

**Remarks to Automotive Press Association  
By John Surma on behalf of the  
Steel Market Development Institute  
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FINAL – AS PREPARED FOR DELIVERY**

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Thank you, Mark, for the kind introduction.

It is a pleasure to be here with you in Detroit today to speak on behalf of the Steel Market Development Institute and the North American steel industry. Steel is essential to building, maintaining and advancing a modern society. Today, our steel is metallurgically designed to meet our customers' needs, and those products are transformed by our customers into things that touch millions of lives every day, including every person in this room.

From food containers to household appliances to computer parts to bridges and buildings to, of course, the cars and trucks that travel our highways today, steel is a key component. And steel is an incredibly green material – in fact it is the greenest from a recyclability standpoint. Steel can be recycled continually without affecting its key performance attributes, and it is universally recyclable. In other words, a bridge can become a car, which can then become a can. And every year, more than 70 million tons of steel are recycled. That is more than aluminum, glass, paper and plastic ... combined. Steel is a truly amazing, modern material both in terms of its capabilities today and its possibilities for the future.

I wanted to remind all of you of this because there has been a great deal of discussion and media coverage about the potential of various alternative materials to change the way our customers view steel. This is not new. In fact, a famous article in *CARS Magazine* boldly proclaimed:

“The day of the passenger car made primarily of iron and steel is on the wane and will give ground to aluminum, magnesium and plastics.”

This was in 1953. To borrow a phrase from the great Mark Twain, the stories of steel's demise as an automotive material have been greatly exaggerated. It did not happen then and it will not happen now, and my assignment today is to explain why.

First, some background: In the last ten years, our industry has doubled the number of new high-strength steel grades that we now collectively call “advanced high-strength steel.” These are newly formulated grades that reduce vehicle weight without sacrificing safety and ... importantly... affordability.

As a result, advanced high-strength steels are the fastest growing materials in the car. If you were at the most recent North American International Auto Show here in Detroit, and I suspect many of you were, you saw just how pervasive these new steel grades are. Here are just a few examples:

- The 2013 North American Car and Truck of the Year award winners – the Cadillac ATS and Ram 1500 – both feature an extensive amount of these new steels;

- The Ford Fusion and the Fusion Hybrid feature a number of advanced steel technologies. Notably, the 2013 Ford Fusion features the world's first steel hydroformed tube used as a B-pillar.
- The 2013 Kia Optima, voted the International Car of the Year, uses these new steel grades to enhance structural integrity, stiffness and ride quality;
- The 2014 Jeep Grand Cherokee incorporates the new steels to help it achieve best-in-class fuel economy, while keeping drivers and passengers safe; and
- Chevrolet's "strongest ever" 2014 Silverado 1500 full-size pickup features advanced high-strength steel in its main rails and cross members, with hydroformed elements for reduced mass and improved strength. And nearly two-thirds of the Silverado's new truck cab structure is made from advanced high-strength steel.

A more detailed list of current and future advanced high-strength steel automotive applications is also available in hard-copy form in the back of this room. Please be sure to pick one up when you leave today.

The combination of scientific research and product development have brought our industry to this point in the development of new steels. Now, as an industry, we are continuing our research on the next ... the third... generation of advanced high-strength steels.

In February of this year, the Steel Market Development Institute together with the Auto/Steel Partnership and the U.S. Automotive Materials Partnership began an aggressive collaborative project with the U.S. Department of Energy, five universities and Pacific Northwest National Laboratory to develop integrated computer models that will help create the next generation of advanced steel grades. The program will start from atomic and nano scale models of steel and continue through the performance of these steels in actual vehicles. Establishing such intelligent systems for new steel development will be a powerful tool to help our industry design the steels of tomorrow.

So, why is demand for high-strength steels continuing to grow? There are three main reasons:

1. Steel has unique chemical and physical properties that allow it to evolve and adapt to increasing safety and performance requirements;
2. Steel has a more competitive cost compared to other materials; and
3. Steel has unmatched environmental benefits over its entire life cycle.

Let's look at steel's properties first.

Advanced high-strength steel's unique properties are determined by the laws of chemistry and physics. And these laws allow for the continuous reinvention of steel and the development of an almost unlimited number of different grades, which can satisfy the complex demands of today's vehicles as well as those being designed today for the model

years of the future. Steel's composition also enables advances in two critical performance factors: strength and formability. Both of these factors are crucial to efforts aimed at removing weight from tomorrow's vehicles.

