion of the various types of continuous caster molds and proper maintenance practices, including a variety of mold coating options available to the industry.

10:15 a.m.
Break

10:30 a.m.
**Caster Roll Maintenance and Overlay Technologies**
Jeff Brower, Primetals Technologies Metallurgical Services Maintenance
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.
Breakfast

Noon
Plant Tour of Nucor Steel–Arkansas or Nucor Steel Memphis Inc.

4 p.m.
Panel Discussion and Reception
Panelists: Yury Krotov, Steel Dynamics Inc. – Flat Roll Group; Butler Division; Rick Besich, ArcelorMittal Indiana Harbor; Ian Deeks, Nucor Steel–Arkansas; and Brian Thomas, Colorado School of Mines

### Thursday, 24 October 2019
7 a.m.
Breakfast

8 a.m.
**Billet and Bloom Caster Operations and Maintenance**
Ian Deeks, Nucor Steel–Arkansas

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.
**Caster Secondary Cooling and Water Treatment**
Stephen Swoboda, Delavan, and Eric Rosenow, NALCO Water, An Ecolab Company
This presentation provides an overview of nozzle technology used in secondary cooling for casters. The concepts are applicable to basic nozzle technology for both operators and maintenance of any type of casting machine. Included in the review will be the water treatment-related challenges and needs in continuous caster secondary cooling systems and the potential impacts that secondary water quality can have on the operational and maintenance aspects of a caster.

11:15 a.m.
**Caster Bearings – Types of Bearings, Failure Modes and Preventive Maintenance**
Paul Brda, NSK Corp.
Discussion will focus on typical bearing types in casters, failure modes with analysis and normal maintenance practices.

Noon
Conference Adjourn