



**MINUTES OF MEETING  
UNIVERSITY-INDUSTRY RELATIONS ROUNDTABLE  
8 MAY 2023  
DETROIT, MICH., USA**

**Attendees (54):**

Kelly Dallas (Chair, Cleveland-Cliffs Inc.	Karim Alshurafa, Vollmer America Inc.
Ron Ashburn, AIIST	Amy Beard, Quaker Houghton
Katie Behrendt, Nucor Steel Blytheville	Staci Beiswanger, Steel Dynamics Inc.
James Bero, Danieli Corporation	Lothar Birkhaeuser, Vallourec
Kevin Bort, TMEIC	Nick Bucci, Nucor Steel Hertford County
Chad Cathcart, Stelco Inc.	Shannon Clark, ArcelorMittal Dofasco
Jennifer Durbin, Commercial Metals Company	Joe Dzierzawski, Primetals Technologies LLC
Rita Esposito, Heraeus Electro Nite Co., LLC	Mark Fedor, Morgan
Alicia Gauffin, AIIST	Chuck Greene, AM/NS Calvert LLC
Steve Henderson, Commercial Metals Company	Roger Kalinowsky, Sidock Group Inc.
Pallava Kaushik, ArcelorMittal R&D	Ben Kowing, SSAB Americas
Nilesh Kumar, University of Alabama	Monserrat Lopez, Instituto Tecnologico de Morelia
Paul Lynch, Penn State Erie	Ted Lyon, Hatch
Cathy Martin, Primetals Technologies LLC	Theresa Masek, Commercial Metals Company
Jennifer McCloud, Cleveland-Cliffs Inc.	Bill McCormick, Global Guage
Chris McKelvey, AIIST	Charles Monroe, University of Alabama
Lee Morgan, The Systems Group	Chloe Myers, Steel Dynamics Inc.
Mark Olson, Pacific Steel Group	Ron O'Malley, Missouri S&T
Jernej Pretnar, Quaker Houghton	Jarrood Prill, Nucor Steel Kankakee Inc.
Glenn Pushis, Steel Dynamics Inc.	Brandy Reese, Midrex Technologies Inc.
Paul Sanders, Michigan Technological University	Barry Schneider, Steel Dynamics Inc.
Sabra Serino, CMC Steel Texas	Steve Simpson, Commercial Metals Company
Rebekah Smith, Michigan Technological University	John Speer, Colorado School of Mines
Kyle Toth, Purdue University Northwest, CIVS	Stacy Varnecky, AIIST
Bryan Webler, Carnegie Mellon University	Lori Wharrey, AIIST
Jeenetta Williams, Primetals Technologies LLC	Courtney Young, AIIST
Liwei Zhang, ArcelorMittal Global R&D	Chenn Zhou, Purdue University Northwest, CIVS

**1.0 CALL TO ORDER AND INTRODUCTIONS**

Ms. Dallas called the meeting to order. She welcomed and thanked those in attendance. Introductions were made around the room.

**2.0 ANTI-TRUST GUIDELINE REVIEW**

Ms. Dallas reviewed the anti-trust guidelines and stated the meeting would be held in compliance with those guidelines.

**3.0 COMMITTEE PURPOSE AND OBJECTIVE**

Ms. Dallas reported the AIIST Foundation University–Industry Relations Roundtable exists to foster communication between our university network and the steel industry. The committee objectives are to increase the number of professors teaching a steel-related curriculum, and to increase the number of students interested in a career in the steel industry.

## 4.0 AIST (NIST) ROADMAP UPDATE

Ms. Gauffin provided an [update](#) on the progress for the National Institute of Standards and Technology (NIST) Advanced Manufacturing Technology Roadmap (MFGTech) Program. This is a grant of nearly \$300,000 over a period of 18-month to lead a large-scale industrially driven and consortia-based effort for developing the technology roadmap for iron and steel manufacturing, revolutionizing U.S. Global Leadership for a sustainable industrial supply chain. This grant, that began in May 2022, will be completed in November 2023 with a possible extension to May 2024. AIST is required to submit biannual reports as the project progresses and a final report 120 days following completion.

