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Foreword

For the future, the UK needs an economy with less financial engineering and more real engineering.

The UK's engineering community is renowned for turning creative ideas into cutting-edge and bespoke solutions.

As we clearly set out in the Government strategy published in September 2008, *Manufacturing: New Challenges, New Opportunities*, Advanced Engineering and manufacturing are recognised cornerstones of the UK economy. In 2007, total exports in the UK's engineering sector amounted to some £109 billion. This is a great success, but, as the global financial crisis has underlined, past successes can all too quickly be forgotten. Success in the future will depend on making the right decisions today to position the UK at the forefront of the recovery.

Given the global nature of this sector, closer ties between Government, industry and research bodies around the world will be essential to share knowledge, expertise and drive the cost-effective delivery of new technologies forward. Within the UK, it is vital that all of the Advanced Engineering sector works together to take advantage of the opportunities that a restructured landscape presents.

UK businesses have many great strengths and are working all over the world. Our aerospace sector is regularly second only to the USA in turnover and leads the world in the field of sustainable aviation. Our automotive sector, while currently enduring a particularly difficult time, has over recent years developed an ability to drive down costs and deliver to tight deadlines. Across the Advanced Engineering spectrum, the UK possesses world-class capabilities in areas such as composites, plastics electronics, structural materials, metrology and nanotechnology.

Without doubt, we have the skills and capabilities to succeed in the global marketplace. We will work to strengthen those capabilities further for the future. But we need to market those strengths better to ensure that we maximise the opportunities available for UK businesses and for attracting high quality investment from overseas. This global marketing strategy sets out a range of activities to make the most of what we have to offer.

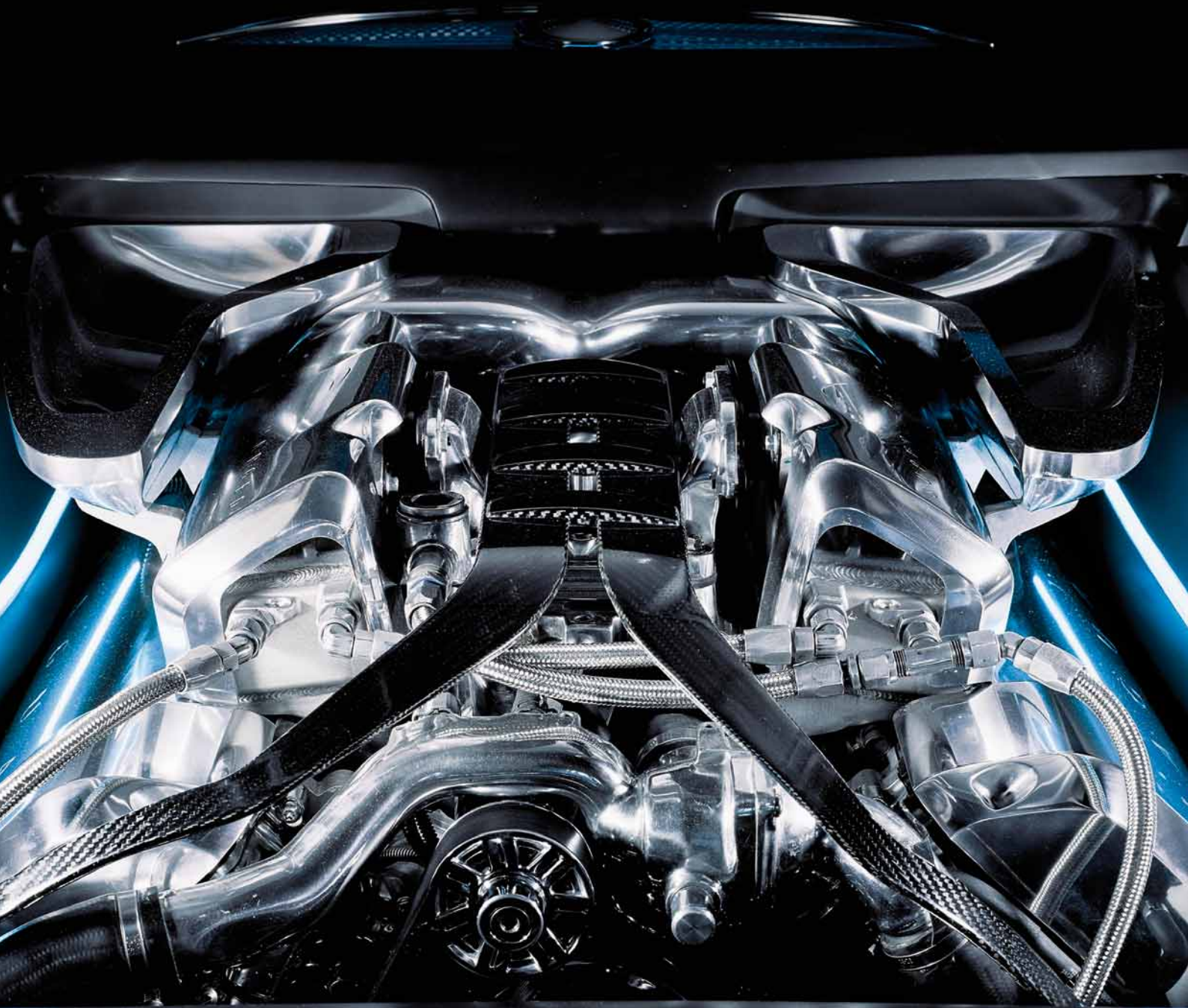
UK Trade & Investment's Advanced Engineering Sector Advisory Board will lead the implementation of the strategy and will seek the support of all parts of the sector to ensure it remains relevant and of practical support.

