

About the Program

This seminar provides a comprehensive introductory overview of cold rolling. The course covers fundamentals, equipment, rolling theory, control, threading, rolls, lubrication, measurement, instrumentation, safety and new technology. Attendees will leave this course with a better understanding of the basic metallurgy involved, the different types of products and product attributes, the types of mills used, and equipment involved with the mills, the theory of rolling, latest technologies involved in cold rolling, safety aspects, rolling solutions, production measures, and much more. Panel discussions will provide an opportunity to discuss issues and engage in problem-solving.

Who Should Attend

Anyone who would like to expand their knowledge and understanding of cold mills and cold rolling should attend. This includes electrical, mechanical, lubrication and metallurgical engineers; maintenance personnel; operators; and those responsible for quality assurance. Equipment manufacturers, field service personnel, on-line and off-line service suppliers will also benefit from this course.

Registration Fees

Registration fees: Member US\$1,295, Non-member US\$1,540. Registration includes breakfast and lunch Monday–Thursday, reception 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 Hilton Palacio del Rio. Please call the hotel at +1.210.222.1400 by 30 January 2023 to secure the AIST discount rate of US\$199 per night for single/double occupancy.

Professional Development Hours

This course may qualify for up to 21 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 credit 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 Cold Sheet Rolling Technology Committee

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AIST Members
US\$1,295

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US\$1,540

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Cold Rolling Fundamentals

A Practical Training Seminar

20–23 February 2023

Hilton Palacio del Rio
San Antonio, Texas, USA

Plant Tour: Steel Dynamics Inc. – Flat Roll Group
Southwest-Sinton Division

AIST.org

Sunday, 19 February 2023

4–6 p.m. Registration

Monday, 20 February 2023

7 a.m. Registration and Breakfast

8 a.m. Introductions and Opening Remarks, Brian Smith, ANDRITZ Metals USA Inc.

8:10 a.m. Overview, John Speer, Colorado School of Mines
Discussion will include a general overview of products, metallurgy and processing from steelmaking to finishing, including product properties, end users and applications.

9 a.m. Break

9:20 a.m. Cold Rolling Fundamentals, John Speer, Colorado School of Mines
This presentation will cover deformation and metallurgical properties, iron-carbon phase diagram, grain size, stress-strain relationship, work hardening, effects of annealing, effect of percent reduction on R and N values, and effect of composition on properties.

10:10 a.m. Break

10:30 a.m. Rolling Mill Designs, Mark Zipf, SMS group Inc.
This presentation provides an introduction into contemporary rolling mill designs, with a special emphasis on how evolving material and process requirements directed their specific developments. Working outward from the roll bite, key parameters and "rules of thumb" are identified, in both the longitudinal and transverse directions, to illustrate how the force-loaded conditions/reactions dictate certain mill selection and sizing philosophies. This leads to a review of the various vertically oriented roll stack and structurally supported roll cluster arrangements, along with their associated roll gap and shape actuation strategies.

11:15 a.m. Line Arrangements, Mark Zipf, SMS group Inc.

Noon Lunch

1 p.m. Mill Terminal Equipment, Frank Beddings, Primetals Technologies USA LLC
An introduction to the design and function of cold mill terminal equipment.

1:50 p.m. Break

2:05 p.m. Mill Measurement and Actuation Systems, Brian Smith, ANDRITZ Metals USA Inc.

2:50 p.m. Motor and Drive Upgrades, Thomas Richards, TMEIC Corp. Americas
Presentation includes items to be considered when planning an upgrade to the motors and drives. Pros and cons of various approaches will be discussed.

3:35 p.m. Break

3:50 p.m. Hot Band Characteristics That Influence Cold Rolling, John Manko, Outokumpu Stainless USA LLC
This presentation will discuss melting and hot rolling defects and hot band characteristics that impact cold-rolled sheet.

4:40 p.m. Roundtable Discussion

5 p.m. Adjourn

5–6 p.m. Reception

Tuesday, 21 February 2023

7 a.m. Breakfast

8 a.m. Rolls Manufacturing and Materials Requirements, Konstantin Redkin, WHEMCO Inc.
The lecture will cover the basics of rolls manufacturing, materials requirements, aspects of non-destructive testing and modern mill trends.

