



Hot Sheet and Plate Rolling Fundamentals

A Practical Training Seminar

20-24 October 2019

Blue Chip Casino, Hotel & Spa

Michigan City, Ind., USA

Plant tour:
ArcelorMittal Burns Harbor



About the Program

This seminar provides a comprehensive overview of hot rolling steel strip and plate. The course covers fundamentals, metallurgical and quality requirements, equipment, rolling theory, control, rolls, temperature control, measurement, safety and new technology. A new module on maintenance and reliability has been included by popular demand. Attendees will leave this course with a better understanding of the basic metallurgy involved; the different types of products and their attributes; the types of rolling mills and equipment; rolling theory; the latest technologies involved in hot rolling; safety aspects; production measures; maintenance practices and much more. There will be opportunities to discuss issues and solve problems during this interactive course. A full-day parallel session will be devoted to discrete plate and Steckel rolling, and tours will be offered of sheet and plate rolling operations.

Who Should Attend

Anyone who would like to expand his or her knowledge and understanding of hot strip mills, Steckel mills, plate mills and hot rolling. This includes electrical, mechanical, lubrication and metallurgical engineers; maintenance personnel; operators; and those responsible for quality assurance. Equipment manufacturers and service suppliers would also benefit from this course.

Professional Development Hours

This course may qualify for up to 27.25 Professional Development Hour (PDH) credits. Each attendee will receive a certificate listing the quantity of PDH credits earned for this course. This course is not approved for PDH credit in New York, Florida, North Carolina and Oklahoma.

Organized By

AIST's Hot Sheet Rolling and Plate Rolling Technology Committees.



Visit AIST.org/byoyp for more information.

Upcoming Events

Maintenance & Reliability for the Next Generation

10-12 September 2019
Embassy Suites by Hilton Indianapolis Downtown
Indianapolis, Ind., USA

Pipe and Tube — A Practical Training Seminar
23-26 September 2019
Doubletree Birmingham Perimeter Park
Birmingham, Ala., USA

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

The Making, Shaping and Treating of Steel: 101
29-30 October 2019
Hilton Milwaukee City Center
Milwaukee, Wis., USA



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Registration Includes

Breakfast and lunch Monday through Thursday, receptions Monday and Tuesday, 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 Blue Chip Casino, Hotel & Spa. Please call the hotel at +1.888.879.7711 and use group code GIR1020 by 6 October 2019 to secure the AIST discount rate of US\$109 per night for single/double occupancy.

