UK Automotive Industry…..
…..sunset or sunrise?

Jon King, Director, Corus Automotive Engineering

Automotive World Conference @ IMechE

30 October 2007

Sunset or sunrise?

- Roll over and die
  - New technology and innovation will save us?
- Not a chance
  - Greenfield economies can do it better and faster

Steel – last year's material…..
…..or part of the solution?

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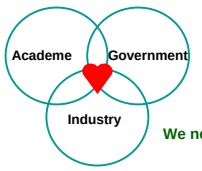

We need a bigger sweet spot

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- We need to be much better at what we already do
- Balance technology and innovation across both existing and new areas of UK competence
  - Identify 'core' areas to provide focus
  - Bring industry and academe together
  - Put easier funding routes in place

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Wouldn't it be nice??????

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"Forming to" technologies (F2x)

Forming influences…

Material Strength

Component Shape

Material Thickness

These factors influence structural performance, particularly for AHSS

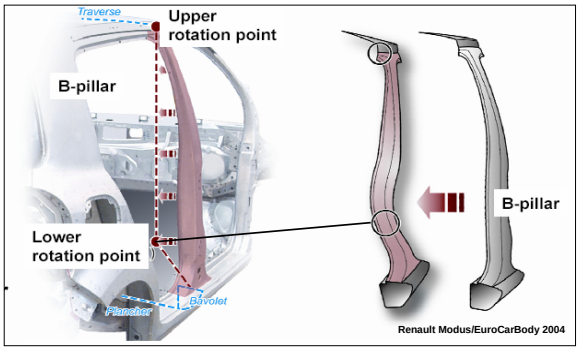
Corus has developed a range of F2x technologies…

- –F2C® Forming to Crash
- –F2F® Forming to Fatigue
- –F2S® Forming to Strength

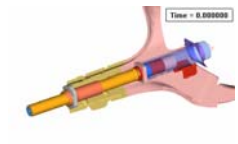
Last year's material – fantastic!

- Steel **is** last year's material
  - Last year, 99% of new cars had steel body structures
  - 0.5% had hybrid aluminium/steel body structures
  - 0.4% had aluminium body structures
  - 0.1% had composite body structures
- Steel is also next year's material, and will continue to be, provided it continues to tick the right boxes
- Steel **is** part of the solution

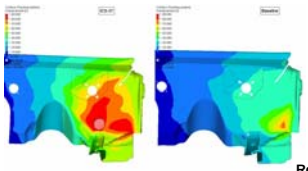
Side Impact – 5 Star safety achieved only using Ultra High Strength Steel



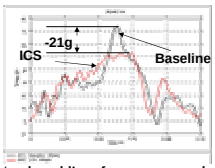
Front impact – adaptive concept



Peak acceleration reduced by up to 21g



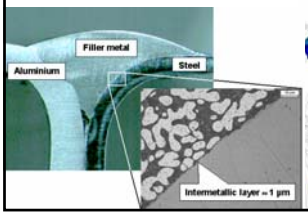
Reduced footwell intrusion

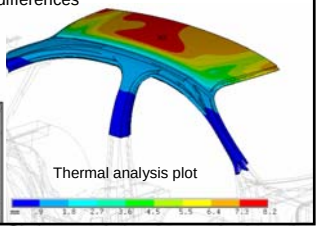


Robust 'real world' performance, - works at a range of offsets, angles and overspeed

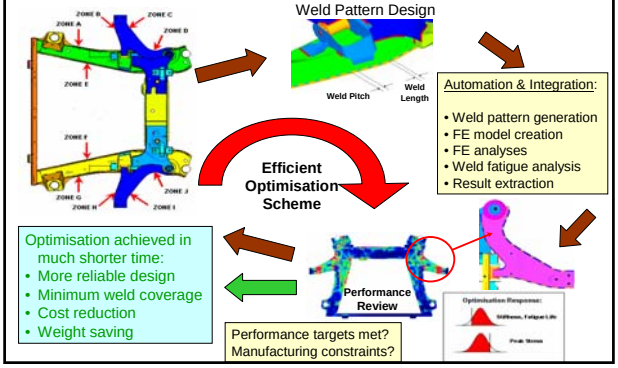
New joining technologies

- Steel to aluminium joining – aluminium roof for lighter weight and lower Centre of Gravity
  - Fluxless laser brazing
  - Manages thermal expansion differences

