About the Program
This course serves as a natural extension of the concepts introduced in Cold Sheet Rolling — A Practical Training Seminar. Composed of a series of in-depth seminars and open discussions, this two-day course explores the inner workings and analytic details of key subjects, including: material mechanics, rolling theory, automatic gauge control, shape/flatness measurement and control, rolling operations and techniques, and specialty mills and complex materials. These seminars include complete first-principles derivations of historically significant relationships, equations and models that are difficult to find in the literature and textbooks, along with case studies and examinations of real-world systems, situations and operational events.

Who Should Attend
This course has been designed for those seeking an advanced understanding of the mechanics of cold rolling; analytic derivations of popular equations; philosophies and procedures of rolling mill sizing, selection and design; deeper details and strategies of the associated control systems; exposure to unusual materials, mill designs and operational philosophies; and subtle nuances of specialty mills and rolling practices. Seasoned operators or those who completed Cold Sheet Rolling — A Practical Training Seminar should attend. Anyone who would like to hone their skills and expand their knowledge 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$795, Non-member US$1,040. Registration includes breakfast and lunch Thursday and Friday and a course workbook or flash drive including presentations.

Hotel Accommodations
The block of rooms reserved at the Hilton Palacio del Rio is currently sold out. Please call the hotel at +1.210.222.1400 for availability. Hotels to consider nearby include Grand Hyatt, Marriott Rivercenter and Riverwalk, The Menger Hotel, Hotel Contessa and the Westin Hotel.

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 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

Advanced Cold Rolling Training: 201
23–24 February 2023
Hilton Palacio del Rio
San Antonio, Texas, USA
Instructor

Mark Zipf
Principal Process Engineer,
SMS group Inc.,
Pittsburgh, Pa., USA

Schedule

Thursday, 23 February 2023
7 a.m. Registration and Breakfast
8 a.m. Advanced Rolling Theory — Part 1
Rolling theory and its applications comprise a broad spectrum of disciplines and interests. The discussion of this complex and varied subject will be partitioned into three seminars: Mechanics of the Material and Roll Bite; Analytic Models of the Cold Rolling Process; and Practical Concerns, Model Adaption and Applications.
10 a.m. Break
10:15 a.m. Advanced Rolling Theory — Part 2
Noon Lunch
1 p.m. Automatic Gauge Control
The accuracy, precision and consistency (over the product mix) of the rolled strip’s thickness are critical quality indicators, requiring high-performance, real-time control of the mill (i.e., automatic gauge control). The discussion of this important subject will be partitioned into two seminars: The Theory; Mechanics and Sensitivities of the Gauge Control Problem; and AGC Mode Details, Special Functions and Tandem Mill Controls.
3 p.m. Break
3:15 p.m. Shape/Flatness Measurement and Control — Part 1
The concepts and realities of shape, flatness and profile are closely related, but are fundamentally different, in the way they describe and characterize the same underlying phenomena: The material’s reaction to the presence of plastically induced, non-uniform strain, embedded within the solid body of the strip. There’s a lot involved in this process/control problem, and the discussion of this multi-faceted subject will be partitioned into two seminars, starting with an analytic examination of the underlying phenomena, then progressing to detailed examination of how one measures and controls shape to render the desired flatness.
5 p.m. Adjourn

Friday, 24 February 2023
7 a.m. Breakfast
8 a.m. Shape/Flatness Measurement and Control — Part 2
9 a.m. Special Topics and Interesting Mills/Materials — Part 1
There are a number of subjects that, in the past, have received little attention because their need or performance impact was not deemed significant enough to warrant further investigation or discussion. However, as contemporary markets tighten tolerances and heighten quality concerns, along with new needs to roll harder materials to thinner gauges, many of these obscure subjects are being looked upon with a new and urgent interest. This seminar will shine the light on a number of key topics, including: 20-high/Sendzimir mills, 18-high/Z-high mills, mass flow dynamics and compensation, the mystery of herringbone flatness defects, eccentricity measurement and control, coordinated mill scheduling, non-homogenous material flow within the roll bite, along with unusual materials and operating practices.
9:45 a.m. Break
10 a.m. Special Topics and Interesting Mills/Materials — Part 2
Noon Adjourn