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» 2023 Retrospective

By Amanda L. Blyth



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AISTech 2023 was a record-setting week for AIST. It not only marked the first time the conference was held in Detroit, Mich., USA, but the exposition shattered previously set records, with 595 exhibiting companies and a total exhibit space of 107,000 net ft² (9,941 net m²).

"With nearly US\$23 billion committed to harnessing new iron and steel technology here in North America alone, it was awesome to see record participation for the AISTech exposition in Detroit," said Ron Ashburn, AIST's executive director. "The only thing better than setting records is breaking them... One thing is for sure: the industry is profitable and it's reinvesting in its future – a future that is green, digital and safe!"

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Huntington Place welcomed 7,043 attendees from 45 countries to Detroit. The Technology Conference had 2,032 registrants, and the student programming attracted 92 attendees from 36 universities and eight countries.

A palpable energy could be felt in the convention center throughout the week. Perhaps it was the joy of networking in person with colleagues and customers; maybe it was the excitement of being in a new venue; or maybe it was the thrill of entering to win a new truck – whatever the reason, the outcome was a lively and successful event.

The Technology Conference offered attendees 422 across 102 sessions over the course of three days. Conferencegoers had the opportunity to hear from fellow steelmakers, researchers and students from across the globe. The program



included presentations that covered the entire steelmaking process, from ironmaking to crane operations and everything in between.

Liz Abreu of Steel Dynamics Inc. – Flat Roll Group Southwest-Sinton Division served as a session chair this year. "We had some really, really good papers this year, especially the student papers," she said.

Abreu said she appreciates attending the Technology Conference and Technology Committee meetings during AISTech because it affords the opportunity to see what other steelmakers are doing at their facilities.

In his remarks during the President's Award Breakfast, 2022–2023 AIST president Keith Howell compared the steel industry's current race to decarbonize to the Space Race of







AIST executive director Ron Ashburn and 2022–2023 AIST president Keith Howell with past Howe Memorial Lecturers (left to right) » Ashburn, Toshihiko Emi (1989), Roderick Guthrie (2000), Brian Thomas (2009), Howell, Ron O'Malley (2023) and Yakov Gordon (2015).



the 1960s. While President John F. Kennedy addressed the question, "Should we?" the question facing Can we decarbonize the global steel industry? While decarbonizing the steel industry may be difficult, since steel is often categorized as a hardto-abate sector, Howell affirmed it is not an impossible task. "I come from a family of steelmakers and have spent my career surrounded by those who make steel, so I say this with some authority: you will not find a more clever, inventive, and hardworking bunch of problem-solvers than the men and women of this industry. Decarbonization is indeed achievable," he said.

The question of can we decarbonize the steel industry (and if so, how?) was top of mind during the week, and was addressed by speakers, panelists and attendees across the Technology Conference and plenary events. In the Technology Conference, approximately 60 presentations were devoted to decarbonization.

"Tve worked in steel a long time and have never seen the global steel community this united on the need to reduce our carbon emissions," Ashburn said. "Climate change is a global problem that necessitates global solutions. Who may be leading whom at any given moment is irrelevant as long as each company is doing more today to reduce emissions than it was yesterday."

Kevin Dempsey of the American Iron and Steel Institute shared his thoughts in a press conference during AISTech.

"Everyone's trying to get to net zero by 2050, and the reality is there's probably going to be a lot of different pathways, and I think we have to let the market act to determine which of those work, and it may vary from region to region depending on what raw materials are available."









Town Hall Forum » Steel 2023: Get Your Motor Runnin'

We can make steel stronger, more ductile and less CO_2 intensive. Or, generally, just plain better. But can we make steel cool? As in chic, hip or snazzy?

We can, and we well ought to be trying, says TimkenSteel chief executive Mike Williams.

"We need to figure out a way to communicate how cool steel really is and how innovative it is," he said during the AISTech 2023 Town Hall Forum.

