



Great Designs in Steel 2013 – Opening Remarks

Michael Rippey, President and Chief Executive Officer
ArcelorMittal USA LLC

Thank you, Larry.

Good morning and welcome everyone. On behalf of the Steel Market Development Institute and its member companies, I welcome you to the 12th annual Great Designs in Steel seminar.

This event is truly a one-of-a-kind forum for the steel industry. No other event in North America brings our industry together to network ... learn ... share best practices ... and, most importantly, discuss the issues and challenges facing our customers.

I would like to thank you for making the time in your busy schedules to be a part of an event that helps drive the success of our industry.

I would also like to thank all of the presenters for the time and technical expertise they're lending to today's event. I know these experts' presentations and commentary will provoke some thoughts, inspire some innovation and demonstrate what can happen through the close cooperation of two industries – steel and auto.

Each year, we mindfully craft this program with the explicit intent to provide you with the knowledge, data and materials that will help you bring steel solutions into your vehicle designs.

We realize you're contending with numerous ... and sometime competing ... factors in mind, including weight, affordability,

manufacturability, sustainability and safety during your development and testing work. We hope today's event will show you that today, more than ever, steel is the complete package for automotive applications.

Today's 25-plus sessions will showcase steel's prominent role in the automotive industry. Over the past six years, total automotive steel content has remained at about 60 percent of vehicle weight despite materials competition, according to reports by Mega Associates. And other forecasts over the last several years suggest that advanced high-strength steel's ability to replace conventional steel applications will make it the fastest growing automotive material at least through 2020.

Steel's important role was evident at the recent North American International Auto Show in Detroit, where new

grades of advanced high-strength steel were prevalent on a number of noteworthy new vehicles, including:

- 2013 North American Car and Truck / Utility of the Year award winners, the Cadillac ATS and Ram 1500;
- The International Car of the Year; the 2013 Kia Optima
- A number of new vehicles that were debuted from domestic and foreign automakers.

As you work through your day today, you'll also see some great examples of steel's strong industry presence in

- Chevy Silverado;
- Hyundai Sonata and HED-7;
- Ford Escape; and
- Cadillac ATS.

You'll also be able to see all of these body structures in the exhibit hall.

Today's sessions will explore the trends and topics that are driving the auto industry's evolution. Throughout the day, you'll have the opportunity to participate in discussions covering material lightweighting, repairability, hydro-forming, component design and styling, life cycle assessment and the next generation of steel products. I especially encourage you to attend the presentation by Blake Zuidema from

ArcelorMittal later today. I assure you it will be groundbreaking and it will fundamentally alter the discussion about competing materials for the auto body. I encourage you to help drive these discussions with your questions and comments.

It's the efforts from all of you here today that have allowed the steel industry to double the number of new advanced high-strength steels that help automakers reduce vehicle weight without sacrificing safety, sustainability and affordability in the past 10 years. That's a notable feat ... and I believe that the technology transfer that occurs at events like GDIS contribute to this successful evolution.

Speaking of evolution, I want to share a quote about the evolution of vehicles with all of you: "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 is a quote from an article in CARS magazine ... and it's from 1953.

It wasn't true then and it certainly isn't true now. In fact, the funny thing is that CARS Magazine is no longer here, but steel certainly is.

Why? The answer is simple: While there are a number of competing low-density materials for automotive applications, none offer the complete package of safety, lightweighting, affordability and sustainability that steel offers.

That said, automakers will ... and arguably should ... investigate new materials for their cars and trucks. This has happened before and actually played favorably for the steel industry. Competition helps us all “up” our game and drives us to be more creative. The beneficiaries of materials competition are the car companies and, certainly, the consumer.

So what’s the reason for steel’s continued success? As mentioned before, it’s the complete package. And as our industry is discovering, while some materials may compete on one of these attributes, none offer the full package of

benefits or allow for the continuous re-invention of material properties like steel.

This is the message that we're sending to the industry. Let's look at what this complete package offers.

Extensive and Increasing Lightweighting Possibilities of Steel

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. It's steel's unique structure that allows the material to continually improve through development of stronger and more formable grades which improve its capability to satisfy the complex

demands of today's and tomorrow's vehicles with lower weight affordable solutions.

