



# System Automation Fundamentals

in conjunction with Cold Rolling Fundamentals — A Practical Training Seminar

6–9 March 2017  
Indianapolis, Ind., USA  
Hyatt Regency Indianapolis





### About the Program

Few individuals are knowledgeable about the complete level 0, 1 and 2 systems available today for various rolling mill types. Current sensor and control technologies coupled with modern communication architecture allow implementation of functionality without regard for the traditional level designations. Effective system maintenance typically requires system-wide knowledge and may cross organizational boundaries. This conference will provide an overview of what is available today, along with details of how individual mills may be configured. This knowledge will be useful for upgrading existing mills as well as new installations.

The intent of this conference is to educate and inform on the various components and systems available, making organizational discussions less stressful and implementation more seamless. The agenda

is a single track with time reserved for small group discussions on specific topics of interest.

### Who Should Attend

These sessions will benefit newcomers and experienced individuals alike who buy or maintain level 0–2 electrical equipment and systems on any mill type.



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Visit [AIST.org/byoypp](http://AIST.org/byoypp) for more information

### Organized By

AIST's Electrical Applications and Computer Applications Technology Committees.

## Schedule of Events

### Monday, 6 March 2017

4–6 p.m.

Registration

### Tuesday, 7 March 2017

7 a.m.

Registration and Continental Breakfast

8 a.m.

Welcome, Introduction and Overview

8:20 a.m.

### Speed and Position Sensors

Brian Winter, Nidec Avtron Automation

This seminar will focus on improving reliability in speed and position feedback devices used for metals machinery such as loopers.

8:55 a.m.

### Vision Systems — Surface Inspection

Gregory Gutmann, ISRA Surface Vision Inc.

This presentation will provide an overview of automated surface inspection technology, differences in available

technologies and applications of these technologies to various metals production steps from slab to finishing.

9:30 a.m.

### Strip Width Measurement

Brian Smith, ANDRITZ Metals Inc.

This presentation will cover the importance of strip width measurement — why it is important to the process, what it means to downstream processing and how it can affect the product outcome. Various techniques for measurement and detection in the industry will be covered, as well as how implementation and upgrade paths can alter the outcomes of the mill.

10 a.m.

Break

10:15 a.m.

### Shape Rolls and Flatness Measurement

Mark Zipf, Cold Rolling Technologies Inc.

This presentation will provide an introduction to the overall shape/flatness measurement and control problem, including specific definitions of profile, shape and flatness. An overview will be given of the distortion phenomena and its sources/formation, including an analysis of the force-loaded transverse roll stack deflection characteristics; thermal reactions; and available, corrective shape actuators. How to measure shape/flatness and the strategies used in contemporary systems will be covered. Discussion will include the primary components, architecture, and theory of operation of automatic shape/flatness measurement and control systems. Shape/flatness control performance characterization and specification will also be discussed.

11 a.m.

### Strip Thickness Measurement Systems

Christopher Burnett, Thermo Fisher Scientific

This presentation will review various technologies for non-contact thickness and coating weight measurement of flat sheet in the rolling process. The benefits and limitations of each method will be discussed. Following the presentation, representatives from various sensor vendors will sit on a panel to answer questions from the students.

11:30 a.m.

### Strip Coating Technology

Christopher Burnett, Thermo Fisher Scientific

Noon

Lunch

1 p.m.

### Plant Tour of Nucor Steel—Indiana



5 p.m.

Return From Plant Tour

5:30 p.m.

Reception

## Wednesday, 8 March 2017

7 a.m.

Continental Breakfast

8 a.m.

### Sensor Roundtable — Question and Answer Session With Sensors Subcommittee

Panelists: Brian Winter, Nidec Avtron Automation; Christopher Burnett, Thermo Fisher Scientific; and Gregory Gutmann, ISRA Surface Vision Inc.

8:30 a.m.

### Process Models and Simulation

Mark Zipf, Cold Rolling Technologies Inc.

This presentation will provide an introduction to the concepts and strategies of mathematical modeling and simulation, focusing on understanding what models are, what simulation is, and how they're combined to provide insight into and predictions of process, machine, and control system behavior. Included will be a review, classification and comparison of the different types of mathematical modeling techniques, and their applicability to certain circumstances and interests, followed by an examination of the various forms of model evaluation and system simulation. Strategies of model development are considered, along with model implementation, validation and tuning. Model/simulation capabilities, predictive accuracy/confidence and practical assessment of results will be discussed.

9:15 a.m.

### Level 1 Controllers — The Workhorses of Modern Control Systems

Reginald Snyder, TMEIC Corp.

This presentation will cover a brief history and the evolution of industrial programmable logic controller application issues from single machine to networked systems, the effects of standards for programming languages (such as IEC 61131) and future possibilities.