Through a co-ordinated effort, we can work together to market the UK and make the most of business opportunities – wherever they are!



Lord Mandelson
Secretary of State for Business,
Enterprise and Regulatory Reform





01

“UK Advanced Engineering businesses are a vital part of our economy. To succeed in the global market, we must do everything in our power to promote the fantastic capability the UK has to offer. The CBI fully supports the aims of this strategy.”

Richard Lambert
Director-General, CBI

The UK Advanced Engineering international marketing strategy

Introduction

The UK Trade & Investment five-year strategy, *Prosperity in a Changing World*, acknowledged the need, in an increasingly competitive international market, for a more coherent marketing strategy to promote the UK's strengths.

The fact that this marketing strategy is launched against the backdrop of a global economic crisis makes it more relevant than ever. The UK Advanced Engineering sector combines excellence with creativity and so much more. But to continue to succeed globally it needs to target new markets, make new partners around the world and constantly demonstrate all that is good about our country and our expertise. And we need to do this as one, with Government, industry and academia working together for the collective good. This strategy is for everyone working in the sector or involved in its future.

The new marketing strategy sets out a clear direction and plan of action that will help focus collective efforts and achieve shared goals. Joined-up marketing will improve the targeting and co-ordination of marketing activities, we will deliver the right messages at the right time, and working together, with a shared approach and goals, we will make the most of our joint resources. But fundamentally, it's about changing perceptions and promoting positive views of UK Advanced Engineering.

UK Trade & Investment's Advanced Engineering Sector Advisory Board has guided the development of this strategy. In May 2008, UK Trade & Investment (UKTI) undertook a major showcase event in India, as a pilot of the approach being developed to enhance UK reputation and change misperceptions. The Advisory Board has sought to work closely with the community of Advanced Engineering stakeholders and will continue to do so as it leads implementation of the strategy.

What's in a title?

The UK: Advancing Engineering

The title of this strategy reflects the central position of the UK's Advanced Engineering sector. Not only do our businesses deliver excellent quality, cost-effectiveness and reliability, but we are continually advancing the scope of what engineering can do to meet our customers' needs. The strategy also has a further meaning in that its central premise is the need to advance the case for UK Advanced Engineering, whose world-leading capabilities are not always recognised in international markets.

Inventive solutions...

The concept of inventiveness is central to the strategy. Whilst firms will continue to compete successfully on the basis of other competitive attributes such as aspects of cost and quality, it is the sustained inventiveness (whether in relation to products, technologies, processes or service) of UK Advanced Engineering that differentiates the UK from other nations and which offers the best opportunity for long-term success.

...For global challenges

This inventiveness has never been more important to the world as it faces up to challenges such as climate change, the enhancement of infrastructure in developing nations, economic pressures and globalisation.

Objectives

The main aim of the strategy is to get all of the key stakeholders in UK Advanced Engineering to speak with a single compelling voice across the world. This will help to position the UK as a destination of choice for Advanced Engineering, with a view to increasing international sales for UK businesses and attracting more, high added-value foreign direct investment.

Three key principles underpin this aim:

- Adoption of a joined-up approach
- Business and government working in partnership
- Alignment of marketing efforts to ensure the best possible outcome for the UK.

Ultimately, the ideal outcome is increased international sales by UK businesses and an increased flow to the UK of high added-value inward investment.

The strategy aims to achieve this by delivering a number of supporting objectives. First, in relation to the promotion of UK businesses abroad, the objectives are:

- To enhance the understanding and reputation of UK Advanced Engineering across the world, in markets and sectors where the benefit to UK businesses will be greatest.
- To ensure that UK Advanced Engineering businesses have the information available to them to make rational decisions as to where to apply their business development resource.
- To enhance the capability of UK Advanced Engineering firms with specific respect to their ability to present their offering to international markets.

