FutureSteelVehicle – Today, Tomorrow & Beyond

Cees ten Broek
WorldAutoSteel
MEMBER COMPANIES

Ansteel
Arcelor Mittal
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USIMINAS
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Presentation Topics

• Paths pursued since launch results FSV at 2011 GDIS Conference

• Life Cycle Analysis & Emission Regulation

• Integrating supply chain: steel industry & automotive industry
  North America as leading example?
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FutureSteelVehicle

1. State-of-the-future development process
2. 177 kg body structure mass - *39% mass reduction*
3. 97% use of HSS and AHSS
4. Nearly 50% GigaPascal steels
5. Enables 5-star safety ratings
6. Nearly 70% Total Lifetime Emissions Reduction
7. Mass savings at no cost penalty
8. Near-term production-applicable solutions

FutureSteelVehicle  Nature’s Way to Mobility
FSV on Par with Alternative Material Vehicles

(Area vs. Regression Analysis Prediction)

Body Structure Mass (Actual) (Kg)

Body Structure Mass (Regression Analysis Prediction) (Kg)

a2mac1 (database)
ULSAB-AVC Ref.
ULSAB-AVC
FSV
Aluminum
Multi-Material

Audi A2
Jaguar XK
Audi TT
Lotus Venza
Super Light Car

2011
FSV

1998
ULSAB_AVC Reference Vehicle

2002
ULSAB-AVC

www.autosteel.org
AHSS Application Guidelines

Version 4.0 included:

• 1^{st} stress-strain curves publicly available

• Detailed discussions of manufacturing processes

• Addresses the tough joining issues

• Edited by the father of the forming limit diagram, Dr. Stuart Keeler

publicly available at www.worldautosteel.org
Design Advisor

publicly available at www.worldautosteel.org
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A critical approach to avoid unintended consequences

Source: worldsteel
Tailpipe-only regulations may increase vehicle production costs and GHG emissions.
The Problem with Tailpipe Only GHG Emissions Regulations...

Now: Conventional Gasoline Vehicle
- Vehicle production: 25%
- Use Phase: 70%
- Recycling:

What will change?
- + 32%
- - 30%

In the future: Battery Electric Vehicle
- Vehicle production: 57%
- Use Phase: 40%
- Recycling:

Source: Ricardo Study, Preparing for a life cycle CO2 measure, 2011, p.52
LCA-Based Future Regulation

- Acknowledged by regulators
- Increased efforts in providing solid databases
- Continue to work with academia on modeling
- Suggest and propose deployment methodologies

At all times our initiatives will be aligned with current car industry LCA practice
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Global Resonance

Implement NA model

Cooperation Structure & Organization
Capitalize on Best Practices
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