8:50 a.m. Break

9:10 a.m. Roll Shop Practices: What Do Roll Shops Do for Your Mill?, Lewis Graff, Steel Dynamics Inc. – Flat Roll Group Southwest-Sinton Division
This presentation will outline the importance of the roll shop as a critical partner in a successful rolling process.

10 a.m. Cold Mill Defects and Quality, Katie Behrendt, Nucor Steel–Arkansas
Overview of common incoming and outgoing defects for cold rolling. This will include descriptions of defects, possible root causes, and suggestions for corrective and preventive action.

10:50 a.m. Break

11:10 a.m. Key Technologies for Cold Rolling of AHSS and Electrical Steels, Konrad Krimpelstaetter, Primetals Technologies Austria GmbH
This presentation will discuss: Market demands and trends for advanced high-strength steels (AHSS) and electrical steels, and requirements and challenges for cold rolling of AHSS and electrical steels. Key technologies and solutions for a successful production of AHSS and electrical steels include: Small-work-roll-diameter solutions, mill stand technologies and shape control capability, strip heating and strip temperature guidance, roll gap lubrication and cooling, anti-chatter devices, etc.

Noon Lunch

1 p.m. Cold Rolling Theory Basics, Leland Robinson, Novelis Inc., and Mark Zipf, SMS group Inc.

2 p.m. Break

2:20 p.m. Cold Rolling Lubrication Fundamentals, Brad Wellensiek and William Hartley, Quaker Houghton
The presentation will cover the usage of cold rolling oils during the lubrication process.

3:20 p.m. Break

3:40 p.m. Mill Roundtable Discussion, Moderator: Katie Behrendt, Nucor Steel–Arkansas

5–6 p.m. Reception

Wednesday, 22 February 2023

7 a.m. Breakfast

8 a.m. Automatic Gauge Control (AGC) Basics, Brian Braho, Braho Machinery LLC
This presentation will provide an overview of automatic gauge control, including a description of the feedback control loop along with a discussion of common sources of error. Other topics included will be feedforward corrections, single- and multi-stand control diagrams, and thread-to-run sequences.

9 a.m. Break

9:20 a.m. Automatic Flatness Control (AFC) Shape/Flatness Basics, Leland Robinson, Novelis Inc.

10:30 a.m. Break

10:50 a.m. Rolling Mill Chatter and Vibration, Jim Smith, IVC Technologies
This presentation provides an overview of chatter that occurs in rolling mills in its various forms including first octave, third octave, fifth octave as well as grinder chatter. Areas covered will be how and where chatter can show up, some of the associated effects on equipment and product, as well as measures that can be taken to minimize or mitigate the issue.

Noon Lunch

1 p.m. Rolling Solution System and Maintenance, Brad Wellensiek, Quaker Houghton

This presentation will focus on cold rolling lubricant fundamentals. It will include information on key components of rolling oils and how lubrication is important in the cold rolling process. It will provide an examination of the roll coolant system and its various components.

1:30 p.m. Air Blow-Off and Dry Strip Systems, Adam Junkin, ArcelorMittal Dofasco G.P.

Strip drying is an important quality aspect of pickling and cold rolling with various failure modes that will be discussed.

2 p.m. Break

2:15 p.m. The Importance of Mill Alignment, Adam Junkin, ArcelorMittal Dofasco G.P.

Mill alignment is another critical aspect to high throughput and quality production.

3:15 p.m. Break

3:30 p.m. Cold Mill Safety

4:15 p.m. Cold Mill – What Have You Learned?, Brian Smith, ANDRITZ Metals USA Inc., and Katie Behrendt, Nucor Steel–Arkansas

4:45 p.m. Roundtable Discussion

5 p.m. Conference Adjourn

Thursday, 23 February 2023

7 a.m. Breakfast

8 a.m. Plant Tour of Steel Dynamics Inc. – Flat Roll Group Southwest-Sinton Division 🍌

2 p.m. Return From Plant Tour and Conference Adjourn



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