In relation to the promotion of inward investment to the UK from Advanced Engineering businesses, the objectives are as follows:

- To enhance the understanding and reputation of UK Advanced Engineering across the world, ensuring that the UK is the destination of choice for investment from international engineering companies.
- To ensure that international companies have the information available to them to make rational decisions regarding investment in the UK.



Electric sports bike

An important “enabling objective” will be to build awareness of, and commitment to, the key messages contained in this strategy across businesses and other stakeholders with an interest in Advanced Engineering in the UK, whilst also raising awareness in the UK of the UK’s excellent capabilities in this area.

To do this, the strategy aims to ensure that UK Advanced Engineering businesses have the information and capability to exploit the opportunities that this repositioning will bring, and that international firms have access to information that enables them to make rational decisions regarding investment in the UK.

The new marketing strategy will complement the range of existing UK strategies for areas such as manufacturing, energy and the low-carbon economy, which seek to address some of the main challenges facing UK Advanced Engineering and focus on the fundamental underlying aspects of competitiveness.

02

“The UK’s Advanced Engineering Marketing Strategy brings essential focus to further advancing the scope and competitiveness of UK engineering. This builds on our excellent capabilities and will help to raise awareness of what the UK has to offer.”

Tony Wood
President Gas Turbine Services,
Rolls-Royce

UK Advanced Engineering

Advanced Engineering encompasses all that is great about UK manufacturing.

UK companies in this sector are involved in the development of products, processes or services that employ research and/or continuous development capability.

This means that they develop or use intellectual property in areas such as:

- design engineering and product development;
- advanced materials (including, for example, composites and nanotechnology) and
- advanced manufacturing and process intensification.

These capabilities are then applied by businesses across an extensive range of sectors, including:

- aerospace (including civil, defence and space applications);
- automotive (including motorsport);
- construction and mining equipment;
- energy (including oil and gas, nuclear and renewable energy);
- marine and
- a wide spectrum of other sectors that can use Advanced Engineering in their processes (e.g. food and drink, textiles, pharmaceuticals, medical technology, chemicals, environmental technologies and ICT).

It is clear from the above that Advanced Engineering technologies underpin a vast range of business sectors.

Please note that further information on key capabilities is outlined on pages 18 and 19.

The county of Staffordshire makes more construction equipment than any country in Europe and is the heartbeat of a sector worth in excess of £8.5 billion with over 80% of production being internationally exported to more than 200 countries.

Marketing the UK's strengths

Be it in aerospace, automotive or any other field of engineering, the UK's capability in Advanced Engineering is world class.

However, this world-class expertise is not always fully recognised in international markets – something that the UK Government is keen to address.

Consequently, UK Trade & Investment, working closely with key industry, government and academic partners, has developed an international marketing strategy for the UK's Advanced Engineering sector, which aims to market its strengths more effectively overseas.

UK: Advancing Engineering. Inventive Solutions for Global Challenges sets out the opportunities and threats for UK businesses in this dynamic sector and highlights its main capabilities.

Given that these are not always well understood internationally, the strategy emphasises the need to reposition the UK sector and promote it more forcefully on a global stage through the effective communication of key messages.

The next chapters outline the findings of the consultation process and recommend activities to meet the strategy's objectives.



Composite fan blade

03

Six out of the top ten global vehicle makers and **19 of the top 20** auto parts makers have a UK manufacturing presence.

Consultative analysis

The new strategy was developed following a comprehensive programme of consultation with UK Advanced Engineering stakeholders, in which they were asked to voice their perceptions of the industry and how they feel it is viewed by potential overseas customers and investors.

A snapshot of the results of this process is provided below.

The needs of international buyers

UK Advanced Engineering stakeholders identified a range of factors that they felt most important to international customers when selecting a country from which to buy their goods and services.

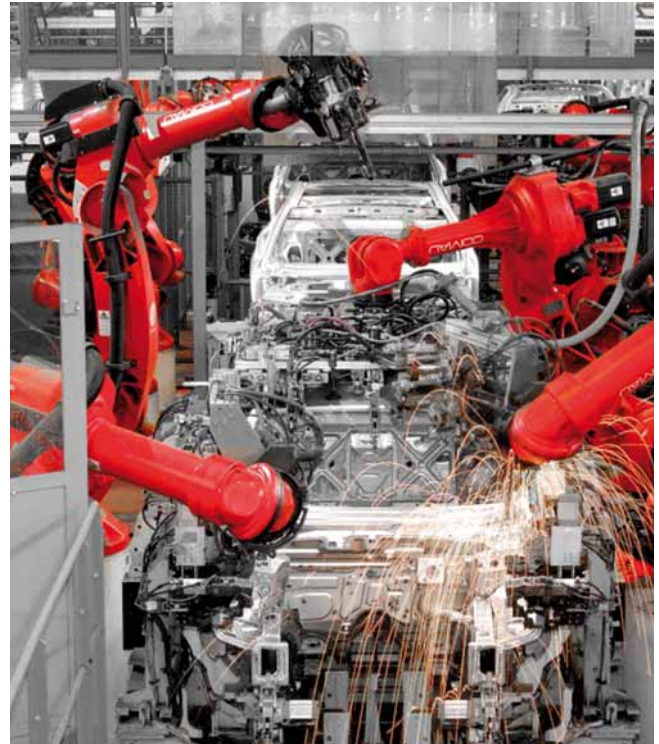
- For UK companies in particular, the marketplace is often seeking **innovative solutions to difficult engineering problems**, whether related to product or process.
- Buyers are looking for **technologies that help their own countries to industrialise**; UK businesses often have these technologies to sell.
- Cost is clearly a factor, but is not always the prime driver.
- **Reliability** issues are seen as important.

