**Global WorldAutoSteel Project Delivers Steel Solutions for Low GHG Body Structure for Electrified Vehicles**

***Brussels, 5 May 2010*** – WorldAutoSteel unveiled key findings today on the progress of FutureSteelVehicle (FSV) Phase 2, a global steel industry effort to develop advanced high-strength steel (AHSS) architectures for electrified vehicles that reduce life cycle greenhouse gas (GHG) emissions. Following is a summary of the interim results presented at North American automotive conference "Great Designs in Steel (GDIS)," convened by the American Iron and Steel Institute (AISI):

- ***New benchmark in weight reduction achieved through Advanced High-Strength Steel optimised structures, enabling powertrain downsizing for affordable electrified vehicles.***
- ***Portfolio of innovative steel solutions that apply to full range of electrified or internal combustion engine vehicles.***
- ***New design methodology to realize the best environmental solution for compliance with future vehicle emission regulations.***
- ***CO2 emissions, measured through a life cycle assessment, dramatically reduced in seven optimised sub-system structures, at lower or comparable costs.***

"FutureSteelVehicle is demonstrating affordable, lightweight steel solutions that achieve dramatic mass reduction, enabling powertrain downsizing without the cost premium of low-density materials," said Edward Opbroek, WorldAutoSteel Director. If vehicle structural components are lighter, the powertrain and other components can be downsized, while maintaining the required performance. With electrified vehicles, a smaller powertrain leads to significant cost savings.

**Advanced Steel Grades and Technologies, Multiple Solutions**

The FSV Programme is midway through its second phase, designing optimised AHSS body structures for four proposed 2015-2020 year vehicles: battery electric (BEV), plug-in hybrid electric (PHEV), with both PHEV-20 and PHEV-40 powertrains, and fuel cell (FCV), with variants among the different powertrain types for four and five passengers vehicles. The interim results presented at GDIS by the engineering team today make reference to the optimisation of multiple solutions for seven different sub-systems: the rocker, B-pillar, roof, rear and front rails, front upper load path and battery tunnel load path members.

"FutureSteelVehicle offers design solutions that can apply to any vehicle, whether for electrified or conventional internal combustion engine (ICE) vehicles," said Jody Shaw, Chairman, FSV Programme and manager of Technical Marketing and Product Research at United States Steel Corporation. "Because of steel's flexibility, we were able to produce a broad bandwidth of solutions, all of which were evaluated on the basis of cost versus weight and CO2 equivalent emissions. Within this portfolio of solutions are applications that all vehicle manufacturers and segments will find relevant."

**FSV Includes Life Cycle Assessment**

"Key to our Phase 2 evaluations of different structural options is a life cycle assessment of each system based on the University of California at Santa Barbara (UCSB) GHG Materials Comparison Model," said Shaw. "FSV stretches emissions targets out in anticipation of future legislation and requirements around the world."

Life Cycle Assessment (LCA) is a methodology that considers a vehicle's entire life cycle, from material and vehicle production (manufacturing phase) through its lifetime on the road (use phase) to its disposal (end-of-life phase), as well as the life cycle of its fuel sources.

An LCA approach assists automakers in evaluating and reducing the total energy consumed and the lifetime GHG emissions of their products. Regulations that consider only the vehicle use phase can encourage use of low-density, GHG-intensive materials that may, in some applications, provide lighter weight components that improve fuel economy and tailpipe emissions. However, this may have the unintended consequence of increasing GHG emissions during the vehicle's total life cycle. In the future, regulators will move beyond the current narrow view of tailpipe emissions to the more comprehensive perspective of a total carbon footprint measurement with LCA.

"If materials are selected based on their performance in just one phase of a vehicle's life, it could result in the unintended consequences of higher emissions over the whole life cycle, as well as severe cost increases for no gain in the emissions reduction battle," said Opbroek. "WorldAutoSteel is actively pursuing the advancement and support of life cycle thinking in the world today because we believe it's the only way climate change can truly be addressed for meaningful impact."

**Nature's Way to Mobility**

FutureSteelVehicle is achieving its results through the broad range of available steel grades and an award-winning "state of the future" design optimisation process that develops non-intuitive solutions for structural performance, including optimised shapes and component configurations that often mimic Mother Nature's own design efficiency.  FSV's steel portfolio is utilised during the material selection process with the aid of full vehicle analysis to determine material grade and thickness optimisation.

