



Steelmaking for the Next Generation

The 2019 AIST William T. Hogan, S.J. Lecture

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Good morning. I am truly honored to be here today. I'd like to thank Jim Dudek, Ron Ashburn and the entire AIST team for asking me to deliver the Hogan Memorial Lecture. I'm humbled to follow in the distinguished footsteps of many of this industry's most recognizable names, including many of my predecessors at U. S. Steel.

First, let me personally congratulate all of today's award winners. I think all of us here recognize that steel is the material of choice for many applications, but we also know that we cannot rest on our laurels given the advances by alternative materials. The innovators we are recognizing today are a testament to the opportunities available for steel. And given the new records mentioned earlier, our industry clearly understands that AIST is a leader in promoting steelmaking innovation. Congratulations, Ron, and thank you and the AIST team for what you do every day.

Before I turn to the theme of this talk — steelmaking for the next generation — I thought I'd share a little background on the namesake of this lecture. Father William Hogan, also known as the “steel priest,” was an economist who worked at United States Steel Corporation in the late 1940s while researching his dissertation on steel productivity. He went on to advise five U.S. presidents and other government leaders on tax and steel matters, including legislative reforms to spur capital investment. I find it quite interesting how much of what Father Hogan studied and advised on decades ago continues to resonate today.

Now, back to the topic of my discussion.



and practices that have served us well in the past.

First, a brief word about an issue from the past that we are addressing in the present that is critical to our future.

Our domestic industry is recovering from years of unfair trading practices and global overcapacity in large part because of the 232 trade remedies that have allowed us to reinvest in our businesses.

For companies in the U.S., this is exactly what the Trump administration intended when it enacted the Section 232 remedies. Like Father Hogan, the Trump administration understands the strategically important role the steel industry plays in our national and economic security. The goal of the 232 remedies was to ensure our national security and create a more level playing field. Since then, the domestic industry has been investing in new technology, research and development, and our people. These are exactly the kinds of investments we need in order to keep dreaming big and doing good things for decades to come. We will continue to advocate for trade that is both free and fair, and defend ourselves from those who think the rules don't apply to them.

While much progress has been made in the past year, we should not allow this renaissance to mask the significant challenges we face, including an aging workforce, the breakneck pace of technological changes, competition from new materials and ever-increasing societal expectations for environmental stewardship.

How will we address those challenges? As my first theme said, we need to draw on our past, preserve the best parts of it and improve on the rest.

Innovation and continuous improvement have always been a part of the steel industry. I need look no further than the company I am fortunate to lead, which was the first billion-dollar business enterprise. Many of the business culture firsts you see listed here have been adopted throughout corporate America because they were valuable innovations.

U. S. Steel and our predecessor companies have also been technological innovators. In fact,

As we think about the next generation of steelmaking, my strong belief is that in order to capitalize on our present, we need to adapt to — and, in fact, leverage — the technological and societal changes that are all around us while preserving the values, structures,

Andrew Carnegie's decision to construct the Edgar Thomson Plant a few miles from here in 1875 was driven by his desire to implement new steelmaking technologies available in Europe — the Bessemer process and open hearth furnaces. That spirit of technological innovation that drove Carnegie's investment in Braddock, Pa., continues to drive U. S. Steel now, just as it does all of the fine steel companies here today.

As you can see, U. S. Steel also counts leadership in safety among our proudest accomplishments. We still believe we have a fundamental responsibility to keep everyone who enters our facilities safe because it's the right thing to do and — as numerous studies have proven — it's also good for business. Our industry has made significant strides because we've learned from our past to create a safer future for our people. At U. S. Steel, we have adopted a very simple expression that we continue to repeat today. It is our operational excellence drumbeat, and safety is always first. For us, it's about safety ... it's about quality ... it's about delivery ... and it's about cost. Safety, quality, delivery and cost.

Technology advances have certainly contributed to the safety performance improvements you see here. However, safety at its core is about people, and at U. S. Steel, we've found that the education and engagement of our people have been equally important. We are working to create a true "culture of caring" by empowering employees to make safety and health a personal responsibility and to look out for their co-workers as if they were family members. And today, I'm happy to report that we have achieved an all-time record low for Days Away From Work cases through this point in the year.

"Safety First" is not just a slogan ... it's the way we work. We sincerely believe steelmaking for the next generation is one where zero injuries will be the norm, not the exception. We're pushing hard to make this dream our reality because, as I said earlier, it's the right thing to do.