Higher strength means less material is needed. New steel grades available today are as much as as five times stronger than their predecessors and can yield parts that are as much as 39 percent lighter than parts made from traditional steels.

Higher formability gives auto designers more latitude to use sophisticated shapes that can also reduce weight and enable improved aerodynamic designs – two of the keys to achieving even greater gains in fuel economy.

And best of all, advanced high-strength steels are stronger and more formable while maintaining – and in some cases improving – the structural safety that consumers, the federal government and related regulatory agencies have come to demand from vehicles.

A few years ago, our industry's global affiliate, WorldAutoSteel, embarked on a \$6 million research program called FutureSteelVehicle to develop optimized steel body structures for four 2020 model year vehicles. In sharing the results of FutureSteelVehicle with automakers, WorldAutoSteel has shown how new steels and new design methods can reduce body-in-white mass by 39 percent compared to traditional steel bodies.

That is comparable to the potential weight reduction achieved with alternative materials. But better yet, WorldAutoSteel showed that you can also reduce life cycle emissions by nearly 70 percent ... that you can achieve a five-star crash rating ... and you can do all of that at no increase in cost to the carmaker or the customer.

As another example, the Auto/Steel Partnership developed a front lower control arm, which is a suspension part, using advanced high-strength steel to replace an alternative material arm that was in service.

The new steel arm matched the weight of the alternative material part but cost 30 percent less, so the manufacturer switched to steel. And that was just one part. There are many other applications where new steels can reduce both weight AND cost.

So thus far, I have provided you with examples in two of the three main sections of the vehicle – the skeleton, or “body in white,” and the chassis – where steel has made lightweighting achievements that were only thought possible through the use of alternative materials. In addition, both examples resulted in significant cost benefits.

So now we come to the third and final area of the car left to discuss – closures, such as doors, lift gates and deck lids. There are some misperceptions that exist when it comes to steel's capabilities. Many observers think that closures represent the toughest area for steel to compete on mass reduction.

Don't believe it.

Our industry has major lightweighting projects currently under way for closures, and we expect to report on those results around this time next year. However, now that I have told

you what our industry has been able to accomplish with the body-in-white and suspension parts, you should not be surprised when we announce enhanced competitive steel solutions for closures, too.

And let me throw in one last lightweighting fact before I move to my next point. There is a current production model vehicle that has a plastic fuel tank. The Steel Market Development Institute team saw this particular part as a design challenge. The result? A steel tank that is 9 to 16 percent lighter than the plastic version on the car and cost-neutral.

Steel lighter than plastic – I'm pretty sure that is not a headline you were expecting to hear from me today, but feel free to use it in your publications. Our industry will not mind.

And that leads me to the second reason for the growing demand for high-strength steels: competitive cost.

Cost, of course, is a major factor in materials selection. After all, what good is a lightweight material if it makes a car too expensive to produce, buy, insure and repair?

Pound for pound, new steels offer the most affordable options to the automotive industry as it works to reduce weight. When compared to alternative materials, the difference is substantial.

According to the FutureSteelVehicle study and recent National Highway Traffic Safety Administration studies, mass reduction using advanced high-strength steel can be achieved at almost no additional cost, while it would cost an extra \$2.75 per pound removed to use aluminum and more than \$7 per pound removed to use carbon fiber.

This accelerated evolution of advanced high-strength steels to support our customers' needs is driven by the steel industry's continued investments – to the tune of more than one billion dollars a year. Let me take a minute to point to some specific examples at the company I have the honor of leading – United States Steel Corporation.

For more than a decade, U. S. Steel has been developing and producing a new proprietary family of advanced high-strength steels named USS Safety Steels. These include our DUAL-TEN and TRIP-TEN products in strength levels of 590 to 980 mega-pascals.

Since their introduction in 1999, these types of steel now represent 10 percent, or 160 pounds, in a typical body, with some vehicles currently including more than 300 pounds. In the not too distant future, our customers expect to increase the use of these high-strength steels to 40 percent, or 600 pounds, in the typical body.

Through aggressive product development and testing that takes place at U. S. Steel's Research and Technology Center near Pittsburgh and our Automotive Center in nearby Troy, we continue to broaden the USS Safety Steel portfolio with higher strength grades that reach into the 1,180 mega-pascal range as we work to support the automotive industry's 2014 production vehicle platforms.