Consequently, the lightest possible solutions are realized for the given structural performance targets.

**Next on the FutureSteelVehicle Agenda**

Over the next months, WorldAutoSteel members will disseminate these FSV technical results directly to automakers around the globe, sharing the sub-system optimization methodology and findings on a global basis and gathering valuable feedback that will be integrated into the programme scope.

In the meantime, the FSV Phase 2 engineering work will continue to advance to the design of complete body structures, with an engineering report and final results made public in early 2011.

**Notes to Editors:**

**About WorldAutoSteel**

WorldAutoSteel, the automotive group of the World Steel Association, is comprised of 17 major global steel producers from around the world. WorldAutoSteel's mission is to advance and communicate steel's unique ability to meet the automotive industry's needs and challenges in a sustainable and environmentally responsible way. WorldAutoSteel is committed to a low carbon future, the principles of which are embedded in our continuous research, manufacturing processes, and ultimately, in advanced automotive steel products, for the benefit of society and future generations.

To learn more about WorldAutoSteel and its projects, visit www.worldautosteel.org

**Members of WorldAutoSteel are:**

- Anshan Iron and Steel Group Corporation – China
- Arcelor Mittal - Luxembourg
- Baoshan Iron & Steel Co. Ltd. - China
- China Steel Corporation – Taiwan, China
- Hyundai-Steel Company - South Korea
- JFE Steel Corporation - Japan
- Kobe Steel, Ltd. - Japan
- Nippon Steel Corporation - Japan
- Nucor Corporation - USA
- POSCO - South Korea
- SeverStal - Russia/USA
- Sumitomo Metal Industries, Ltd. - Japan
- Tata Steel & Corus - India, UK, Netherlands
- ThyssenKrupp Stahl AG - Germany
- United States Steel Corporation – USA
- Usinas Siderúrgicas de Minas Gerais S.A. - Brazil
- voestalpine Stahl GmbH – Austria

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**About FutureSteelVehicle**

The **FutureSteelVehicle (FSV) programme**, which was launched in December 2007 at the United Nations Framework Convention on Climate Change conference in Bali, is a multi-million dollar and multi-annual programme that will deliver auto body concepts that address radically different structures for advanced powertrains, such as advanced hybrid, electric, and fuel cell systems. The goal of the research is the demonstration of safe, lightweight steel structures for future vehicles that reduce GHG emissions over the entire life cycle.

The **FutureSteelVehicle (FSV) programme** consists of three phases:

- Phase 1: Engineering Study (completed)
- Phase 2: Concept Designs (End of 2010)
- Phase 3: Demonstration Hardware (2011)

FutureSteelVehicle's engineering team is headed by EDAG Engineering & Design AG's Auburn Hills, Mich., office and includes global expertise and input from Engineering Technology Associates (ETA), Troy, Mich., Quantum Technologies, Irvine, Calif., Tongji SFCV, Shanghai, China, Advanced Lithium Power, Vancouver, BC, and Schuler, Germany & USA.

FSV is the fifth in a series of automotive steel research projects, following on the heels of the UltraLight Steel family of projects, which revolutionized the kinds of steels normally applied to automobiles, as well as demonstrated innovative steel vehicle designs. The application of these research findings is seen globally in many vehicles on the road today.

These are:

- **UltraLight Steel Auto Body (ULSAB)** – A holistically designed steel body structure that meets tough structural and crash criteria while weighing 25% less and costing no more than typical vehicles in its class.
- **UltraLight Steel Auto Closures (ULSAC)** – Innovative closure concepts for doors, hoods, deck lids and hatchbacks. Demonstration door structures are 46% lighter than average benchmarked frameless doors.
- **UltraLight Steel Auto Suspensions (ULSAS)** – Demonstrates effective use of steel in producing lightweight, structurally sound steel automotive suspensions that achieve up to 34% mass reductions over conventional steel systems.
- **ULSAB-AVC (Advanced Vehicle Concepts)** – Offers steel solutions to meet society's demands for safe, affordable, fuel efficient and environmentally responsible vehicles for the 21st century.

**FSV** is expected to stimulate similar developments in upcoming advanced powertrain vehicles. To learn more about FSV, visit www.futuresteelvehicle.org.

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