

## UPCOMING EVENTS

### Electrical Engineering Basics

12-15 September 2021  
The Battle House Renaissance Mobile Hotel & Spa  
Mobile, Ala., USA

### Cold Rolling Fundamentals – A Practical Training Seminar

12-15 September 2021  
The Battle House Renaissance Mobile Hotel & Spa  
Mobile, Ala., USA

### Maintenance Solutions: Fundamentals and New Frontiers

21-23 September 2021  
Embassy Suites San Antonio Riverwalk  
San Antonio, Texas, USA

### Secondary Steelmaking Refractories – A Practical Training Seminar

5-7 October 2021  
The Doubletree Colorado Springs  
Colorado Springs, Colo., USA



# 27TH AIST CRANE SYMPOSIUM

15-17 AUGUST 2021  
Omni William Penn Hotel  
Pittsburgh, Pa., USA



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## ABOUT THE PROGRAM

The symposium will deliver practical information and experiences from crane maintenance personnel, crane manufacturers, equipment manufacturers and engineering consultants who strive to make electric overhead traveling (EOT) cranes and their runways the safest, most reliable, durable machinery and equipment in the industry. This two-day program will include presentations focused on safe work practices and ergonomics; electrical, mechanical and structural maintenance techniques; crane inspection technologies; and best practices in EOT crane modernizations. As part of the Crane Symposium program, the Charlie Totten Crane Innovator Award winner will be announced, recognizing the individual who has brought forth the latest in technology, or increased efficiencies in operational and maintenance practices for the continuous improvement of heavy industrial cranes.

## WHO SHOULD ATTEND

Plant maintenance staff; applications, electrical, mechanical, safety, service and design engineers; operations and maintenance personnel and management; and those people who supply parts, equipment and services to the industry. Anyone who has responsibility for cranes and crane service and is interested in improvements and incidents in this area should attend.

## ORGANIZED BY

AIST's Cranes Technology Committee.



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YOUNG PROFESSIONAL**

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

## REGISTRATION INCLUDES

Sunday reception, breakfasts and lunches Monday and Tuesday, a dinner Monday evening, and a course workbook or flash drive including presentations.

## HOTEL ACCOMMODATIONS

A block of rooms has been reserved at the Omni William Penn Hotel. Please call the hotel at +1.800.843.6664 by 23 July 2021 to secure the AIST discount rate of US\$179 per night for single/double occupancy.

### AIST MEMBERS

US\$895

by 5 July 2021

US\$995

after 5 July 2021

### NON-MEMBERS

US\$1,140

by 5 July 2021

US\$1,240

after 5 July 2021

## ATTENTION NON-MEMBERS

Non-member registration fees include membership in AIST through 31 December 2022. Membership is not automatic. A completed membership application must be returned to AIST.

## 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.

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# SCHEDULE OF EVENTS



## Sunday, 15 August 2021

4–6 p.m.  
**Registration**

5–6 p.m.  
**Reception**

## Monday, 16 August 2021

7 a.m.  
**Registration and Breakfast**

8 a.m.  
**Introduction and Opening Remarks**

8:15 a.m.  
**2020 Charlie Totten Crane Innovator Award: Crane Magnet Reliability: Methods of Monitoring Crane Magnet System Operation and Condition**

Brian Kath, Nucor Steel–Berkeley  
Magnet systems are critical tools for many applications in the steel industry. Magnet failures place employees at risk and can cause damage and impact productivity. This presentation offers some tools that can be used to verify that design parameters are not being exceeded and determine the operational health of the complete magnet system.

8:45 a.m.  
**Crane Safety – We’ve Done the Thinking So You Don’t Have To**  
Kevin Hoffmeyer, Whiting Corp.

This paper will review the importance of crane runway maintenance as it applies to safety, cost of ownership and reliability. It will share examples of impacts and data analysis used to identify root cause and offer means of mitigating through robust preventive maintenance programs.

9:15 a.m.  
**Why Crane Runways Don’t Have Capacities**

Alex Tadra, Simmers Crane Design & Services Co.  
A discussion of the many variables at play in crane loading on runways. The number of cranes, wheels, wheel base, crane spacing, etc., all have a major impact on the ability of the runway to support cranes of varying capacities in multiple scenarios.