The goals of the roadmap is to define a current baseline for the U.S. steel sector, incorporating technological, economic, environmental, workforce and innovation accelerator requirements to identify the critical gaps and needs for preserving the U.S. economic and national security; by addressing high-priority technical research challenges needed to grow the U.S. manufacturing sector; and enhance innovation capacity and improve industrial competitiveness with small and medium-sized enterprises (SMEs) through the support of technology development, knowledge, dissemination and project enhancements to ensure the U.S steel industry retains its position as a global innovation leader through 2050. A plan will be developed through partnerships with community colleges, trade schools and universities to provide for workforce availability and an infrastructure for workforce development to meet industry needs for a skilled, diverse, and inclusive workforce by 2030. We will also identify economically viable technical pathways(s) to achieve a net-zero-emission iron and steel industry by 2050.

The planned schedule of events and workshops for Roadmapping include:

- International Symposium on Advanced High Strength Sheet Steels (19-22 June 2023)
- AIST Technology Committee Fall 2023 Meetings (August-October 2023)
- Education and Equity Workshop (1-day) (September 2023)
- MS&T 2023 – Steels for Sustainable Development (1-4 October 2023)
- AIST Environmental Solutions – Water Conference (7-9 November 2023)
- Final Roadmap Workshop at AIST 2023 Leadership Conference (15-17 November 2023)

Within the project, four technology themes and three cross-cutting themes have been identified.

1. Electrification of Processes – Electrification to replace fossil-fuel based processes and equipment with electric power from renewable sources such as solar, wind or hydro. One example of this is the metal oxide electrolysis reactor to produce steel.
2. Alternative Energy Sources and Low Carbon Fuels – The most considered alternative has been H<sub>2</sub> based on its potential to be produced at scale. Hydrogen, as a replacement for carbon, can act as a reducing agent as well as an energy source for reheating.
3. Material and Energy Optimization – Material and energy optimization in steelmaking processes. Some examples are, recovery and re-use of off-gas waste heat in the steel industry which provides significant energy and cost savings. Scrap and low-grade iron ore must be optimized to achieve quality demands.
4. Carbon Capture, Utilization and Storage (CCUS) – Carbon capture and storage processes must separate CO<sub>2</sub> from the exhaust gas streams before the subsequent transportation and storage. Commercial-scale transport of caseous and liquid carbon dioxide emissions uses tanks, pipelines and ships.

The cross-cutting themes are:

1. Smart Manufacturing
2. Technologies, Infrastructure, Facilities and Tools
3. Education and Workforce

At the AIST Leadership Conference in November 2022, the decarbonization technologies were categorized into its impact on carbon reduction and timeframe of expected implementation.

## 5.0 STEEL RESEARCH CONNECTION

Ron O'Malley and Bill McCormick presented an idea, stemming from the AIST Leadership Conference in November 2022, for a conceptual concept connecting industry companies and supplier companies with university departments and students. They requested input from attendees.

Mr. McCormick stated there are many industry problems that would benefit from assistance from students who work at a local company or from their university location. Assistance from students could have a meaningful impact on the companies that struggle to find talent.

Dr. O'Malley suggested a portal be developed that includes research projects. The portal would need to be marketed to make connections between companies and the students. The target would be students who want to remain in their current housing situation during the summer as opposed to relocating near a company, allowing them to maintain their current housing arrangements. The projects could also become senior projects or part-time work-study during the academic year and would work perfectly for Freshman and Sophomore students.

With the many ideas, it was agreed to form an ad hoc committee to prepare a formal plan for presentation at a future UIRR. Four attendees volunteered for this committee, Bill McCormick, Sabra Serino, Chenn Zhou, and Kyle Toth.

