



RETROSPECTIVE

AISTech[®] 2013

THE IRON & STEEL TECHNOLOGY CONFERENCE AND EXPOSITION
 DAVID L. LAWRENCE CONVENTION CENTER | PITTSBURGH, PA., USA





8,270
total attendance

“Tomorrow’s Here — New Technologies, New Challenges, New Opportunities.”

This was the theme for AISTech 2013 — The Iron & Steel Technology Conference and Exposition at the David L. Lawrence Convention Center in Pittsburgh, Pa., where more than 8,200 steel producers, suppliers, corporate executives and academia gathered for what has become the world’s largest annual gathering of steel industry personnel.

The world-class conference offered new technologies for sustainable steelmaking, including those discussed during the Howe Memorial Lecture and the International Alliance Lecture. The panelists of the Town Hall Forum considered new challenges that face the industry. And in the exhibit hall, new opportunities were abundant for the exhibitors. From a sold-out exhibit hall to a record-setting number of presentations, one thing was clear at AISTech 2013 — Tomorrow’s Here.

Golf Classic

The AIST Foundation’s annual Golf Classic kicked off the week at Chartiers Country Club Golf Course. Six corporate sponsors and 244 golfers participated in the event on Sunday, 5 May, helping to raise funds toward the student-focused programs of the AIST Foundation. These Foundation programs work everyday to secure the future of our industry. The AIST

Foundation wishes to thank all the sponsoring companies as well as **Fred Harnack** of the United States Steel Corporation, who served as the Golf Committee chair. See page 114 of this issue of *Iron & Steel Technology* for a complete list of sponsors and contest winners. Be sure to join us next year in Indianapolis, Ind., for the next Golf Classic!



Technology Conference

AISTech is now the largest annual iron and steel-related technology conference in the world. This year’s program included 94 sessions for a record-setting 459 individual presentations delivered across three days.

The 2,028 conference attendees — just shy of the record 2,097 technical registrants when AISTech was in Pittsburgh in 2008 — were able to register for one day or the full conference.



The opening plenary session on Monday morning, 6 May included two lectures. The 2013 Howe Memorial lecturer was **Veena Sahajwalla**, director of the University of New South Wales' Centre for Sustainable Materials and Research and Technology (SMaRT). Dr. Sahajwalla's lecture was entitled, "The Power of Steelmaking — Harnessing High-Temperature Reactions to Transform Waste Into Raw Material Resources." More than 350 people attended the lecture, which discussed how waste materials can be used as raw materials in the steelmaking process, potentially providing both environmental and economic benefits to steelmakers. The full lecture appears on pages 68–83 of this issue of *Iron & Steel Technology*.

Directly following the Howe Memorial Lecture was the International Alliance Lecture, presented by **A.C.R. Das**, industrial advisor at the Government of India's Ministry of Steel. His lecture, entitled, "Indian Steel Scenario: Growth Trajectory and Changing Technological Phase," outlined the status of India's steel sector, including demand forecasts and technological challenges currently facing the Indian industry.

The conference also included two plant tours on Thursday, 9 May: U. S. Steel – Mon Valley Works and The Timken Co. – Faircrest Plant. As in previous years, both tours were sold out.

The global event sponsor for AISTech 2013 was CVS Technologies.



representing
46
 countries





Exposition

AISTech 2013's exhibit hall covered 237,000 ft² (22,018 m²) — surpassing AISTech 2012's record of 189,000 ft² (17,560 m²) by 20.3% and making this the largest exposition in AISTech history. Products and services from 506 steel-related companies were featured in aisle after aisle of the sold-out exhibit floor.

AISTech always provides opportunity for exhibitors to gain new business and maintain relationships with their current customers. **Deana Lecy**, director of sales and marketing for Falk PLI, said, "The top reason we exhibit at AISTech is that we walk away from the conference with a number of jobs. Many people come by our booth with a

genuine interest in the technology, allowing us to help them solve their problems." **Laura Freehling**, for Berry Metal Co., added, "We have developed business opportunities and leads from exhibiting at AISTech. We've also solidified our relationships with other vendors and partners."

Attendees visited the AIST Service Center inside the exhibit hall to pick up a copy of the AISTech 2013 Conference Proceedings, browse additional publications for sale and enter prize drawings for a set of golf clubs, a large-screen TV, a laptop and more.

The prize winners are recognized on page 115 of this issue.

President's Award Breakfast

Breakfast was served to a sold-out crowd of 1,200 on Tuesday, 7 May in the Spirit of Pittsburgh Ballroom inside the David L.

Lawrence Convention Center. **Kent D. Peaslee**, the 2012–2013 AIST president, opened the event by detailing what AIST had accomplished throughout the previous year. In addition to more than 200 committee and chapter events, Dr. Peaslee described several major initiatives, including:



Richard J. Harshman of Allegheny Technologies, Inc. delivered the AIST William T. Hogan, S.J. Lecture at the President's Award Breakfast on 7 May 2013.



- The launch of the AIST Digital Library to improve the dissemination of knowledge.
- The growth of the AIST Process Benchmarker® for comparative technical benchmarking.
- The expansion of the AIST International Steel Academy representing first-class education and a network into new markets.
- Progress on the additional volumes of the *Making, Shaping and Treating of Steel*® 11th edition.

Joon Yang Chung, chairman and chief executive officer of POSCO, was named AIST Steelmaker of the Year, in recognition of his role as a visionary for the global steel industry. Mr. Chung was introduced by **John P. Surma**, chief executive officer of United States Steel Corporation, as “a man of steel with a zest for life.” While accepting the award, Mr. Chung said, “I am honored and humbled to be here today. POSCO has taken part in many technical transfers with Pittsburgh-based companies. These technical sharing opportunities have provided POSCO with opportunities to compete in today’s steel market. POSCO will continue to collaborate with the U.S. steel industry to continue to develop technologies.” An interview with Mr. Chung starts on page 109.

Other Association-Level Award winners announced during the President’s Award Breakfast, including the Distinguished Member and Fellow Award and Hunt-Kelly Outstanding Paper Award, appear on pages 84–89 of this issue of *I&ST*. The Technology Division-Level Award winners are listed on pages 90–108.