As demonstrated in the final phase of the FutureSteelVehicle project, which was unveiled at GDIS 2011, today's steel design methods and manufacturing processes have increased the body-in-white mass savings achievable with steel to be equivalent to existing production aluminum vehicles.

And better yet, the project also demonstrated that steel has the ability to reduce life cycle emissions by nearly 70 percent while achieving simulated crash performance that would merit a five-star safety rating. Sure, but at what extra cost, right? None ... I repeat, these results were achieved without any increased cost to the automaker or customer.

Over the past two years, SMDI and its affiliate, WorldAutoSteel, have taken the FSV project on a global roadshow to discuss its findings with automakers around the world. WorldAutoSteel Director, Cees ten Brook, will provide an update on the FSV project in a few short minutes.

The FSV program was a big success and addressed many of the challenges and misconceptions about steel.

It's no secret that we steel folks like a challenge ... we wouldn't be in this business if we didn't. So when we learned of a forged aluminum front lower control arm that was considered best in class for lightweight design, we endeavored to develop a comparable steel solution.

The result: a new stamped steel arm that matched the weight of the aluminum part AND cost 30 percent less. It took the manufacturer only six months to switch the part back to steel and the steel control arm is still in use today.

And that is not the first time parts have been designed in low density materials and then switched back to steel. There is a long list of hoods that have gone both ways. And plastic body panels, even complete exterior bodies like the Fiero, Saturn and others have been terminated. It's really hard to beat the cost effectiveness of steel in automobiles.

We all know that steel is the first choice of carmakers when it comes to designing light and crashworthy bodies-in-white.

The rapid growth of new advanced high-strength steel grades in the body is the reason why. But, the steel industry is now working to apply the same high-strength steel lightweighting technologies to other major vehicle systems, like chassis and closures. In fact, we have put a special priority on developing lightweight solutions for virtually all hang-on parts that might threaten steel. Our teams working under the Automotive

Applications Council of SMDI are currently developing lightweight door, suspension, wheel, and fuel tank optimized designs in steel, and more will be coming. You will see results as they are released throughout the year with the best results to be showcased here next year.

Now, all of these projects use steel grades that are currently available. The mass savings opportunities will continue to increase in the future because of our research. Our industry is working now on the next generation, the THIRD GENERATION of advanced high-strength steels. Much of this work is going on right now in our steel company laboratories. At ArcelorMittal we have research being conducted in Europe and North America that will be to your benefit for future steel applications.

A few years ago AM introduced S-in motion, where we demonstrated multiple weight reduction techniques for several components. These components included doors, body sides, front modules and rear modules. You are going to continue to see these kinds of solutions.

Shortly you will hear from Dr. Lou Hector of General Motors, about a new collaborative project which is just beginning the use of computers and the science of integrated computational materials engineering, to model how steel can be developed by manipulating molecular structures to create new grades that are stronger and more formable than what we have today. The U. S. Department of Energy is helping to fund this research, and it involves steel company and car company experts, universities, national laboratories, and engineering companies – the best of the best. Lou will explain how this project will unfold over the next four years.

Cost Advantage of Steel

My company and other SMDI member companies are investing heavily to develop the next generation of steel technologies. We believe steel is a winner not only for its lightweighting benefits, but also because of its cost.

Mass reduction with steel can be achieved at nearly zero extra cost, while many engineering studies show low-density materials like aluminum can cost an extra \$2.75 or for every pound saved. Additionally, manufacturing and assembly with aluminum is 20 to 30 percent more expensive than steel.

And that extra 20 to 30 percent cost does not include a company's cost to change its infrastructure to manufacture aluminum. Because of steel's dominant role in the auto industry, most manufacturing plants are already equipped with the technology and machines required to process steel.

This eliminates the costly retooling necessary to produce and use other materials.

Steel's affordability is a global benefit. Steel is available around the world and steel-intensive designs can therefore be implemented on global vehicle platforms, enabling car companies to keep costs low.

Then there's the cost benefit for the consumer. Steel vehicles' damage repair and insurance costs are more affordable than vehicles produced with other materials.