U. S. Steel is also a partner in PRO-TEC Coating Company, a highly successful joint venture with Kobe Steel that has served our automotive customers' needs for high-quality, value-added steel products for nearly 20 years.

Just over one month from today on May 13, PRO-TEC will commission a new 500,000 ton per year technologically advanced continuous annealing line that represents a \$400 million investment designed to anticipate the automotive industry's steel needs. This state-of-the-art line will process the next generation of advanced high-strength steels to produce formability attributes that will exceed our current range of products. We have been aggressively marketing these products to our automotive customers and they have indicated that they are eager to use these grades to achieve their advanced lightweight vehicle designs of the future. Both U. S. Steel and Kobe Steel, our partner at PRO-TEC, are excited to be able to bring this technology and capability to our customers. Many of you may have just received a formal invitation to our dedication event on May 13. If you have not, consider my remarks today to be your personal invitation. There is also a formal event invitation in your press kits today. Please contact U. S. Steel's Public Affairs Department here today or through [ussteel.com](http://ussteel.com) for more information. I hope to see you there.

Of course U. S. Steel is just one company investing in the automotive industry's future. Other steel producers are making similar kinds of investments in research and development and process and product technology, all in an effort to meet the needs of our customers. It is a very competitive industry.

The third driver for demand growth for high-strength steels is steel's superior environmental performance.

The driving force behind new vehicle regulations calling for 54.5 mpg is the desire to reduce greenhouse gas emissions. Lightweighting is one way to lower fuel use and reduce greenhouse gas emissions, but it is not as simple as substituting a perceived lower-weight material for steel.

If lightweighting is accomplished by materials that are emissions-intensive to make, then the net impact on the environment is *more* greenhouse gases. Therefore, it is not simply lightweighting that is the goal ... but "low-carbon lightweighting."

And since the steelmaking process emits one-twentieth to one-fifth the amount of greenhouse gases of the other common materials used to achieve lightweighting advances, using steel becomes an even more obvious choice.

In fact, to be sure the lowest emitting vehicles are designed and put on the road, our industry believes that vehicles should be regulated based not just on tailpipe emissions but rather on their life cycle emissions, meaning the sum of emissions generated from the production of the vehicle itself and its parts, through the vehicle's use phase and finally through the end-of-life, or recycling, phase.

If you would like to experience the pace of progress and grasp a sense of the change that is occurring in automotive steel, please consider attending Steel Market Development

Institute's 12th annual Great Designs in Steel Conference, which will be held in Livonia at Laurel Manor on May 1.

There, you will see the latest use of new steels in cars and trucks. The exhibit hall will be packed with examples, and designers and engineers from major car companies will talk about their "great design" with new steels.

In conclusion, let me recap the three reasons our industry is bullish on high-strength steel's growth in the automotive industry:

1. Steel has achieved tremendous lightweighting performance with our new advanced products ... and our industry is committed to continuing our research and development efforts in order to extend these gains;
2. Steel offers a variety of affordable options to help automakers achieve their lightweighting goals, something other materials cannot claim; and
3. Lightweighting with steel carries none of the emissions penalties of alternative materials.

Steel remains the preferred material among auto makers and will continue to outperform competing materials due to its versatility and strength. Innovative advanced high-strength steels and manufacturing techniques allow designers to put strength exactly where it is needed, and that's a key consideration for today's consumers, who place a high value on the safety benefits associated with steel. When asked which auto components protect them the most, the top three choices were: seat belts, the steel safety cage and steel side-impact beams. Those are pretty powerful statistics from our industry's perspective.

Of course the steel industry knows that the automotive industry will continue to investigate material alternatives, as they should.

Frankly, we encourage them to do just that because our industry believes that the advantages steel has to offer, including those I just listed, are more compelling and align perfectly with the engine and drivetrain advances that are necessary to achieve 2025 targets.

I believe that the steel industry, in partnership with the auto industry, has done more to improve and enhance steel's properties to meet automakers' needs for lightweighting, safety and cost in the past 10 years than in the previous 100 years. And there is still plenty of room for steel to evolve even further in the decades ahead. Our company considers it a privilege to be involved in the exciting business that is automotive and we are a much better company for it.

Thank you once again for inviting me here today. And now, with the help of our technical experts from the Steel Market Development Institute, I'd like to open the floor up to your questions.

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