The keynote address was delivered by **Richard J. Harshman**, Chairman, President and Chief Executive Officer of Allegheny Technologies, Inc. ATI is one of largest specialty metals suppliers in the world, and Harshman spoke about the company’s commitment to relentless innovation. “Change is the only constant,” he said. “Status quo loses!” Construction of the US\$1.16 billion hot rolling and processing facility at ATI’s Brackenridge facility is expected to be completed by end of 2013, and formal commissioning will take place in the first half of 2014. The facility is designed to hot roll nickel-based and specialty alloys, titanium alloys, stainless sheet, strip and coiled plate, zirconium alloys, Precision Rolled Strip® products and grain-oriented electrical steel. Harshman’s address is reprinted on pages 59–67 of this issue of *I&ST*.

The breakfast was sponsored by CVS Technologies, Danieli and Tenova.



1,200

attended the President’s
Award Breakfast



Town Hall Forum

The past year has been difficult for the industry as it deals with Europe teetering on the edge of recession, overproduction in China, and political uncertainty in the U.S. The 2013 AISTech Town Hall Forum brought together leaders from steel companies around the world to discuss the industry's brighter future.

The Town Hall Forum was again moderated by **Jon Delano**, money and politics editor for KDKA-TV (CBS), Pittsburgh,

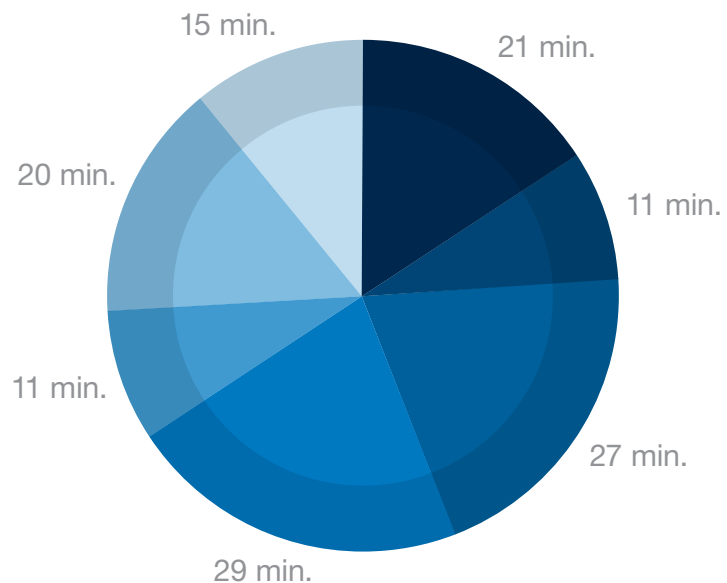
and chaired by **George J. Koenig**, president, Berry Metal Co. The two led a lively discussion on market forces, capital investment, trade issues, innovation, safety, workforce recruitment and the perception of the industry on Wednesday morning, 8 May in the Spirit of Pittsburgh Ballroom. Approximately 1,000 attendees listened to the discussion while hundreds more tuned in via the live Webcast sponsored by Hewlett Packard and NACB.



Town Hall Forum

topics

- Capital Investment
- Market Forces
- Trade
- Growth Markets
- Innovation
- Safety
- Recruiting the Workforce





The panelists included (pictured above, left to right, with **Ron Ashburn**, fourth from right, and **George J. Koenig**, second from right): **Carlos Garza**, president and chief executive officer, Tenova HYL; **Andrew S. Harshaw**, chief operating officer of ArcelorMittal USA; **Mario Longhi**, president and chief operating officer, United States Steel Corporation; **Michael T. Rehwinkel**, executive chairman, EVRAZ North America; **Anand Sen**, vice president (TQM and KPO), Tata Steel; and **Chad Utermark**, vice president and general manager, Nucor-Yamato Steel.

Delano began the discussion by asking the panelists how their companies intend to grow and remain profitable in the age of the natural gas renaissance. The panelists agreed the boom in natural gas is providing great opportunities to create manufacturing jobs in the U.S., but Rehwinkel cautioned that the U.S. should not let other countries enjoy the renaissance by using imported steel. "It's our renaissance, our life-changing event in North America. Don't let someone else enjoy our low-priced natural gas," he stated. Utermark agreed, saying the gas should be used to our country's and our businesses' advantage before allowing it to be exported. Sen noted that India is watching

what's happening here with interest, and that if the U.S. gets a boost from the renaissance, it will be good for the global steel economy.

Delano asked the panelists if the current economic situation in Europe is creating opportunity for steel companies. Harshaw noted how structural overcapacity in the region is creating difficulty for the industry. Sen foresees more mergers and fewer acquisitions, and perhaps more collaborative support in the region moving forward.

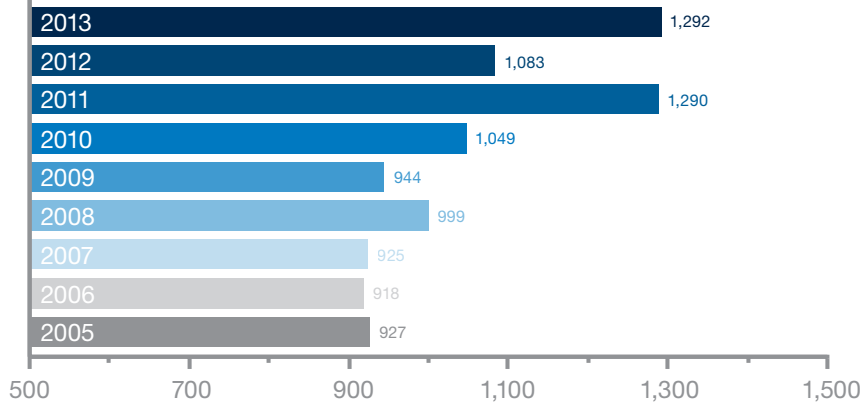
The U.S. leaders expressed their dismay with the lack of support from the federal government when it came to imports and trade policy. Rehwinkel pointed out that U.S. trade laws are outdated.



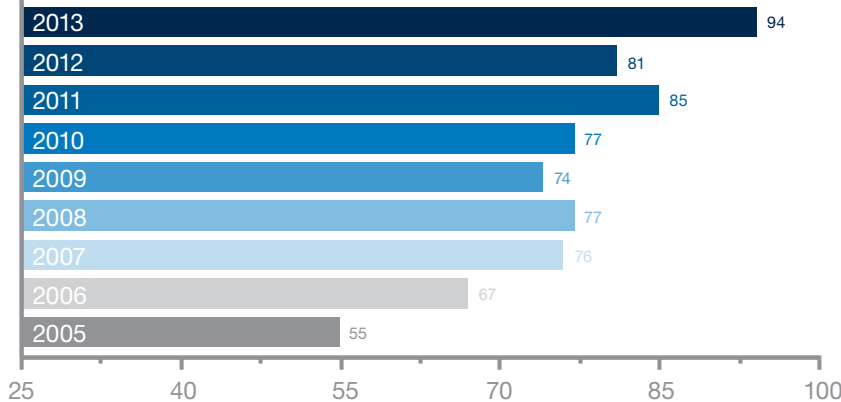
George J. Koenig of Berry Metal Co. served as chair of the 2013 AISTech Town Hall Forum on 8 May 2013.



