

CHANGING GEAR



Dr Scott Steedman

In October, the number of cars produced in the UK in 2013 quietly motored through the one million mark, with a rolling 12-month total exceeding 1.5 million. The UK exported some 1.275 million cars last year, the highest figure for decades. This year the number of engines manufactured in the UK is on track to exceed two million, and car exports look set to beat the 2012 result.

The automotive sector is on a roll: it has attracted billions of pounds of inward investment over the past two years. The UK Automotive Council, a government-industry partnership established in December 2009, has shaped a new strategy for the sector and has promoted the importance of skills, innovation, technology and the supply chain. The future of manufacturing was the subject of an important government Foresight study recently launched at the Royal Academy of Engineering (see page 6).

The industry's recent success builds on the strengths that underpin modern manufacturing in the UK: a flexible workforce, our British passion for creativity, an excellent science and technology base, openness to

innovation and a reputation for good design. The Range Rover Evoque, a worldwide success story, won the Academy's MacRobert Award in 2012 partly because of its novel weight-saving technologies and all-new suspension system.

Can the UK automotive sector complete its transformation into a sustainable, world-leading industry fit for the challenges of the next decades?

The opportunity for British industry lies in the breadth and depth of its research and technology in automotive engineering, particularly in powertrain technology: the engine, transmission and drive system. Aside from the cost of fuel, regulations and low-carbon targets are driving innovation in vehicle design around the world.

The race is on to find low-cost lightweight materials, to increase efficiency through reducing friction and aerodynamic drag, but above all to develop the engines that will power a new generation of low-carbon cars.

There is a widespread public perception that the internal combustion engine has had its day and that we are waiting for some magic wand to switch us over from our beloved petrol or diesel engines to hydrogen or battery power. In practice, it's not so simple, but the UK is a world leader in vehicle propulsion research and is well placed to deliver the low-carbon technologies we need.

Professor Neville Jackson FREng, Chief Technology and Innovation Officer at Ricardo plc and Deputy Chair of the Automotive Council's Technology Group, argues that future propulsion systems will combine a fully integrated mix of technologies, exploiting low-carbon liquid fuels, more efficient 'advanced combustion engines' and electrification in a far more sophisticated way

than today's modular stop/start and bolt-on hybrid designs.

Government and industry will invest more than £1 billion over 10 years to create an Advanced Propulsion Centre (APC). The APC will research, develop and commercialise these new technologies. The Technology Strategy Board announced the first funding competition for the APC in November, even before it has found a home. The APC will award up to £75 million for the development of low-carbon powertrain technologies and to grow the UK supply chain.

However, much as the APC is a welcome innovation, the UK's capability in research and development is not really the issue. The challenge is to bring researchers and industrialists together and to build the supply chain of makers of materials, components and subsystems that can exploit these new technologies. The Automotive Council estimates that feeding the production lines will create a domestic market opportunity worth £3 billion per year. While there is a skills issue, this can be addressed. The primary challenge is to stimulate investment in component suppliers that can meet the new demand.

The UK has the imagination, technological base, access to finance and workers to secure this new industry for the nation. Converting the recent momentum in the UK automotive sector into sustained innovation and growth should play to all our strengths. Let's make sure that our small and medium-sized enterprises, the lifeblood of British manufacturing, get the support they need to capture these great new opportunities.

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