9:45 a.m.  
**Break**

10 a.m.  
**Important Updates to AIST Technical Report No. 13**

Steve Bohm, JNE Consulting  
AIST Technical Report No. 13 — Guide for the Design and Construction of Mill Buildings was published in 1969 to provide owners, engineers and contractors with information about the considerations unique to mill buildings. The 6th edition is being prepared for release and includes many important updates, including:

- Crane load cases and combinations to match current building code requirements.
- Updated crane runway girder design criteria.
- Expanded crane runway fabrication and erection tolerance requirements.
- An expanded section with guidance on structural inspections and reinforcement. This session will further explain these updates and the benefits to building owners.

10:30 a.m.  
**Lifting or Lowering a Load Safely After Failure or Incident**

Joel Cox and Michael Astemborski, Pintsch Bubenzer USA

11 a.m.  
**Flat-Tread vs. Tapered-Tread Wheels Revisited**

Rich Warriner, Virginia Crane-Foley Material Handling Co. Inc.  
A condensed comparison of two previous presentations by proponents of both designs. This presentation is designed to provide attendees with information to determine which design is best for their application.

11:30 a.m.  
**The Making, Shaping and Treating of Crane Wheels**

Mark McGinley, Hall Industries Inc.  
This presentation describes the material selection, production processes, heat treating practices, and inspection procedures commonly used in the production of crane wheels and wire rope sheaves.

Noon  
**Lunch**

1:15 p.m.  
**Redundancy, Emergency Brake in Hot Metal Cranes/Steel Mills**

Max Pauli, SIBRE Brakes GmbH  
This paper will provide an introduction to emergency brakes, including their design and function; why to use emergency brakes; and different types — hydraulic, magnetic, pneumatic. It will also cover redundancy in cranes. Why redundancy? To provide a comparison to other cranes where it is already used; European standards for cranes; steel mills are more sensible than port area; and accident prevention.

1:45 p.m.  
**HVAC for Crane Applications**  
Kirk Lintern, Lintern Corp. Worldwide

2:15 p.m.  
**Break**

2:30 p.m.  
**Identifying a Disaster Crane Project Before It Happens**

Larry Dunville and Tad Dunville, Overhead Crane Consulting LLC  
Crane projects can be classified by Pareto’s 80/20 Rule. About 80% are simple cranes, while 20% are more complex projects. This presentation will identify three factors that separate the 80 from the 20 and will examine how to avoid the 20% and what to do in a 20% cluster situation.

3:00 p.m.  
**Improving Encoder Reliability in Overhead Cranes**

Brian Winter, Nidec Industrial Solutions  
Encoder operation is critical to maintaining uptime in overhead cranes. This seminar will inform the attendees on both troubleshooting and preventive maintenance that can reduce or eliminate encoder-related downtime.

3:30 p.m.  
**Break**

3:45 p.m.  
**Motor Design, Technology and Duty Ratings (IEC vs. NEMA)**

Dan Ivanuck, Regal PTS

4:15 p.m.  
**TBD**

4:45 p.m.  
**End of Day Wrap-Up and Adjourn**

5:30 p.m.  
**Dinner**  
The Gateway Clipper

## Tuesday, 17 August 2021

7 a.m.  
**Breakfast**

8 a.m.  
**Introduction and Opening Remarks**

8:15 a.m.  
**Innovations in Crane Technology**

Mike Martin, Trutegra  
This presentation will cover emerging technologies to aid operators with manual and semi-auto cranes as well as new technologies for fully automatic operation. Manual/semi-auto new technology includes anti-sway for non-variable frequency drive cranes, obstacle avoidance/no-fly zones, and the use of augmented reality for remote operation. New automated crane technology includes automatic bucket crane digging, real-time obstacle avoidance of moving material, automated eye-to-the-sky coil handling, and programmable logic controller-based 3D mapping of bulk inventory.

8:45 a.m.  
**Case Study: Automated Scale Pit Crane System at Nucor Steel**

Rick Emmer, CMCO Automation and Jared Gilpin, Nucor Steel–Berkeley  
This presentation explores a recent crane automation project performed at Nucor Steel–Berkeley. The steelmaking facility was looking to improve their mill scale clarifying process. Working together with Columbus McKinnon’s Automation Division, Nucor Steel–Berkeley was able to automate the scale removal process and reduce maintenance time and costs. The presentation will delve into the solution to this challenging application and explain the automated solution designed and implemented to improve safety, uptime, and productivity.

9:15 a.m.  
**Monitoring for Overhead Crane Collisions With In-Plant Storage Racking and Movable Obstacles**

Phillip Prokop, Laser-View Technologies

9:45 a.m.  
**Break**

10:00 a.m.  
**High-Speed Data Transmission Rail for Automated Cranes**

Pete Kirst, Conductix Inc.; Jon Snyder, DeShazo Crane Co.