Total authors



Technical sessions



The laws, as written, require companies to prove that they are being harmed by imports over a long period of time. “Try to tell an unemployed steelworker that he’s not being harmed right now,” Rehwinkel said passionately. Harshaw concurred, saying U.S. trade laws are out of touch with reality, especially considering the fast-paced business cycles that now occur. The panelists agreed that the industry needs to personalize the message in Washington, D.C., and encourage a grassroots effort to effect change. “Hourly productive workers need to get the word out,” Utermark commented.

Regarding growth markets, Harshaw said the automotive market is the number one market for ArcelorMittal. Rehwinkel noted that when the housing market begins to heat up over the next 1–4 years, it will pull



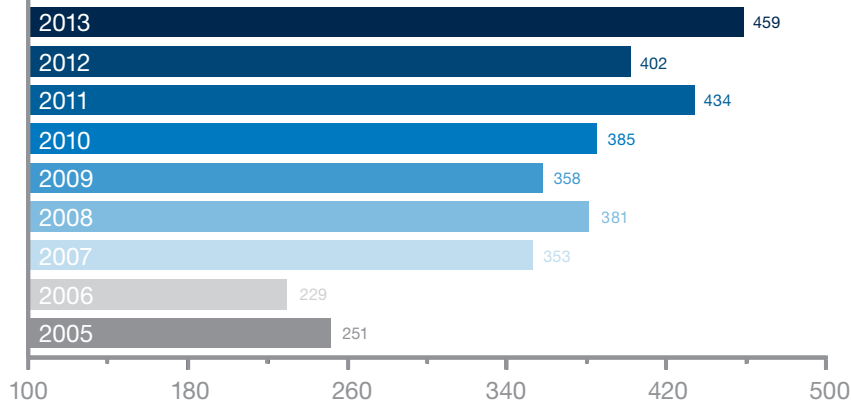
the rest of the steel industry up with it. He also noted there is plenty of room for railroads and pipelines to be successful, creating opportunities for the steel rail market. Utermark said an explosion in the non-residential construction market is possible if long-term solutions can be applied to the nation's infrastructure. He predicted there will be good times in the non-residential sector in 2014 and 2015.

Moving on to innovation, Delano asked what the panelists see as the cutting-edge materials and processes in today's steel industry. EVRAZ reviews every month the evolution of technology in the industry. "This crowd, the talent in this room — that's our innovation," Rehwinkel said. Utermark agreed, saying that what happens on the shop floor is where the innovation takes place. Garza, as a supplier to the steel industry,

took the opportunity to highlight different developments from Tenova HYL that could help make the steel industry more competitive and profitable, including new gasification techniques for low-grade coal, a process for turning iron carbide into DRI, CO₂ management and sulfur management. Longhi said U. S. Steel is concentrating on developing materials needed for OCTG and drilling applications.

On the topic of safety, Utermark stated that safety "has become a way of life" for steelmakers. For Tenova HYL, as a technology provider, safety is a science, Garza said. To design the systems, they must consider the norms and the human factors, creating each product with safety in mind. "Safety is a not a lonely effort. Having no accidents does not happen by accident," Longhi added.

Technical presentations





All the panelists agreed there is a technology skills gap in the steel industry. ArcelorMittal has partnered with community colleges to provide programs that include an internship at their mills and also has a “Steelworker of the Future” program. U. S. Steel has a similar program. They are moving away from a broad effort, opting for customized regional efforts, focusing on 20 specific colleges and intensifying relationships with teachers and students, Longhi said. Nucor also works with community colleges, but has also begun reaching out to high schools and creating co-ops and internships that allow students to participate in relevant, meaningful projects so they will want to come back to work for the company.

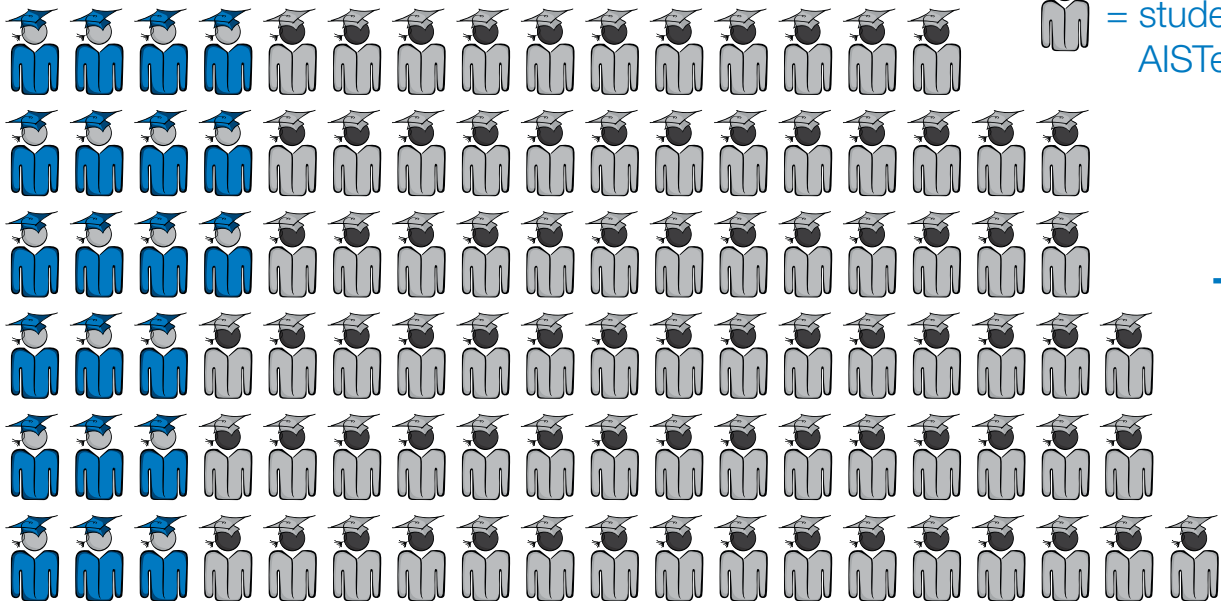
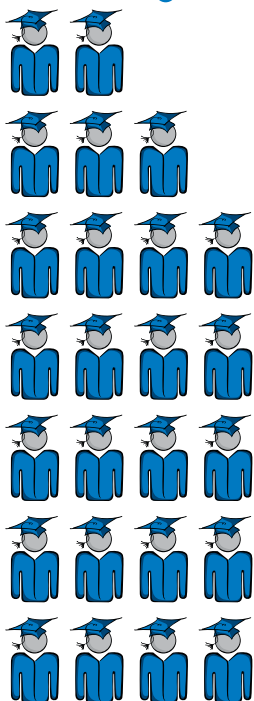
When it comes to the overall general perception of the steel industry, Longhi commented, “We haven’t figured out how