Steelmaking for the next generation must also involve innovation that allows steelmakers and consumers alike to protect our shared environment. Our industry has made tremendous strides over time

related to environmental stewardship, especially here in the United States where regulations are among the world's most stringent. According to the American Iron and Steel Institute, the American steel industry

U.S. A History of Business Innovation

- ✓ First billion dollar business enterprise
- ✓ First company with an annual report
- ✓ First company with a code of conduct (the "Gary Principles")
- ✓ First company with an outside auditor
- ✓ First company with an annual meeting of stockholders
- ✓ Coined "Safety First" expression
- ✓ Innovator in modern industrial safety programs

United States Steel Corporation





environmental expenditures over the last three years topped US\$830 million. This included innovative enhancements at our nearby Clairton Plant that are an integral part of Allegheny County's plan to attain the new National Ambient Air Quality Standards for sulfur dioxide and contributed to the area meeting the standard for PM2.5 for 2018.

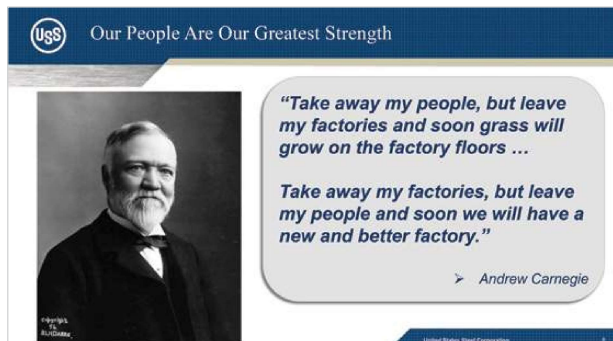
Our entire industry can also be proud that the products we make allow consumers to be good environmental stewards as well.

As you can see, steel has a vital role to play in the creation of a truly sustainable circular economy grounded in the life cycle approach. Numerous studies have shown that the life cycle approach is the most accurate way to determine a product's true environmental impact. Given steel's infinite recyclability, highly adaptive nature and durability, our products enjoy distinct competitive advantages over other materials. As our customers and the consumers they serve work to make more climate-conscious choices, steel stands ready, willing, and fully able to contribute to environmental, social and economic sustainability.

As I said earlier, if we want our industry to remain relevant for future generations, it's essential for us to attract, develop and retain the most talented people to drive the innovation necessary to ensure steel remains the material of choice in a variety of applications.

As Andrew Carnegie rightly noted, our people have always been the fiery, beating heart of our industry. The work done by AIST on the people side of our business has always been just as important as the technological advances it fosters. Jim Dudek, AIST's current president and a vice president at U. S. Steel, is himself an AIST success story. He directly traces his desire to join this industry back to the experiences afforded to him by his AIST student chapter while in college. And today, he's leading a US\$2 billion multi-year asset revitalization program in our North American flat-rolled facilities.

Like safety in our workplaces, making that personal connection with people is critical to attracting talented individuals, and organizations like AIST help us do just that.



has reduced energy intensity by 35% and greenhouse gas intensity by 37% since 1990.

Most of those reductions are the result of significant investments by our industry. At U. S. Steel, our

Our companies must also work with other like-minded partners in the public and private sectors to pool available resources.

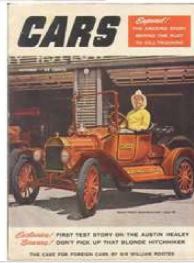
As data from the National Association of Manufacturers shows, manufacturing jobs like those in the steel industry are value-added for the economy. Unfortunately, skills gaps are preventing millions of family-sustaining jobs from being filled. An increasing number of workforce development agencies at the local and state levels are reaching out to companies like U. S. Steel to partner with us to better prepare and place candidates. In addition, high schools in the areas where we operate are putting renewed emphasis on technical training and have asked us to collaborate with them.

Once individuals elect to join us, we have to provide a strong value proposition to ensure they stay. At U. S. Steel, we've focused on a number of things to help us achieve that goal. We're creating individual and leadership development plans to help each employee deliver their best work. We've developed highly successful capabilities-building workshops, and are offering an ever-increasing and diverse mixture of e-Learning and classroom training that make our employees and our company better. And we're reinvigorating our diversity and inclusion programming to reinforce our commitment to maintaining a workplace rooted in accountability, fairness and respect.

We're doing these things because at U. S. Steel, we recognize that the best talent wins. And because the best talent and best teams win, each of our companies and organizations needs to lead in this area because our very own futures — and the future of our entire industry — depends on it.

Steel has been challenged for decades by alternative materials, and the threats remain real today. But the prediction you see here and others like it haven't happened yet. Steel remains the dominant material in vehicles and many other end-use applications because we've worked hard to give our customers what they need ... value-added solutions to their most pressing challenges. Together, we have persevered and changed conventional approaches in order to innovate and

Steel: Always Threatened, Never Supplanted



"The day of the passenger car made primarily of iron and steel is on the wane" giving ground to aluminum, magnesium and plastics.