AIST Members

US\$1,195
by 9 September 2019

US\$1,295
after 9 September 2019

AIST Non-Members

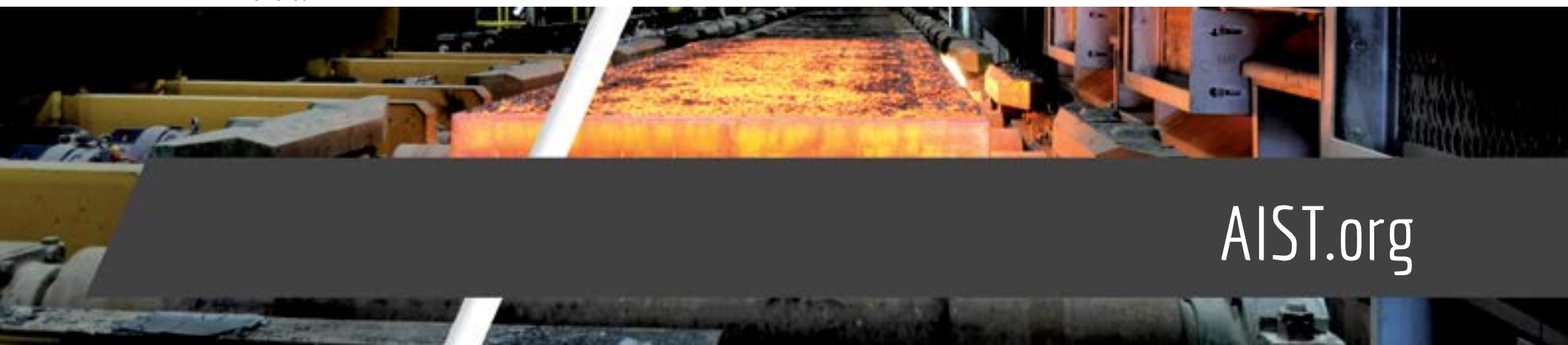
US\$1,440
by 9 September 2019

US\$1,540
after 9 September 2019



Featured Plant Tour:
ArcelorMittal Burns Harbor

AIST.org



Schedule of Events



Sunday, 20 October 2019

4–6 p.m.
Registration

Monday, 21 October 2019

7 a.m.
Registration and Breakfast

8 a.m.
Introductions and Opening Remarks

8:30 a.m.
Safety — It's a Conversation
Robert Brock, Steel Dynamics Inc. — Flat Roll Group
Columbus Division

Safety culture is dynamic. A successful safety culture is marked by communication that can be difficult to maintain in today's lean workforce environment. This presentation will look at ideas for improving and maintaining good safety communication practices.

9:15 a.m.
Safety Panel Discussion

9:45 a.m.
Break

10 a.m.
Safety Share

10:10 a.m.
Overview of Rolling
Nancy Hake, NLMK Indiana

11 a.m.
Basic Rolling Theory
Yuli Liu, Quad Engineering Inc.
This presentation begins with the basic concepts of rolling, and then introduces the theories to calculate rolling force, torque and power. Basic theories of gauge and shape control are also included. An interactive program will be used to demonstrate basic rolling theories.

Noon
Lunch

12:50 p.m.
Safety Share

1 p.m.
Metallurgical Basics/Application of Fundamentals to Hot-Rolled Processing/Products
John Speer, Colorado School of Mines

2 p.m.
Break

2:15 p.m.
Metallurgical Basics/Application of Fundamentals to Hot-Rolled Processing/Products
John Speer, Colorado School of Mines

3 p.m.
The Reheat Furnace
Jared Kaufman, Tenova Inc.
This discussion will be an introduction to the purpose, basic design and operating characteristics of a reheat furnace as used in a hot sheet or plate rolling mill. The presentation will highlight the typical furnace structure and lining, material handling, process combustion and exhaust systems, safety systems, and automation.

4 p.m.
Roughing Mill Area Equipment
Frank Beddings, Primetals Technologies USA LLC
An overview of roughing mill equipment from the exit of the reheat furnaces to the entry of the finishing mill.

5 p.m.
Question-and-Answer Session

5:10 p.m.
Reception

Tuesday, 22 October 2019

7 a.m.
Breakfast

8 a.m.
Introductions

8:15 a.m.
Flatness With Profile Control
Eugene Nikitenko, U. S. Steel Research and Technology Center
Presentation will cover flatness, including definitions, measurements and ASTM standards; fundamentals of strip buckling under applied compressive stress, Buckling conditions for center buckles and buckling conditions for wavy edges; the relationship between flatness and strip profile, plain strain hypothesis and flatness as a function of strip unit crown change; and profile and flatness control, roll stack deformations, mill actuators and flatness sensors.

9:45 a.m.
Break

10 a.m.
Maintenance and Reliability
Ken Hutter, Belden-Hutter Inc.
Good maintenance and reliability practices improve efficiencies, downtime control and overall cost.

11 a.m.
Drivetrain Design
Ken Hutter, Belden-Hutter Inc.
Drivetrain designs are influenced by many forces and interactions. Each component has a purpose along with its own design requirements.

Noon
Lunch

1 p.m.
Plant Tour of ArcelorMittal Burns Harbor 

5 p.m.
Reception

Wednesday, 23 October 2019

7 a.m.
Breakfast

>>HOT SHEET ROLLING TRACK

8 a.m.
Introductions

8:30 a.m.
Finishing Mill Equipment 1 and 2
Frank Beddings, Primetals Technologies USA LLC
An overview of finishing mill equipment from the entry of the finishing stands through the downcoiler.