to properly demonstrate the beauty and usefulness of steel to young people as they are growing up,” he said. “Who is responsible?” asked Sen. “We are responsible for showcasing our industry” in a better light and bringing the brighter future to the present reality.

A Town Hall Forum luncheon, sponsored by Berry Metal Co., CBMM North America, Herr-Voss Stamco and TMEIC, was held for all Town Hall attendees directly following the Forum in the Exhibit Hall.



To hear more of the panelists’ views, visit AIST.org. A full-length video of the Town Hall Forum is available on-demand — free for AIST members — throughout 2013.





Member Chapter Meetings

Over the course of AISTech 2013, leaders from AIST's Brazil, India, and Korea Member Chapters and the proposed Italy Member Chapter met with AIST representatives to discuss advances within each chapter and future programming opportunities within each region.

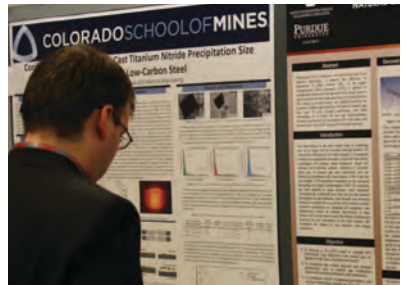
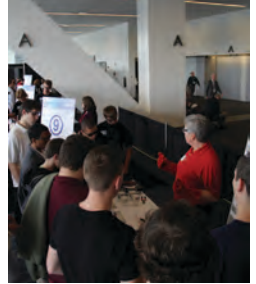
On Sunday, 5 May 2013, the India Member Chapter officers and representatives met with AIST staff members. In 2013, a formal executive committee was established, which will lead the new chapter as it continues to grow alongside the Indian steel market. During the meeting, membership growth ideas were discussed, as well as the planning of AIST's 2013 International Steel Academy (ISA). The ISA will be held 9–13 December 2013 at Jindal Steel Power Ltd. in Raigarh, India. Visit AIST.org/ISA for details.

Also on Sunday, AIST staff members met with a representative from the AIST Korea Member Chapter to discuss the current cooperation agreement between AIST and the Southeast Asia Iron and Steel Institute (SEAISI), as well as a potential combi-membership opportunity with the Iron and Steel Institute of Japan (ISIJ).

AIST staff members met with representatives from the proposed AIST Italy Member Chapter on Wednesday, 8 May 2013. The discussion centered around the Italy Steel Forum, which was held for the first time in 2012 and will be held again in 2013. The program features an Industry Leader Town Hall Forum, a panel discussion with secondary steelmaking experts and two keynote presentations. The 2013 Italy Steel Forum will be held on 26–27 September 2013 at the Pomini Tenova facility in Castellanza, Italy. Visit AIST.org/Italy for more information.



Student activities at AISTech 2013 included the Graduate Student Project Contest (left to right): Kent D. Peaslee, AIST president, and Vivek Thapliyal, a Graduate Student Project contestant from Missouri University of Science & Technology.



Representatives from the AIST Brazil Member Chapter met with AIST staff members on Tuesday, 7 May 2013 to discuss future collaborative opportunities, including a potential study tour of

the EAF mills in Brazil and Argentina, and a specialty training conference. The AIST partnership with ABM was also discussed, along with a review of the ABM/AIST Combi-Membership.

Students at AISTech

The AIST Foundation, with support from several industry companies, held special student-specific programs at AISTech 2013. A record total of 129 students from 32 universities participated in the student programs. Events included a plant tour of AK Steel Butler, the

Steel to Students reception, an attendance challenge, and presentation and poster contests. A Materials Camp was held for more than 200 middle school and high school students. For complete details on the student activities at AISTech, see pages 260–261.

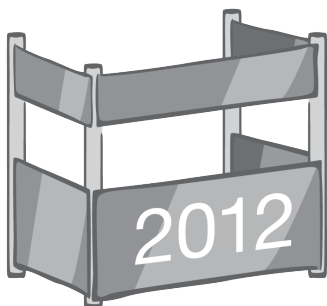
Acknowledgments

Every year, many individuals put forth the effort that goes into making AISTech a success. As always, AIST's executive committee and board of directors are pleased to acknowledge the leadership of the AISTech 2013 Conference Planning Committee chair, **Ron O'Malley**, Nucor Steel; the Exhibitor Committee chair, **Rebecca Dolan**, InfoSight Corp.; and the Golf Committee chair,

Fred Harnack, United States Steel Corporation. Thanks also go to the Town Hall Forum session chair, **George Koenig**, Berry Metal Co.; AIST Foundation president, **Tom Russo**, MMFX Technologies Corp.; the Technology Committee members who put together the record-breaking technical program; as well those who wrote and/or presented papers.



VS.



20.3%

increase in exhibit floor space



AISTech 2014: Indianapolis, Ind., USA

AISTech 2014 will be held at the Indiana Convention Center in Indianapolis, Ind., USA, on 5–8 May. Nearly 300 companies have already reserved space for the next exposition. Space is limited for 2014 and the Exhibit Hall is very close to being sold out. Contact the AIST Sales Team at sales@aist.org to reserve your space if you haven't done so already.

Also, submit an abstract for a technical presentation by emailing abstracts@aist.org or by visiting AISTech.org. Be part of the premier steel technology event of the year! You won't want to miss it.