Reports of higher costs to repair aluminum parts suggest that the use of alternative materials could have cost consequences to consumers.

Clearly, steel is the most cost-effective choice for both automakers and consumers. And our goal is to keep it that way.

Environmental Advantages of Steel; Low-carbon

Lightweighting

This brings me to the final point I would like to discuss regarding steel's "complete package" offering, which is the environmental advantage of using steel versus competing materials.

With increasing upcoming CAFE regulations, the concept of lightweighting has taken center stage. This is a bit misleading, as the ultimate goal is not lower weight, but lower emissions. So the real term we should be discussing is "low-carbon lightweighting."

What good is reducing driving-phase emissions by building the car with emission-intensive materials? The added emissions to build the car exceed what is saved by lightweighting. It just doesn't make sense.

What does make sense, is steel.

The manufacturing of steel emits one-twentieth to one-fifth the greenhouse gases of the other common lightweighting materials. And this is true for all grades of steel.

When combining steel's manufacturing emission benefits with the fact that new grades of high-strength steel can reduce a vehicle's structural weight by as much as 39 percent, steel is the only material that can lower vehicle emissions in each life cycle phase – manufacturing, driving, and recycling at end-of-life. Mass reduction with steel is low-carbon lightweighting and ensures reduced emissions to the environment.

Speaking of recycling, steel is 100 percent recyclable and is the most recycled of all materials. Automotive steels can be recycled into any other steel product without loss of quality,

which explains why there is such a huge market for steel scrap in the world.

Other materials just can't compete with steel's recycling benefits. Let's consider aluminum for a moment ... due to the manufacturing requirements for specific applications, aluminum is not often recycled across products (for example, recycled cast aluminum is not suitable for sheet applications.) and today there is very little sheet aluminum in automobiles which limits the opportunity for growth in aluminum use from recycled aluminum. This means that any increased use of aluminum sheet for automobiles must come from greenhouse gas intensive primary aluminum production, which is approximately five times the greenhouse gas emissions of steel.

Steel is lightweight. Steel is affordable. And steel is good for the environment. In short, it's the complete package to help automakers develop and implement the next-generation designs to meet the upcoming CAFE standards ... and to ensure we're being environmentally responsible for our children and their children.

Today, you will all get a glimpse of steel's current successes and future capabilities. I hope you leave here today with an updated sense of steel's crucial role in today's auto industry and its necessity in the automotive industry of the future.

But before we get started with today's session, I would like to recognize a 2012 GDIS presenter for helping lead this charge.

The "Great Designs in Steel Automotive Excellence Award" recognizes past GDIS presenters who embrace innovation

and make significant contributions to the advancement of steel in the automotive marketplace.

Shawn Morgans, can you please stand?

Ladies and gentlemen, please join me in congratulating Ford Motor Company's Shawn Morgans with a round of applause.

[Lead applause]

Last year, Shawn presented "Advanced High-strength Steel Technologies in the 2013 Ford Fusion," which the awards panel felt best demonstrated the application innovative use of steel technology for mass reduction and efficient design.

The Fusion made use of a DP 1000 upper rail stretching from the A-post to the C-post, a hydroformed tubular B-post design with effective use of laser welding, and an energy absorbing front rail and cowl load path concept, all leading to reduced mass and outstanding stiffness and crashworthiness.

At this time, I'd ask Shawn to please join me at the podium to accept the award on behalf of Ford for its work to further steel's place in today's automotive arena.

[Read plaque]

[Photo at podium]

Again, on behalf of the entire Steel Market Development Institute team, congratulations Shawn and the Ford team. Let's give him one more round of applause.

[Lead applause]

I would like to conclude by thanking each one of you here today. Your work and dedication to keeping steel competitive in the automotive market is truly something to applaud.

Together, we can keep steel the dominant material in automotive applications.

I also encourage you to use SMDI as a resource and an ally in your development efforts, as it is our goal to serve and assist you.

On behalf of SMDI and its member companies, I would like to official kick-off the 2013 Great Design in Steel seminar. I hope you find today's presentations useful and thought-provoking.

I'll now turn the podium back to over Larry Kavanagh.

Larry

#