10:30 a.m.  
**Use of Non-Contact Sensors to Provide and Improve Safety and Reliability in the Operation of Overhead Cranes**

Steven Lubeck, Laser-View Technologies  
Traditionally, overhead cranes have utilized mechanical means of providing safety features to protect equipment and personnel. Some examples are end stop limits, crane-to-crane spacing, no-fly zone perimeters, obstacle detection, temporary maintenance stops, and hoist side pull and anti-sag. Several sensor technologies exist that are applicable to provide non-contact solutions to applications previously handled with mechanical methods. Non-contact solutions oftentimes are more reliable and can provide a level of operational flexibility that is not possible solely with traditional methods. This presentation will provide descriptions of the various non-contact sensing methods commonly used, along with a comparison of advantages and disadvantages of each technology. New techniques will also be

discussed. Emphasis will be placed on the level of reliability and safety provided by each method, along with the relative levels of complication related with the integration. Examples will be provided with the intent of sparking interest in creative approaches to using sensors on cranes to establish safer and more reliable operation.

11 a.m.  
**Optimizing Material Handling**

Rob Loomis, InVekTek LLC  
The throughput of a plant is throttled by the skills of the least experienced crane operator. The recent resurgence of the steel industry and the sudden increase in new hires has magnified the need to help new crane operators get up the learning curve. One industry leader reported it incurs US\$1.5 million per month in product damage due to operator error and it’s getting worse. While viable automation is still not yet attainable, there are new technologies that can dramatically save money by accelerating the learning curve of new crane operators, reducing the number of and severity of collisions and improving overall productivity.

11:30 a.m.  
**Remote Control of Two Overhead Cranes of a Scrap Yard**

Jon Urso, Schneider Electric  
The main objective of this presentation is to provide an automated remote control management solution to drive existing scrap yard from a control room. The project is a turnkey project including detailed risk analysis for the safety operation, DC to AC conversion and crane electrical revamping, closed-circuit television remote control system, semi-automated functionalities, and advanced crane system expert for diagnostic and supervision. The discussion will include a description of the challenges during design, engineering and commissioning of this project of two remote cranes with an electromagnet for scrap handling.

Noon  
**Lunch**

1:15 p.m.  
**The Right People in the Right Place**

Scott Carter, Nucor-Yamato Steel Co.  
This presentation focuses on control house modernization and trolley replacement on a ladle crane.

1:45 p.m.  
**Implementation of Crane Automation Features**

Edgardo La Bruna, Janus Automation, and Robbie Sturgill, Steel Dynamics Inc. – Flat Roll Group Columbus Division  
This presentation discusses real implementation cases of crane automation features at Steel Dynamics Inc. – Flat Roll Group Columbus Division. New technology allows the reliable implementation of crane automation features even in harsh environments. Some of the crane automation features are simple anti-collision, no-fly zone and slow-down zones, positioning assistance, closed-loop anti-sway, semi-auto positioning, automatic operation, automatic storage and retrieval systems, and logistics optimizer and diagnostics tools. The incorporation of crane automation features increases productivity and also safety. This presentation discusses key aspects and recommendations for successful projects.

2:15 p.m.  
**Break**

2:30 p.m.  
**Retractable Roofs: Traveling Crane Technologies in Sports**

Cory Lindh, Uni-Systems  
Retractable roofs and other kinetic sports architecture features have heritage in, and further enhance, the hoist and gantry technology developed by the overhead traveling crane and material handling industries. This case study describes how *AIST Technical Report No. 6* has contributed to the design of the custom mechanization within these applications, as well as how innovative technologies — including alternative drive arrangements, tolerance-accommodating structural releases, custom independent suspension systems and more sophisticated controls systems — have enabled the reliable motion of increasingly complex systems, including some of the largest moving structures in the world.

3 p.m.  
**Automatic Coil Crane With Railroad Coil Removal at Nucor Steel Gallatin**

Edgardo La Bruna, Janus Automation, and Dave Reynolds, Nucor Steel Gallatin  
Implementation of an automatic storage and retrieval system with the functionality to automatically remove coils from railroad cars at Nucor Steel Gallatin. This paper will present state-of-the-art automation and safety functions, including housekeeping operation, no-fly zones, intelligent positioning, detection of objects and area access.

3:30 p.m.  
**Break**

3:45 p.m.  
**How to Give a Technical Presentation**

Tom Berringer, Gantrex Inc.

4:15 p.m.  
**Conference Wrap-Up and Adjourn**