AISTech 2013 Goggle Man

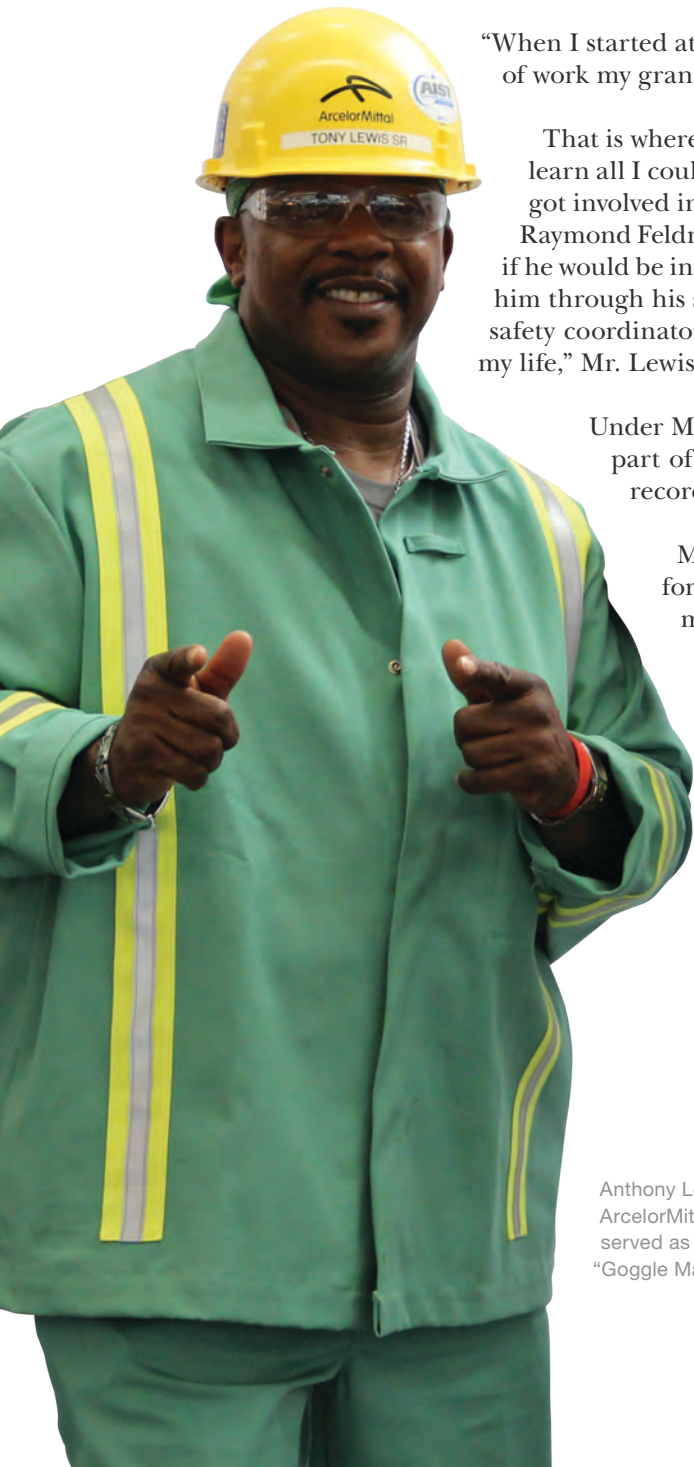
Anthony Lewis, safety coordinator — hot rolling, ArcelorMittal Burns Harbor

Anthony Lewis is not the first person to be the focal point of the AISTech image, but he is the first to attend AISTech and be recognized at the event as “Goggle Man.” Currently the safety coordinator for the hot rolling division at ArcelorMittal Burns Harbor, he has worked in the steel industry since 1978, when he was hired at the facility under Bethlehem Steel.

Mr. Lewis grew up in Gary, Ind., a city with a strong history in the steel industry. His father was a steelworker, and before that his grandfather worked at U. S. Steel in the coke plant. “I am proud to be a third-generation steel worker,” he told *Iron & Steel Technology*.



237,000 ft² /
22,000 m²
 of exhibit floor space



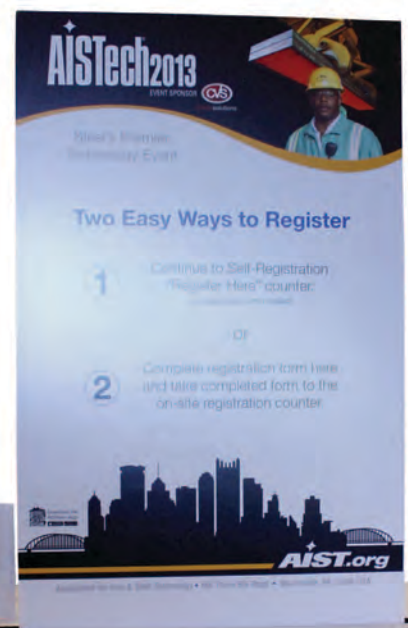
“When I started at the coke plant at Bethlehem Steel, I was doing the same type of work my grandfather had done.”

That is where his interest in safety began. “I attended Purdue University to learn all I could about OSHA,” said Mr. Lewis. “I received some training and got involved in safety in 1986, staying at the coke plant for another 15 years.” Raymond Feldmeier, the safety chairperson at the coke plant, asked Mr. Lewis if he would be interested in becoming a safety representative, and helped guide him through his start. Then in August 2001, Mr. Lewis was appointed as union safety coordinator for the hot rolling division. “This opportunity has changed my life,” Mr. Lewis remarked.

Under Mr. Lewis’ direction at the Burns Harbor plant — which is now part of ArcelorMittal Steel USA — the safety team was able to set a record incident rate of 0.47 in 2010, and this still holds.

Mr. Lewis’ selection as Goggle Man 2013 was quite an honor for him. He recalled, “In the weeks before AISTech, I received multiple correspondences with my picture as the face of the conference and exposition. Then I walked into the convention, and I was recognized as the face on the pictures. Goggle Man became something that I will cherish for the remainder of my career and beyond.” ♦

Anthony Lewis of ArcelorMittal Burns Harbor served as AISTech 2013’s “Goggle Man.”





Specialty Metals: Creating Value Through Relentless Innovation in a Dynamic, Global Industry

AISTech 2013 President's Award Breakfast Keynote Address

by Richard J. Harshman, Chairman, President and Chief Executive Officer, Allegheny Technologies, Inc.

Good morning. I am honored to be the speaker at this year's President's Award Breakfast. I follow some very distinguished past speakers, and I am proud to represent not only ATI, but the specialty metals industry.