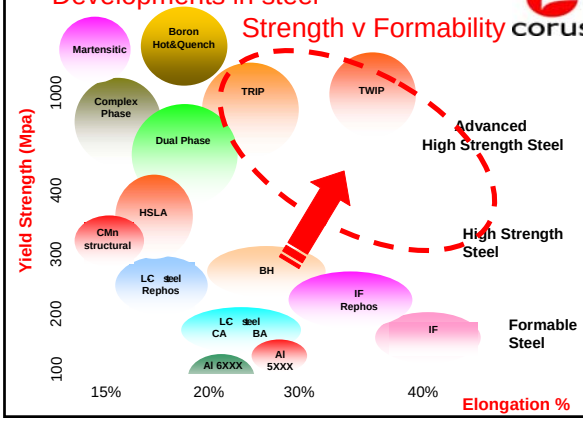




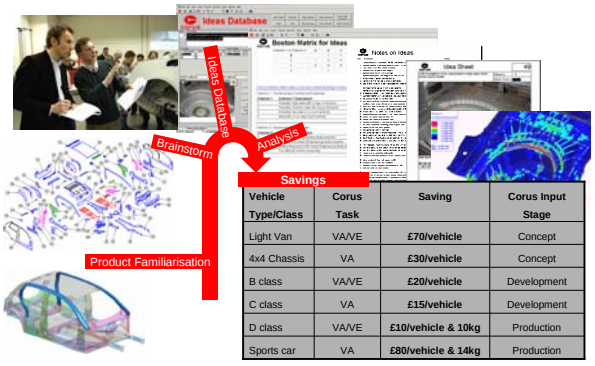
Weld optimisation for cost/efficiency



Developments in steel Strength v Formability



Customer Engineering – VA/VE



Savings

Vehicle Type/Class	Corus Task	Saving	Corus Input Stage
Light Van	VA/VE	£70/vehicle	Concept
4x4 Chassis	VA	£30/vehicle	Concept
B class	VA/VE	£20/vehicle	Development
C class	VA	£15/vehicle	Development
D class	VA/VE	£10/vehicle & 10kg	Production
Sports car	VA	£80/vehicle & 14kg	Production

What about the environment?

- Globally, we're getting there
  - 49% reduction in energy consumption per unit of production in last 25 years (developed steel industry)
- But production is growing fast
  - EU pc consumption is 300kg, India is 20kg!
- New global commitments required…

IISI global commitments

- Share best practice globally for low emissions steelmaking
- Research breakthrough CO2 reduction technology
- Optimise and maximise scrap recycling
- Maximise use of by-products
- Develop new steels to help our customers
- Develop and implement common/verified reporting systems
- Adopt a global approach to CO2 reduction

But

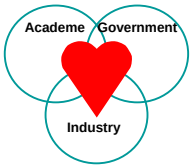
- Needs government support for all of these to work – particularly to replace cap and trade schemes and encourage efficient expansion
- Needs customers to support – working in closer partnership

Changing Patterns of Car Usage

- Public transport cannot compete with personal mobility convenience, needs to evolve
  - Flexible pick up and drop off
  - Comfortable bus stops with real time info
  - Accommodates electric bikes/wheelchairs
- Hiring/sharing schemes - commute in an economy car, weekend in a lifestyle car(s)
- Once the (currently suggested) 70mph speed limiter for motorbikes becomes acceptable, apply to all motor vehicles
  - Older cars will hold a premium until modified to comply
  - Stored power then becomes the market differentiator = 'performance hybrids'

Wouldn't it be nice…….

…….if the UK automotive industry already had most of the answers?



Let's assume we can fix this bit

Changing Consumer Demands

- Market fragmentation will continue – highly profitable niche products that we didn't realise we couldn't live without
- Volatile/unpredictable demand is best suited to the platform engineering concept with reduced risk of lost investment
- Cost of fuel will continue to rise faster than inflation, we will start to choose a vehicle based on the lifetime ownership cost
- Lifestyle driven styling will drive more innovation, especially in interior design and materials
- Competing hybrid designs and alternative fuels will eventually rationalise

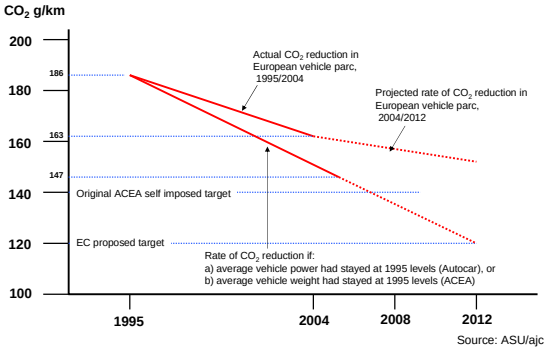
Wouldn't it be nice…….