## 6.0 ROUNDTABLE OPEN DISCUSSION AND REPORTS

All

### **How to connect university faculty and steel industry research.**

- Discussed in section 5

### **Working with the DOE, is there a better way?**

- Yes
- Our industry has no experience with the DOE.

### **Ideas on how to improve the perception of the steel industry.**

- Emphasize sustainability for decarb and recycling, and technology (beyond just computers), and safety.
- Expand Steel Curriculum Development Grant. Gear more toward co-op program. Co-op versus internship.
- Video contest has low participation and a limited reach.
- AIST campus road shows with both producer and supplier booths.
- Relay that we are here, we are safe, we are green, we are high-tech, we are vital to everyone.
- Establish a standing committee that will interact with member chapters, technology committees, women in steel, and young professionals.
- Continue to grow social media presence
- Lack of R&D (old industry) optimization focused, not design/research
- Lose students to other industries that seem more exciting.
- Retention of young professionals
- Outreach to parents at middle school/young STEM awareness)
- More visual/pictorial representation
- Make it clear what people actually do in industry and more ways to be involved than in a melt shop.
- It is important to represent industry accurately. Just because a lot of people say that the industry is "dirty" does not mean that we should represent it as "clean." The reality of a melt shop is that is IS somewhat dirty and if we don't accurately portray the steel industry we won't have retention.
- Present the good / the engineering
- Represent the carbon reduction initiatives, technology drivers, and process improvements.
- Meet students where they are
- Connect digital to classroom
- Understand the competition
- Change the cultural understanding of steel
- Get into middle/high schools and build an opportunity

- Decreasing number of students in universities equals more competition
- More marketing for universities. Quick promotions
- Create a career roadmap for students
- Virtual plant tour
- Engagement with community on local level along with other organizations. Host family days at plants and engage with summer camp programs to promote technology at events. Sample “Dress like a Steelmaker.” Hold open houses to get people into the mills.
- Make a big commitment, declaration and continuity.
- Open steel plants for more plant tours

## 7.0 WOMEN IN STEEL UPDATE

Ms. Varnecky, general manager, sales & marketing, gave an overview of AIST’s Women in Steel Initiative and how it has evolved from a small Women in Steel Focus Group in 2018 to preparing for its inaugural Women in Steel Conference to be held in September 2023.

Since 2018, AIST has polled the industry to determine the need for women in steel support/programming and [published an article](#) in *Iron & Steel Technology*; hosted multiple Women in Steel Roundtables to generate ideas for content and program development; held Women in Steel Panels to address challenges and learn company strategies to attract a diverse workforce; added a [quarterly column](#) to *Iron & Steel Technology* to share stories from women in the industry; provided content and supported the development of a book for Women in Steel; created a Women in Steel logo; and formed an informal Women in Steel Conference Planning Committee to develop the upcoming Women in Steel Conference.

The [Women in Steel Conference](#) has been created to support the recruitment, engagement and professional development of women in the global steel industry. It will feature three panels, two keynote speakers and leadership skills training, in addition to multiple networking opportunities through meals and receptions.

Lastly, Ms. Varnecky provided attendees with AIST membership statistics to show the percentage differential between male and female in the following categories: AIST professional and student membership, AIST leadership, and AISTech female presenter participation. In the coming months, AIST will be contacting all known human resource representatives from the producer, supplier and academia communities to request percentage distribution for their male/female staff. This data will be compared against the AIST database statistics to determine if its database is a good representation of the industry. We would sincerely appreciate engagement and support from these groups with this effort.

In closing, AIST is committed to continue learning about the needs from the industry and evolving its offerings to provide a support system for all companies placing an emphasis on gender diversity.

## 8.0 REAL STEEL VIDEO CONTEST UPDATE

Ms. Beiswanger reported the 2023 Theme was “*Energy – Problem Solving with Steel.*” The winner is Alfonso Montanez Fuerte from Instituto Tecnológico de Morelia entitled “[The New Age of Steel](#)”. This video will be played just before the President’s Award Breakfast on Tuesday morning. The theme for the 2024 contest will be determined.