➤ CARS Magazine
October 1953

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Our Critical Success Factors

**Move Up
the Talent
Curve**

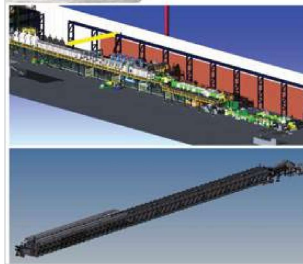
**Move Down
the Cost
Curve**

**Win in
Attractive
Markets**

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Dynamo Line at U. S. Steel Košice



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create a healthier, more sustainable steel industry. This is such an exciting time for our industry. And the nearly 30,000 men and women who work for U. S. Steel around the world are proud of the role



Investments in Tubular Technology

Electric Arc Furnace
Under construction – Fairfield, Ala.



Photo: SMS Group

Proprietary Premium Connections



USS-EAGLE SFH®

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creativity, dreams for a brighter tomorrow, and unimaginable levels of grit contributed to improvements that allowed our leadership team to deploy a future-oriented strategy focused on the three critical success factors: Move Up the Talent Curve, Move Down the Cost Curve, and Win in Attractive Markets. This strategy has helped us build the business case around a series of actions we've taken over the last couple of years.

Like many of you, we're investing in digital because of the potential for value creation and step changes in safety, efficiency, quality and much more. Things like big data, sensor and modeling advancements, robotics, and machine learning are no longer the stuff of sci-fi movies. Companies who can harness the raw power of digital will undoubtedly have a long-term competitive advantage, and we're pleased with our recent progress.

We have also developed an innovation strategy designed to help us foster the workplace culture necessary to drive innovative, transformational change in everything we do. Our early progress in this area includes the announcement in March of a project with Lawrence Livermore National Lab to expand our manufacturing capabilities for advanced high-strength steels.

U. S. Steel has also been making more traditional technology investments designed to help us compete and win long term.

In January, we announced construction of a new state-of-the-art Dynamo Line at our facility in Slovakia. Once completed, the line will increase our existing capabilities to produce non-grain-oriented electrical steels in demand for vehicles and generators.

A few weeks later, we restarted construction on a technologically advanced electric arc furnace at our Fairfield Tubular Operations. We're also continuing to invest in the development of proprietary premium connections. Together, these actions will further solidify our position as a value-added supplier supporting the energy industry.



PRO-TEC Coating Company Continuous Galvanizing Line

Soon to be the most capable and flexible AHSS coating line in the world



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Mon Valley Works \$1+ Billion Investment

New endless casting and rolling facility at Mon Valley Works' Edgar Thomson Plant



New cogeneration facility at Mon Valley Works' Clairton Plant



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we're playing in what I believe is a true renaissance for steel.

At U. S. Steel, our employees are the reason we've emerged from a trying period of time. Their

Since 2017, we've also been working through an asset revitalization program in our North American

James F. Dudek (left), 2018–2019 AIST president, United States Steel Corporation, presented the 2019 William T. Hogan, S.J. Lecture Award to David B. Burritt (right) at the AISTech 2019 President's Award Breakfast.



flat-rolled facilities. By the time we finish in 2020, our investments will total US\$2 billion. This includes at least US\$750 million at our Gary Works alone with a focus on improving our capabilities in heavy-gauge products.

Our PRO-TEC Coating Co. joint venture is also continuing construction of a new cutting-edge continuous galvanizing line. This new line features a proprietary coating process that can produce steels that will help automakers manufacture economically lightweight vehicles to meet increasing fuel efficiency and safety requirements.

Among the products the new line will be capable of producing are our sophisticated Generation 3 advanced high-strength steels, including our new industry-leading XG3 product. Launched last year, XG3 gives customers the strength, formability and weldability they need at a cost-effective price, and has been well received.

We're very excited about this product, and we're even more excited that we'll be able to source the substrate for it from our Pittsburgh-area Mon Valley Works facilities in the future thanks to our announcement last week: a billion-dollar-plus investment that will bring some of our industry's most cutting-edge technology right here to Southwestern Pennsylvania.

The addition of a sophisticated new endless casting and rolling facility and a state-of-the-art cogeneration facility will enable significant, measurable improvements to our environmental performance, cost structure and ability to compete — and win — in the most attractive markets. Mon Valley Works was a natural fit for this investment, and we're proud to continue the legacy of innovation started there by Andrew Carnegie back in 1875.

In closing, when this conference concludes, I'm sure you'll be reflecting on many things you learn here. I hope that among those lessons learned, you'll keep these three things in mind as we work together to build a future as strong and sustainable as the products we all have a hand in making every day. To do that, we must remember that steelmaking for the next generation is about:

Our Past: Keeping the good and improving on the not so good,

Our Present: Capitalizing on the current steel renaissance, and

Our Future: We must dream big and push hard, while always doing good things.

Thank you. ♦