…….if the UK automotive industry already had most of the answers?

- We're good at technology and manufacturing
  - Transplant vehicles
  - Premium and niche
  - Light/heavy commercial
  - Buses and taxis
  - Powertrain
  - Electronics
  - Electric vehicles
  - Future powertrain
  - The environment

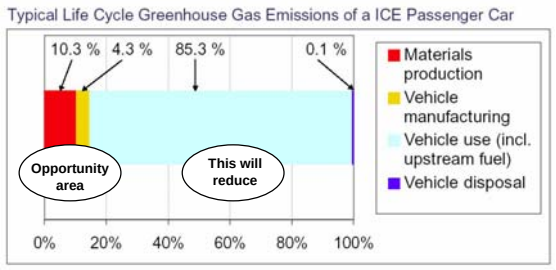
Many of these are a perfect fit with future trends

Europe – CO_2 target missed



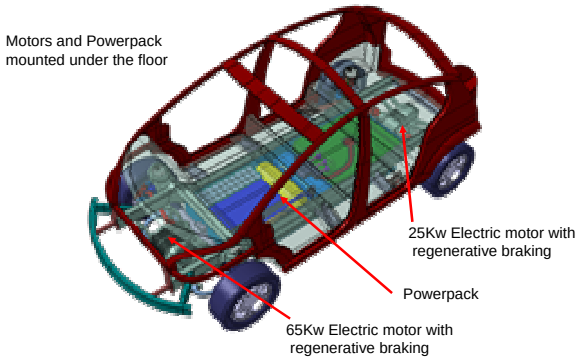
Source: ASU/ajc

CO_2 from passenger vehicles

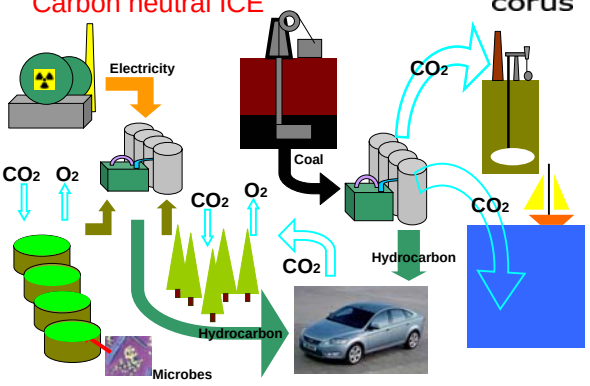


Source: Development Bank of Japan, 2004

Vehicle Layout



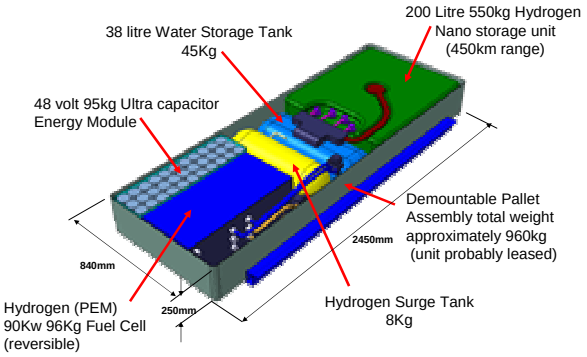
Carbon neutral ICE



Plenty of opportunity

- Transport solutions for the future
  - Radical approach to public/personalised transport (trains, trams, buses, taxis, trikes, bikes and Segways)
  - Understand first and last mile (and everything in between)
- More volume niche manufacturing for the above
  - Coachbuilders sharing high-tech, affordable platforms
  - Use volume techniques (Nissan 'secrets')
- 'Premium economy' for affluent Europeans
- Hydrogen economy without the infrastructure

Future Hydrogen Fuel Cell System (on-board, no infrastructure)



How?

- All the small business start-ups in the world won't save UK plc if we let go of fundamental manufacturing excellence
  - New technology and innovation is not enough on it's own
- We are already good at many things – innovation will help us maintain a leading position. The technology exists, it's
  - Knowing about it
  - Deploying it
- New and improved technology, products and manufacturing methods
  - Share IP, it's the only way to exploit it
  - Partnership and collaboration throughout the technology and manufacturing supply chains
  - Improve the way we do collaborative research


corus
New challenges
New Technologies
New Solutions