Before I begin, there are some standard forward-looking statements that I need to acknowledge.

Allegheny Technologies, Inc., or ATI, is one of the largest and most diversified specialty metals producers in the world (Figure 1). We have more than 11,000 full-time employees, 85% of whom are located in the United States. At ATI, we use innovative technologies to offer growing global markets a wide range of specialty metals solutions.

Specialty metals, as we define them, begin with stainless steel alloys containing a minimum of 10% chromium, and move up the alloy systems spectrum to include titanium and titanium alloys, nickel-based alloys and superalloys, specialty steel alloys, zirconium, hafnium and niobium alloys and tungsten heavy alloys (Figure 2).

ATI's specialty metals products that are made from these alloy systems include what we refer to as long and flat rolled mill products. Our long mill products include billet, bar, extrusions, rod and wire. Our flat rolled mill products include sheet, plate, coil and precision engineered strip (Figure 3).

It is no secret that a key challenge facing all metal producers is to move closer to near-net-shape and net-shape products (Figure 4). We've chosen to do this via powder-metal alloys and highly engineered investment cast and precision forged products. We have also moved more toward net shapes by expanding our machining and finishing capabilities.



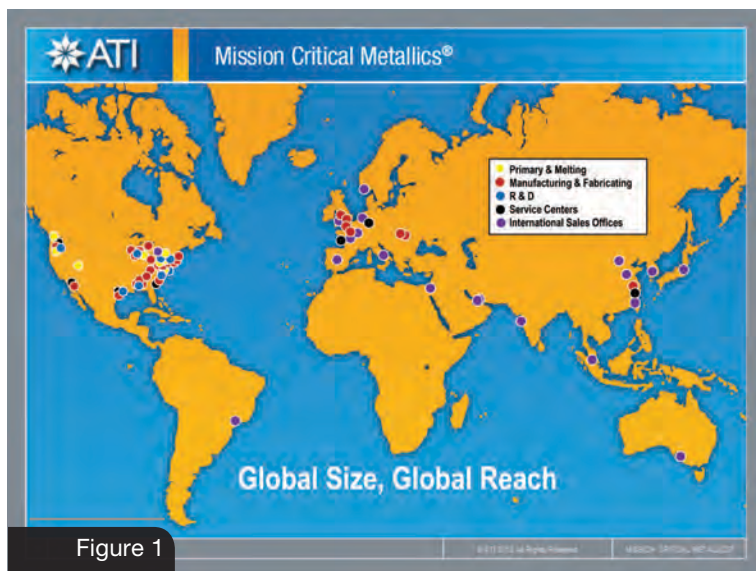


Figure 1



Figure 2

Figure 1. ATI's global presence. Figure 2. ATI's metals and alloys.

In 2012, 79% of our sales were what we view as high-value products (Figure 5). These products are at the upper end of specialty metals technology. They require specialized processing and are manufactured by only a few companies in the world. ATI is one of them. We are among the few integrated specialty metals producers.

Our capabilities begin with the primary production of certain raw materials and conclude with the machining of highly engineered cast and forged components.

ATI makes “mission critical metallics,” which means there is no room for failure from our products, our people, or our environmental and safety performance.

We strive to be the best specialty metals company in the world by providing our customers with unmatched product breadth, unparalleled technical depth and unsurpassed manufacturing capabilities.

To manufacture our specialty metals, we need the most advanced technology and a diversified suite of melting and refining capabilities.

Stainless steels are created in air using electric arc furnace melting and argon-oxygen refining. Nickel-based alloys and superalloys are generally melted and refined in a vacuum to more precisely control chemistry among other metallurgical requirements.

Vacuum induction melting, vacuum arc remelting and electroslag remelting are the main production processes for our nickel-based alloys, superalloys and many of our other specialty alloys.

Titanium and zirconium are reactive metals and must be melted and refined in a vacuum.



For titanium, ATI uses all three melting and refining processes: vacuum arc remelting (VAR), electron beam and plasma arc melting, or PAM.

ATI is also working to enhance the sustainability of our manufacturing processes. For example, we routinely use more than 85% recycled materials when melting our flat rolled products.

In addition, in our high-performance alloys, many of our customers have instituted revert programs so that the scrap metal from their operations, and throughout their supply chains, is returned to ATI to be remelted into new products.

The key global markets for ATI include aerospace and defense, oil and gas and chemical processing industry, electrical energy, both generation and distribution, and medical equipment.

We believe that these key markets are differentiated in several ways. Each has significant technical barriers to entry due to the mission-critical nature of the application. Each is primarily global in nature.

And they are all projected to grow faster than global GDP in the short and intermediate term. These key markets focus on secular growth trends in the global economy.

Even through short-term economic cycles, the world's population continues to grow and more people are moving into an expanded middle class of consumers.

These markets are responding to a long-term demographic shift and the long-term infrastructure building and rebuilding occurring around the world.



Figure 3



Figure 4

Figure 3. ATI's products. Figure 4. ATI's near-net and net-shaped products.

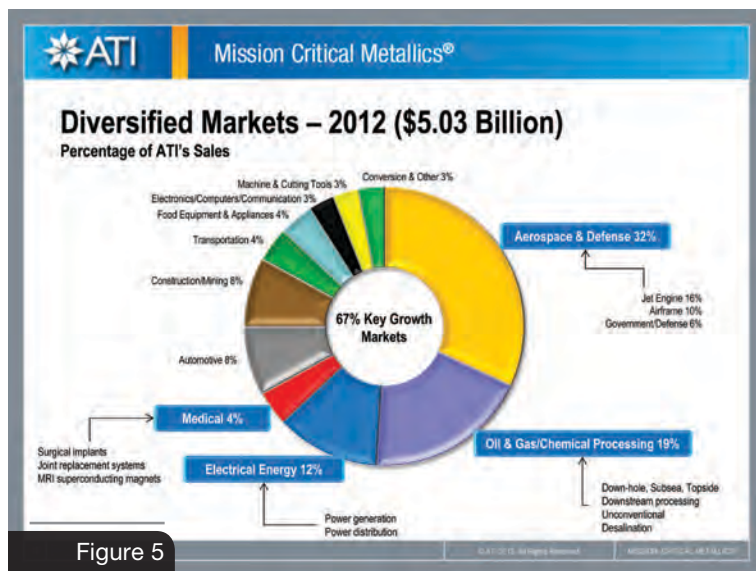


Figure 5

Figure 5. ATI's diversified products.