9:45 a.m.
Break

10 a.m.
Finishing Mill Operations and Temperature Control
Ian Ward, Primetals Technologies USA LLC
The presentation focuses on the goal of stable mill operations and the necessary key requirements for this to be achieved. These key requirements will be discussed in detail and illustrated by actual examples and results.

11 a.m.
Mini-Mills
Michael Peretic, SMS group Inc.

Noon
Lunch

1 p.m.
Hot Rolling Defects
Dmitri Nassyrov, Nucor Steel—Berkeley
“What's this?” A practical guide in determining the origin of defects that could be seen on a hot rolling mill without blaming the previous production units.

2 p.m.
Break

2:15 p.m.
Hot Rolling Defects (Cont'd)
Dmitri Nassyrov, Nucor Steel—Berkeley

3:15 p.m.
Continued Developments in Hot Rolling
Michael Peretic, SMS group Inc.

4:30 p.m.
Question-and-Answer Session

>>PLATE ROLLING TRACK

8 a.m.
Plate Rolling Introduction

8:15 a.m.
Steckel Rolling — Process
Blane Vines, Nucor Steel Tuscaloosa Inc.
This presentation describes the Steckel mill rolling process.

9 a.m.
Steckel Rolling — Equipment
Blane Vines, Nucor Steel Tuscaloosa Inc.
This discussion will focus on the basics of the mill equipment unique to a Steckel mill operation.

9:45 a.m.
Break

10 a.m.
Discrete Plate Rolling — Process and Equipment
Corey Ivey, Nucor Steel Hertford County

Noon
Lunch

1 p.m.
Plate Finishing Equipment
Eric Thokar, CISDI USA
Topics will include: cooling beds, plate transfers, sidetrimmers and shears, dividing and flying shears, ultrasonic testing, inspection, marking, and piling.

2 p.m.
Break

2:15 p.m.
Practical Aspects of Plate Leveling
Jim Kitson, Allor Manufacturing Inc./Plesh Industries Inc., and Dave Withrow, Withrow Industries Inc.
This session will focus on the need for leveling when rolling hot plate, theory, terminology, types of levelers, roll sizes, machine loads and the effects of the industry trending toward higher-strength materials. Interaction among the attendees is encouraged to discuss real-world problems, cause and effects, maintenance, leveler settings, etc.

3:30 p.m.
Plate Heat Treatment
Joseph Stubenbort, Tenova Core, and Holger Kehler, Tenova LOI Thermprocess
This presentation will provide an overview of continuing developments regarding heat treating technologies for carbon steel plate. Specific topics will include the basics of carbon steel plate heat treatment and a description of the type of furnaces needed for the various processes, along with the associated combustion system and automation. The current technology regarding quenching and mathematical quench models will also be discussed.

4:30 p.m.
Question-and-Answer Session

Thursday, 24 October 2019

7 a.m.
Breakfast

8 a.m.
Introductions

8:30 a.m.
Gauge and Width Control
Reginald Snyder, TMEIC
A study of the process control strategies and regulating systems involved in hot band gauge and width.

10 a.m.
Break

10:15 a.m.
Safety Share

10:30 a.m.
Descaling, Roll Cooling and Spray Issues in Hot Rolling
Lesli Peterson, Spraying Systems Co.
Overview of the spray applications in descaling and roll cooling. Topics include the nozzles used in these applications and how to apply them.

11:30 a.m.
Lunch

12:30 a.m.
Hot Strip Mill Downcoilers — Practical Considerations for Operation and Maintenance
Jose de Jesus, Xtek Inc.
A review of the operating sequence of a downcoiler, with an eye to what matters for coil quality and maintaining the equipment to accomplish quality coiling.

1:30 p.m.
Runout Table Cooling Technology
Stuart Hardcastle, Hatch Associate Consultants Inc.
An insight into runout table cooling technologies, cooling strategies, and impact on material properties and shape.

2:30 p.m.
Break

2:45 p.m.
Roll Design/Roll Surface Quality
Kevin Marsden

3:30 p.m.
Roll Shop Practices
Alfredo Brambilla and Erasmo Trenti, Tenova Inc.

4:30 p.m.
Question-and-Answer Session and Closing Comments

5 p.m.
Conference Adjourn