



## 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.





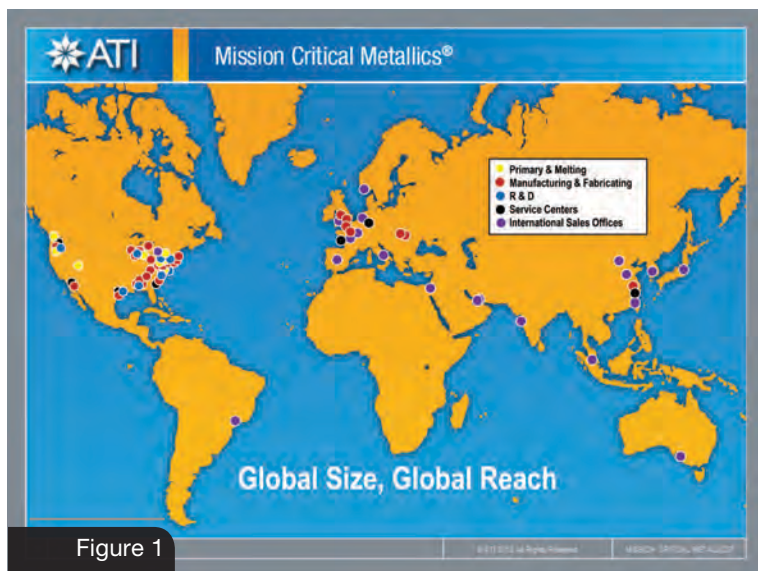


Figure 1



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.



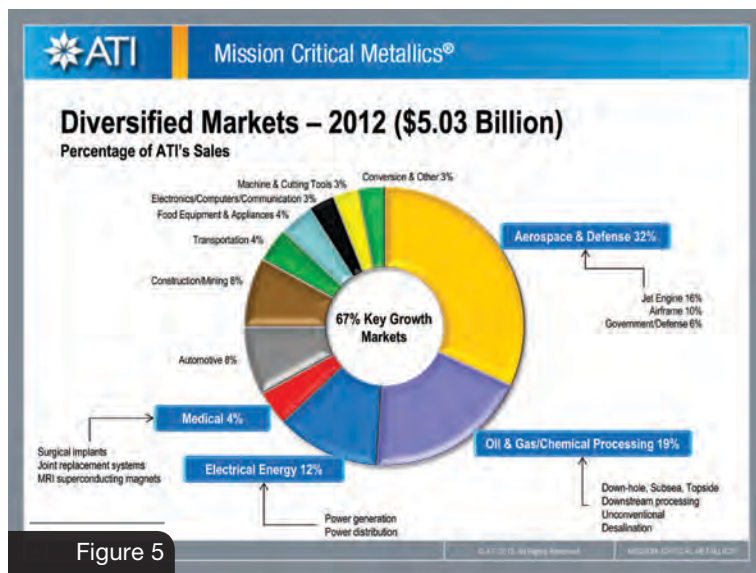


Figure 5. ATI's diversified products.

This reality drives the need for more ATI specialty metals. We believe the commercial aerospace market is in an extended period of unprecedented demand.

This growth cycle is based on the need for more fuel-efficient airplanes to accommodate the world's growing middle class and to provide cost-effective and sustainable aircraft to replace current fleets.

ATI's specialty metals are also vital to building the global infrastructure in markets such as oil and gas, the chemical processing industry and electrical energy.

Demand for our products from the medical equipment market is being driven by the expansion of procedures for aging populations and by the growing need for advanced medical equipment and care for those living in developing societies.

Now that you have some background about what ATI makes and how we make it, I'd like to focus on how ATI intends to use the energy of relentless innovation to maintain global leadership in the specialty metals industry.

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

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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.



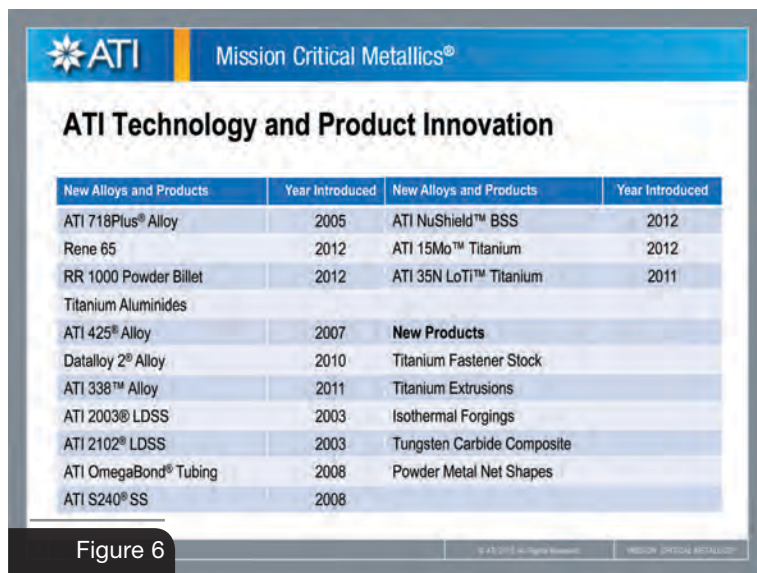


Figure 6

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.

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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. ♦