Along the way, I will give you a look at the path we have taken over the past decade to continue our journey to build the world's best specialty metals company.

To frame this discussion on ATI's pursuit of industry leadership, I'd like to share our thoughts on the changes that have been impacting, and are continuing to impact, the specialty metals business.

From my perspective, these changes fall into five categories:

- The emergence of China and other developing economies.
- Evolving customer relationships.
- Industry consolidation.
- Vertical integration.
- Technical innovation.

In 2005, China made 13% of the world's stainless steel. In 2010, it made 36%. There is no doubt China is a significant participant in the global stainless steel industry. The only question is whose rules they play by.

This is especially true in the areas of currency manipulation, full access to their home markets and full compliance to their commitment to World Trade Organization (WTO) rules. U.S. and European policymakers must get engaged and insist on China's full WTO compliance, including ending currency manipulation.

A second change impacting our industry is evolving customer relationships. Many, if not all, are consolidating their supply bases.

A good example is Rolls Royce. When they developed their Trent 500 engine in 2002, they had 250 suppliers. Today's supply base for their new Trent XWB engine is less than 50.

This kind of supply chain consolidation is forcing component and materials suppliers to be more capable than ever before.

Customer demand for fewer and more capable suppliers is in turn driving both industry



consolidation and vertical integration as we all search for the technological capabilities to produce the innovative products we must provide — quicker and more efficiently than ever before.

This is the backdrop against which we are pursuing our strategy of industry leadership through relentless innovation. But there are other important forces influencing ATI's strategy that need to be highlighted. We believe in U.S. manufacturing. We believe a U.S. manufacturer can compete and be successful in the global economy. From our perspective, we understand that ATI must provide an attractive value proposition to our global customers.

To achieve this from a primarily U.S.-centered manufacturing base, ATI must have the most advanced technology, the most innovative products, the most productive people and offer our customers a competitive cost structure.

We realize that the ability to manufacture specialty metals is a core competency not only for ATI, but for the United States.

In our business, really, in any business, change is the one constant.

The pace of change is much quicker today than it ever has been at any point in my 35-year career. The markets that we serve are global. Our competition is more capable. Our customers are more demanding. The regulations governing our processes are more complex.

To be successful, we must have an unquenchable desire to improve the speed at which ATI gets better.

We must use change to our advantage by being a relentless innovator in everything we do. In ATI, we understand that status quo loses!

At ATI, we believe that relentless innovation earns us the ability to engage in long-term, strategic customer relationships at the highest

“In our business, really, in any business, change is the one constant.”

levels. We believe customers want to work with a company offering the technical expertise and manufacturing know-how to provide solutions for not only their current needs, but also their future needs.

Relentless innovation is the core enabler to our strategy. We must continue to differentiate ATI by innovating faster than our competition to provide greater value for our customers.

A recent research study concluded “that the innovation cycle in the U.S. is alive and well, and could continue to serve as an engine for future U.S. growth.”

That same research study mentioned ATI as one of America's innovative companies.

The study said, “U.S. specialty metals companies like Allegheny Technologies developed high-temperature-resistant alloys like ATI 718Plus® and Rene 65 — a GE-developed alloy that ATI helped commercialize. These specialty metals increase the efficiency of jet engines by allowing them to burn hotter.”

Since 2003, we have brought many new products to the market (Figure 6). In 2005, we introduced ATI 718Plus®, which was the first new nickel-based superalloy developed in more than 40 years, for use in a wide variety of jet engines.

This alloy is a significant improvement over 718 nickel superalloy, a long-time workhorse of the aero engine industry.

ATI 718Plus® enables a 100° increase in engine operating temperature, a key demand from engine original equipment manufacturers to help them improve fuel efficiency and reduce engine emissions. We believe this alloy will have broad application in multiple engine components, including disks, rotors and fasteners.

ATI 718Plus® is already flying in today's jet engines and is being designed into future-generation engines.

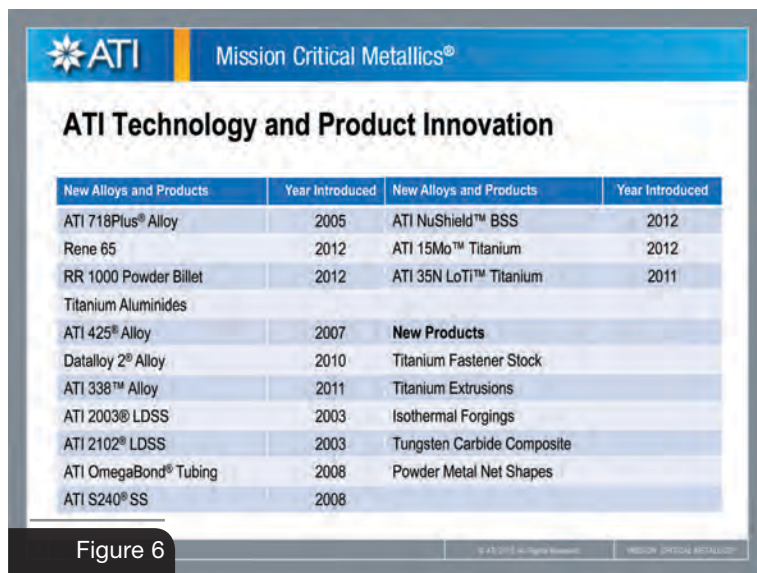


Figure 6

Figure 6. ATI's technology and product innovation.

Next is ATI 425™ Alloy, a new airframe product. Although this titanium alloy has been in existence for some time, it was characterized for airframe applications three years ago, a very short time in the traditionally conservative aerospace industry.

It is the first high-strength titanium alloy capable of being produced in continuously cold rolled sheet. It replaces pack-rolled Ti 6-4 sheet for a variety of airframe structural applications.

ATI 425™ Alloy has also been qualified for rotary blade applications, such as erosion strips, and continues to be evaluated for numerous airframe applications, including fastener stock, hydraulic tubing, and hot- and superplastic-formed parts.

Then we have ATI 2003®, a lean duplex stainless steel developed to provide our oil and gas customers with high-strength, corrosion-resistant material solutions. It was recently selected for offshore topside structural applications in the North Sea because of its capacity to improve maintenance, reduce weight and extend the safe operating timeline compared to conventional alloys.

If you ever travel to Qatar and fly into the new Doha International Airport, you can answer this trivia question: What is the first major architectural application of ATI 2003 Lean Duplex Alloy?