10:15 a.m.

Break

10:30 a.m.

### Level 2 Systems

Paul Jackson, TMEIC Corp.

This presentation is an introduction to level 2 supervisory control systems in the metals industry. Students will learn the basic functions of such systems.

11:15 a.m.

### Drives — How They Fit in the System

Ronald Tessendorf, TMEIC Corp.

Noon

Lunch

1 p.m.

### Process Control Signal Requirements

Bryan Beard, TMEIC Corp.

This presentation will provide an introduction to signal requirements within the automation architecture. It will further address limiting factors, transmission issues and scan times.

1:45 p.m.

### Process Systems — Interfacing Considerations

Patrick Gallagher, Management Science Associates Inc.

The presentation will discuss techniques, considerations and technology related to interfacing automation systems.

2:30 p.m.

### Computer Solutions — Level 1 and Level 2

Brian Allgaier, Automated Control Concepts Inc.

3:15 p.m.

Break

3:30 p.m.

### Operating Systems

John McMillen, TMEIC Corp.

This presentation will review the evolution of operating system technology and the distinguishing factors among main computer operating systems in current automation systems.

4:15 p.m.

### Process Condition Monitoring

Scott Bouchillon, IBA America LLC; Bob Miller, IVC Technologies

## Thursday, 9 March 2017

7 a.m.

Continental Breakfast

8 a.m.

### Process Line Topologies

Ronald Tessendorf, TMEIC Corp.

9 a.m.

### Production Planning and Scheduling in Steel

Perry Zalevsky, OSIssoft LLC

Steel companies today are faced with ever-increasing demands to satisfy customers while maximizing the efficiency of their operations. With continued consolidation of the steel industry and the growth of many producers into multi-plant companies, the need to plan and schedule across plants has dramatically increased. This presentation will discuss the issues of single- and multi-plant planning and scheduling, the various types of solutions in use, and some practical examples.

10 a.m.

Break

10:15 a.m.

### Roundtable: Process System Security

Panelists: Brian Allgaier, Automated Control Concepts Inc.; Tom Bartman, Schweitzer Engineering Laboratories Inc.

11:15 a.m.

### Meltshop and Caster Process Systems

Thomas Carr, Primetals Technologies USA LLC

This session provides an overview of modern process systems for electrical arc furnaces and continuous casters. Specific topics include process equipment, level 1 controls, level 2 functions, process models, and technological packages that constitute modern hierarchical EAF and caster process systems.

Noon

Lunch

1 p.m.

### Reheat Furnace Process Optimization

Robert Robison, Primetals Technologies USA LLC

This presentation introduces the features of a furnace optimization system with some predictions about where the technology may be heading. The topic will be supplemented with a brief overview of the reheating process and specific problems associated with the process.

1:45 p.m.

### Conventional Hot Mill Applications

Włodzimierz Filipczyk, TMEIC Corp.

The hot rolling process of flat products is shown by presenting each of the individual sections of the rolling mill. For each of the sections, the process sensors and actuators, control functions, as well application features, process merits, and control trends are reviewed. Finally, the "global" control system applications and challenges for the future are outlined.

2:30 p.m.

Break

2:45 p.m.

### Project Management Roundtable Discussion on Upgrade Projects

Panelists: Thomas Richards, TMEIC Corp.; Rahul Bhatt, Primetals Technologies USA LLC; Michael Finan, Andritz Metals Inc.

5 p.m.

Conference Adjourn

## Registration

### AIST Members

**US\$845**

by 24 January 2017

**US\$945**

after 24 January 2017

### Non-Members

**US\$1,060**

by 24 January 2017

**US\$1,160**

after 24 January 2017

## Registration Includes

Tuesday through Thursday continental breakfasts, lunches and continuous breaks; reception 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 Hyatt Regency Indianapolis, Indianapolis, Ind., USA. Please call the hotel at +1.402.592.6439 by 13 February 2017 to secure the AIST discount rate of US\$149 per night for single/double occupancy.

## Featured Plant Tour

Nucor Steel—Indiana



## Upcoming Events

- > Scrap Supplements and Alternative Ironmaking 7  
19–21 February 2017  
Wyndham Lake Buena Vista > Orlando, Fla., USA
- > Rod and Bar Rolling  
20–23 February 2017  
The Atlanta Marriott Marquis > Atlanta, Ga., USA
- > Cold Rolling Fundamentals — A Practical Training Seminar in conjunction with System Automation Fundamentals  
5–9 March 2017  
Hyatt Regency Indianapolis > Indianapolis, Ind., USA
- > The Making, Shaping and Treating of Steel: 101  
7–9 March 2017  
The Edward Hotel and Convention Center > Dearborn, Mich., USA



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