Doing so, as he explained to the roughly 1,300 Town Hall Forum attendees, is the path to recruiting future industry leaders and innovators, a standing challenge for an industry that doesn't share the same career prestige as other technology-oriented sectors.

Williams and the four other Town Hall Forum panelists – Cleveland-Cliffs Inc. executive

vice president Traci L. Forrester, United States Steel Corporation senior vice president Richard L. Fruehauf, Steel Dynamics Inc. president and chief operating officer Barry T. Schneider, and Sushma Walker, president of Nucor Business Technology – discussed a variety of industry developments during a wide-ranging discussion, and emphasized the importance of improving efforts to recruit young and diverse talent.

"I was actually at Microsoft's headquarters a couple of weeks ago, and one of the statistics that they shared with me is that as we work toward a more sustainable world over the next 30 years, we're going to need to fill 18 million (specialized) positions, and 16 million of those don't exist today," Walker said, arguing that the industry will have to seek people whose skills lie outside traditional engineering roles.



Walker also stressed the importance of a diverse workforce and encouraged women to consider the industry as a career destination.

"Come join us," she said. "It's some of the coolest work you'll ever do."

The panelists' companies have been doing work of their own to ensure a diversified and well-staffed workforce.

Fruehauf, for instance, highlighted a U. S. Steel policy that requires a diverse candidate pool for senior or managerial positions. Forrester, meanwhile, called attention to Cleveland-Cliffs' partnership with its labor unions to attract tradespeople. And Schneider spoke to Steel Dynamics Inc.'s culture of mentorship that cuts across professional disciplines, like, for instance, having a sales manager in the Midwest explain market trends to production engineers in the South.

For his part, Williams said TimkenSteel is reviving high school apprentice and college internship programs to build a pipeline of potential recruits.

Forrester said the industry's recruiting efforts will certainly be helped by one aspect – great pay and intellectually rewarding work. And, not to mention, opportunity for digitally skilled workers.

"We've got so much going on from a sustainability standpoint and a technology standpoint. You're really starting to see just the tip of where I think we're going to go (in artificial intelligence and machine learning)," Walker said.

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» AIST executive director Ron Ashburn, Town Hall Forum chair George Koenig and Town Hall Forum moderator Jon Delano with the 2023 AIST Town Hall Forum panelists (left to right) » Barry T. Schneider, Traci L. Forrester, Koenig, Sushma Walker, Richard L. Fruehauf, Michael Williams, Ashburn and Delano.

"The first key step is to try to reach an agreement on what is the right way to measure carbon emissions for steel, because to determine progress, you must first agree to what you're measuring," Dempsey added.

The challenge of decarbonization comes with many moving parts — from selecting raw materials to tackling transportation emissions; scaling down energy consumption;

NUCOR

Sushma Walker



CLIFES

Traci L. Forrester

AlSTech



and exploring ways to modernize and decarbonize decades-old equipment.

While the electric arc furnace (EAF) route is typically viewed as an easier-to-decarbonize process route, integrated producers are making their fair share of technological advances.

During the Town Hall Forum, Traci Forrester of Cleveland-Cliffs stated that the company "remains committed to the blast furnace route."

At the beginning of the week, Cliffs announced it had successfully completed a hydrogen injection trial at one of its Ohio blast furnaces. Hydrogen was blended with natural gas in all 20 tuyeres of the No. 3 furnace at the company's Middletown Works.

"We're very excited about the possibility of using hydrogen to further cut down our coke rate," Forrester added. "We may not be able to eradicate the use of coke, but we're doing our best to work those emissions down." (See a synopsis of the Town Hall Forum on pages 44–45.)

Steel Manufacturers Association president Philip Bell said during the press conference that blast furnace production is never going away. "We will never see the end of the blast furnace. We will always need virgin iron units."





