

**Welcome!**

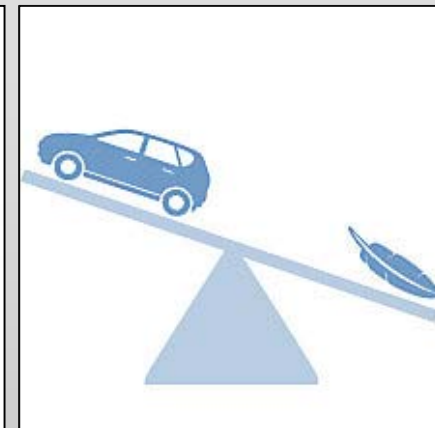


# Industry sectors already using HSS

- Automotives
- Machinery and cranes
- Offshore
- Shipbuilding



# Lightweighting



## High-strength steel finds foothold in auto industry

*Jun 26, 2013 | 07:00 PM | AMM staff*

The use of advanced high-strength steels (AHSS) in vehicles has grown faster than any other material in recent years, and that growth will continue over the next decade, according to experts in the steel and automotive industries who cite new technological developments and increasingly stringent environmental standards for driving the change.

# The case for higher strength steel.....

---

- Material (& carbon) savings
- Weight reduction → lighter supporting structure
- Reduced welding effort
- Easier transportation & handling
- More clearance, design freedom & less congestion

## ...and the challenges

---

- Instability (buckling) and greater deflections can reduce the advantage of high strength
- Reduced ductility
- More critical fatigue conditions
- Longer lead-in times and limited availability from stockists
- Scarcity of experienced welders



RESEARCH & INNOVATION  
Key Enabling Technologies



Research Fund for Coal & Steel (RFCS) gives funding of over €50 million every year to innovative projects to enhance the safety, efficiency and competitive edge of the EU coal and steel industries.

Enabled significant research on all topics related to steel in construction (fire, light gauge, bridges, cellular beams, composite, sustainability, renovation, stainless...)

# High strength steels in long span structures: HILONG

To investigate innovative

- cross-sections
- structural arrangements
- joints
- design methods



which enable the benefit of high strength to be maximised by suppressing buckling and reducing deflection



Long span applications - stadia, closed arenas, airports, exhibition halls.....

S460 and S690

# Why HSS in long span structures?

---

- Less stringent deflections limits because the overall height is large, and stiffness can be increased by increasing truss depth
- Structure deadweight is a considerable proportion of the design load → a reduction in deadweight is of great value
- Use of HSS → elegant and iconic solutions



# HILONG Team

<b>Universities</b>	University of Coimbra, Portugal
	Luleå University of Technology, Sweden
	University of Birmingham, UK
	Imperial College London, UK
<b>Manufacturer of HSS hollow sections</b>	Vallourec Deutschland GmbH, Germany
<b>Designers</b>	Sweco Structures AB, Sweden
	Buro Happold, UK
<b>Manufacturer of lightweight structures</b>	S-Squared Corporation Pty Ltd, Australia
<b>Co-ordinator</b>	SCI, UK