The answer is the roof of the Doha airport. It is the largest such roof in the world.

Finally, there is Datalloy 2®, an advanced solution for down-hole drilling.

It was developed for horizontal and directional drilling for oil and gas development, including shale. It features improved micro-structural stability and exceptional corrosion resistance, higher strength, and greater reliability and productivity in these demanding environments.

I have already discussed the importance of an integrated supply chain to meet our customers' demands for fewer but more capable suppliers. ATI's current integrated supply chain is the result of our strategic investments and acquisitions. Since 2004, we have undertaken a US\$3.7 billion, multi-phase investment program to transform and enhance our capabilities to produce premium specialty metals products (Figure 7).

We have built an aerospace integrated supply chain to meet the needs of next-generation and future-generation airplanes and jet engines. Airframes, such as the Boeing 787 Dreamliner and Airbus A350 Extra Wide Body, use a higher percentage of titanium than any other commercial models.

Next-generation engines, such as the GEnx and Trent 1000 for the 787, and the Trent XWB for the A350XWB, along with future-generation single-aisle aircraft engines, such as the LeapX and Geared Turbofan, must be lighter and must burn hotter to meet their fuel efficiency and environmental goals.

We have built technologically advanced primary production facilities to make raw materials destined for these engines and airframes.



ATI completed the first greenfield titanium sponge facility in the U.S. in six decades. Our facility in Rowley, Utah, has achieved SQ, or standard quality approval, and can be used in aerospace and industrial applications. The next step is PQ, or premium quality qualification, which means we will be able to use ATI Rowley sponge in all titanium applications, including rotating parts in jet engines and high-end medical applications.

We added advanced melting and refining furnaces for our titanium alloys, nickel-based superalloys, specialty alloys and zirconium products. One highlight: we added our fourth PAM in 2011. ATI has been the world's leader in PAM technology since the early 1990s.

Our new Titanium and Super Alloy Facility, TSAF, was commissioned in 2009. It features a 700-mm advanced radial forge and a 10,000-ton open-die forge press. Both are the largest in the specialty metals industry.

These capabilities provide ATI with the opportunity to tailor microstructure in a manner never before achievable. The TSAF is game changing, enabling technology that provides us the capability to produce next-generation and future-generation alloys.

In 2009, ATI added Crucible Compaction Metals — now ATI Powder Metals — and its nickel-based and titanium alloy powders to our product portfolio.

Powder metal components are an avenue to many near-net and net-shaped components. In addition, powder metal alloys represent many of the next-generation and future-generation high-temperature, high-performance alloy systems for jet engines.



Figure 7



Figure 8

Figure 7. Integrated aerospace supply chain. Figure 8. Hot rolling and processing facility (HRPF).



Figure 9. Meltshop and HRPF sequence. Figure 10. Meltshop, HRPF and finishing sequence.

Additive manufacturing is another growth opportunity for our titanium powders.

In 2011, we acquired Ladish, which provides ATI with the capability to manufacture high-performance forgings and titanium investment castings.

The largest isothermal forging press in the world came to ATI via the Ladish purchase. Isothermal forging is an advanced process offering the capacity to produce near-net-shape forgings.

We believe it will be a powerful tool when coupled with our powder metals and forging technologies.

Many customers today recognize the advantage of a seamless, real supply chain over a virtual supply chain involving multiple producers. Being integrated from alloy development through melting and remelting, through semi-fabricated to near-net-shape and net-shape products, is proving to be a significant strength and competitive advantage for ATI.

The final major capital project in ATI's 10-year transformation strategy is our US\$1.16 billion hot rolling and processing facility (Figure 8), or HRPF, that is being built just north of here along the Allegheny River in Brackenridge, Pa. Construction is expected to be completed with assets ready for service by the end of 2013. Formal commissioning is expected to occur in the first half of 2014.

The HRPF is designed to be the most powerful, productive, versatile and technically advanced rolling mill in the world for manufacturing specialty metals. The mill will deliver thinner gauges and wider coils for ATI's full range of flat rolled products.



These products include nickel-based alloys and specialty alloys, titanium and titanium alloys, zirconium alloys, stainless sheet, strip and coiled plate, as well as precision-rolled strip and grain-oriented electrical steels.

The HRPF has also been designed to hot roll the next generation of carbon steel alloys, such as dual-phase alloys and advanced high-strength steels.

The HRPF is designed to be different than any other such facility. It enables game-changing innovation because it brings together an unmatched concentration of technology that provides us with streamlined flow paths while expanding our product capabilities.

Because of the designed-in processing speeds, the HRPF enables fast cycle times with low levels of inventory, decreasing our working capital requirements and mitigating raw materials risk.

Many of our products need to be processed in small batch operations. By designing-in four types of slab reheating capabilities under one roof, several different alloy systems can be fed seamlessly into the same rolling mill.

The HRPF will receive slabs from all of our meltshops (Figure 9). For our high-value products, the HRPF extends our leading position by giving ATI the capability to offer our customers wider and larger coils. In addition, with a thinner hot rolled coil from the HRPF, we will be able to significantly improve the productivity of the processing path for our precision rolled strip products (Figure 10).

For our standard grade stainless products, the HRPF, coupled with our direct roll anneal and pickle line, which is a continuous automated finishing line, creates one of the world's most efficient flow paths. The finishing cycle time is approximately 30 minutes from hot rolled coil to finished coil. This compares to a cycle time of approximately two weeks at most conventional finishing facilities.

“We strive to be the best specialty metals company in the world by providing our customers with unmatched product breadth, unparalleled technical depth and unsurpassed manufacturing capabilities.”

The HRPF is the widest such mill in the world and has been designed to produce hot rolled bands capable of being made into finished product of up to 76.62 inches, or 2 m. It is fully automated and utilizes the best available environmental technologies in all areas.

ATI's unique product line required that the HRPF be designed to be the most powerful available. The unique separating force enables the HRPF to roll next-generation materials, such as the high-strength carbon steels, that are being designed into lighter weight automotive applications.

We believe that the HRPF will help ATI improve our position as a global leader in specialty metal flat rolled products by enabling our customers to meet their product design needs while achieving their own cost and productivity objectives.

I hope my presentation this morning has helped you understand more about the global specialty metals industry, at least from our perspective, and more about ATI.

I hope you have learned something about the path we have been following for the past decade to position our company among the vanguard of this industry.

And I hope you appreciate our commitment to create sustainable growth through relentless innovation.

Thank you. ♦