Bell added, "The U.S. Department of Energy's decarbonization road map predicts that by 2050, about 90% of steel made in the U.S. will be made via EAF/hydrogen-based steelmaking. Notice you still have that 10%, and that's a very important 10%."

As significant a challenge decarbonization is, another challenge was prevalent in discussions throughout the week — how to attract women and younger people to the industry.

AIST is working to increase the number of women in the industry and in its own membership. Among its initiatives is the annual Women in Steel Roundtable held during AISTech. In this sold-out session led by AIST's general manager — sales and marketing, Stacy Varmecky, attendees discussed the inaugural AIST Women in Steel Conference, which will be held in September in Pittsburgh, Pa., USA. Discussion centered around potential questions for the panel sessions during the upcoming conference. The 51 attendees broke into groups to consider mission and vision statements for a formal Women in Steel Membership Committee.









Part of attaining a diversified workforce is growing the number of Young Professionals in its ranks. Each year at AISTech, AIST's Young Professionals meet for a roundtable discussion. The attendees heard from incoming AIST president Barry Schneider, president and chief operating officer of Steel Dynamics Inc., who shared insights on his career journey and progression, including how he's prepared himself for new opportunities and roles along the way.

Another important part of a diversified workforce is ensuring there are enough people coming into







the industry to sustain it well into the future. The AIST Foundation's mission is to ensure the iron and steel industry of tomorrow will have a sufficient number of qualified professionals.

During AISTech, students have the opportunity to network with not only students from other universities, but industry professionals and potential employers. AIST took an excited group of 25 university students to Cleveland-Cliffs Dearborn Works, where they had the opportunity to see operations up close. The students represented universities from India, Mexico, Austria, Canada and the U.S. (Read more about student activities at AISTech on page 30.)

From first-time attendees to industry veterans and everyone in between, AISTech 2023 offered something for everybody. But top of most attendees' lists was the opportunity to network and make new connections. AIST past president and this year's Howe Memorial Lecturer Ronald O'Malley said networking is still his favorite part of AISTech.

"I'm now an academic, but I spent 30 years in industry before that, so I've got a huge network of people I know in the industry and that I've come to know over the years, and this is a place where I can come to see them, interact with them, and strategize on what the industry needs and what the future opportunities are. I really look forward to seeing the people, more than anything else." (Read the manuscript of O'Malley's lecture on pages 55-78.)

This year's Howe Memorial Lecture marked the 100th anniversary of the

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lecture, and past Howe Memorial Lecturers Yakov Gordon, Brian Thomas, Roderick Guthrie and Toshihiko Emi were in attendance.

In addition to the innovations and bigpicture ideas put forth during the plenaries and technical sessions, the expansive show floor offered dozens of aisles of the latest technologies, several features and giveaways.

Chuck Faught of Flame Tech said, "This is a great opportunity for us to get in front of our distributors, and some of our end users all in one building." Flame Technologies has participated in the exposition for more than 20 years.

As always, the week culminated with an exciting truck giveaway, where Nhu Ngo picked the lucky number. Ngo is a first-year Ph.D. student at Carnegie Mellon University studying material science and engineering, with a particular focus on advanced high-strength steels. More "firsts" were set with this year's contest: Ngo is the first woman and first student to win the truck!



Questions / Discussion

It also happened to be Ngo's first AISTech.

Ngo said she found value in attending the technical sessions. "Learning more about the new technology in the industry is important," she explained. "Connecting my current research to industry is also important, as in the lab you always think about researching on a specific problem, but in the industry there are other problems such as efficiency or bulk manufacturing that are not really accounted for in the labs."

Fellow first-time attendee Celina Adhikari of Big River Steel said that AISTech was a good learning opportunity, and found that networking and trying to problem-solve issues faced at the mill was a highlight of her week.

"Just talking to people about the issues we are facing in our company and trying to find an answer, and just networking with them and solving the issue together, has been the nicest part of this event," Adhikari said.