There were over 20,000 views of the videos and over 14,000 votes. The first place winner received \$3,000, 4 video submissions received \$1,000, and 2 others received \$500.

## 9.0 STEEL INTERN SCHOLARS

Ms. Smith introduced herself as a Materials Science & Engineering major from Michigan Technological University. She received the Steel Intern Scholarship in 2022 and again in 2023. She will be serving her internship this summer at Gerdau.

Rebekah contributes her strong interest in the steel industry to her father who introduced her to all the exciting processes in the industry. She got “the bug!”

## 10.0 GRANT RECIPIENT UPDATE

Ms. Lopez, the 2022 Kent D. Peaslee Junior Faculty Award recipient, reported the grant has provided her the chance to share with her community the AIST vision and mission through activities. These include:

- 80 senior-year students from the Metal-Mechanical Engineering department had the opportunity to have a direct chat with professionals from Ternium Mexico, where they could solve some of their concerns regarding the steel industry.
- A seminar regarding the AIST Foundation Steel Intern Scholarships and the Real Steel video contest was held, attended by 65 students.
- An educational network for iron and steel technology development was created. As of 2023 the network is composed of 6 universities and 15 assistant professors. By this year, 2 projects related to steel technology are being developed.
- Students from ITM won 1<sup>st</sup> through 5<sup>th</sup> place in the 2023 AIST Foundation Real Steel Video Contest. There were 6 students selected to receive the 2023 Steel Intern Scholarship, the highest number for a university.
- Outreach to K-12 included the AIST ITM Student Chapter members shared the twists and turns of the materials engineering career, attended by 50 technical high school students in Morelia. Morelia students also visited a local elementary school science fair where they had the chance to show students ranging from 4 to 12 years old the wonders of the minerals, the rock cycle, and the relationship between the processing and the properties of metals. A career fair was held at ITM attended by 150 high school students visited their booth.
- Ms. Lopez was able to financially support 66 students in a visit to Fundidora Morelia Foundry in Morelia, Gerdau Corsa in Hidalgo, and ArcelorMittal in Lazaro Cardenas.
- 115 students from ITM took advantage of the AIST Foundation Steel to Students Program to attend ExpoAcero 2022 in Queretaro, CONAC 2023 in Monterrey, and 2 students attended AIST's Modern Electric Furnace Steelmaking Training Seminar and AIST's The Making, Shaping and Treating of Steel in 2023.
- With the help of AIST, ITM Student Chapter, students attended COHIAC 2023, a 3-day event that hosted over 275 students from 2 universities. The students attended several seminars and a recruitment fair with many steel-related companies participating.
- 4 senior year students and 1 graduated student performed heat treatments in hypoeutectoid steels using forced air cooling. The project involves melting, hot rolling, machining, heat treatments, and metallographis preparation (cutting, grinding, polishing, and etching activities). Two of these students are now employed at Ternium Mexico and 1 student won 2<sup>nd</sup> place in AIST's Undergraduate Student Project Presentation Contest at AISTech 2023.

Ms. Lopez expressed her gratitude to the AIST Foundation for making this happen, the support is changing the lives of many people, including herself.

## 11.0 NEXT MEETING

K. Dallas

Ms. Dallas reported the next UIRR will be held Monday, 2 October, 10:30 a.m. –1:00 p.m. (ET) at MS&T'23, Columbus, Ohio, USA

## 12.0 ADJOURNMENT

K. Dallas

There being no further business, Ms. Dallas adjourned the meeting.

Minutes respectfully submitted,

Lori A. Wharrey, AIST Sr. Board Services Administrator

The minutes have been electronically sent to the attendees of the University-Industry Relations Roundtable for review, corrections, additions, and approval. Information contained in these minutes is pertinent to the attendees of this standing committee of the AIST Foundation, Warrendale, Pennsylvania and is to be treated as confidential.