The needs of inward investors

When asked to list the factors that they felt most important to potential international investors when choosing a country to invest in, **stability, value for money and the availability of a skilled workforce** were seen as key.

Ultimately, according to UK stakeholders, overseas firms decide to make a **first-time investment** based on cost considerations, although issues of skills, infrastructure and access to markets also play a part.

For **subsequent investments**, cost is again viewed as a factor, but the extent to which firms are embedded within their local economies, for example through supply chains and relationships with research bodies, is a key consideration.



Comau

In 1999, Fiat-owned Italian company Comau took over the UK's Pico Estil to form Comau Estil. The firm supplies cutting-edge solutions in systems integration, robotics and numerous areas of automation, with customers predominantly in the automotive and aerospace sectors.

Estil had been associated with global businesses for many years. As Comau, the company now has 38 bases around the world.

“As part of the Global Comau Group, we are in an enviable and unique position to support manufacturers within the UK and Europe, providing a local gateway to a worldwide group of expertise,” says Martin Kinsella, Engineering Manager for Comau Estil UK.

“We pride ourselves on selling to our customers’ needs, focusing on delivering efficiency and productivity and adding value to our clients’ businesses. We are able to provide our customers with localised support, with the benefits of global sourcing capabilities.”



Ford Motor Company

As a result of investment totalling over £775m over recent years, Ford has turned its Dagenham Diesel Centre into its global centre for diesel engineering design and production.

This has been achieved by combining the manufacturing expertise of over 2,000 skilled production staff at Dagenham with an industry leading engineering team both collocated and at their nearby Dunton Technical Centre. With the aid of 500 newly recruited manufacturing specialists 2007 saw Dagenham begin production of Ford's new class leading 1.4 and 1.6 litre TDCI engines on a state of the art assembly line. These low CO₂ emission engines are at the forefront of Ford's commitment to the low carbon vehicle agenda and feature in the new ECONetic range of vehicles. Demand for these products saw Dagenham's production top one million engines in 2008.

Not only is Dagenham building a range of new and innovative low carbon products, but the plant itself is leading the way in eco-efficient production. Currently powered by two 3.6MW capacity wind turbines, with a third due for installation in 2009, the facility is unique amongst Ford operations. Use of wind power has seen gas and electricity consumption cut and 6,500 less tonnes of CO₂ produced per year. Waste elimination also is key to the company's strategy with the diversion of over 12,500 tonnes of material from landfill – old concrete from the site was recycled for use in the new engine production hall floor. Mineral oil use too has been cut with over 500,000 litres saved as the plant moves to increased use of 'Green' vegetable oil for metal working and other uses.

Drivers of change

As outlined earlier, this marketing strategy must complement other relevant business strategies that impact Advanced Engineering. The UK Government's strategy *Manufacturing: New Challenges, New Opportunities*, published in September 2008, highlights five inter-related factors that are reshaping global manufacturing, an important area in the UK Advanced Engineering sector:

- The increasing prevalence and complexity of global value chains.
- The accelerated pace of technology exploitation.
- The growing importance of investment in intangibles such as design, branding and R&D.
- The increased recognition of the importance of investments in people and skills. (Further reference is made to this in the next section).
- The move to a low-carbon economy.

Alongside this strategy, UKTI is facilitating the development of the UK Low Carbon International Marketing Strategy. One of the key characteristics of creating a global presence for the UK's low carbon capability is its relevance across all sectors internationally. The strategies will be mutually beneficial in this area, with the UK Advanced Engineering International Marketing Strategy bringing to the fore its early mover low carbon credentials.

In addition to these, other specific drivers of change were also identified as part of the consultation process for the new UK Advanced Engineering strategy:

- A tendency for larger companies to share risk within their supply chain.
- The opportunities that are emerging from developing economies.
- An increased desire for solutions rather than products.
- Increasing political risk in some countries.

People and skills

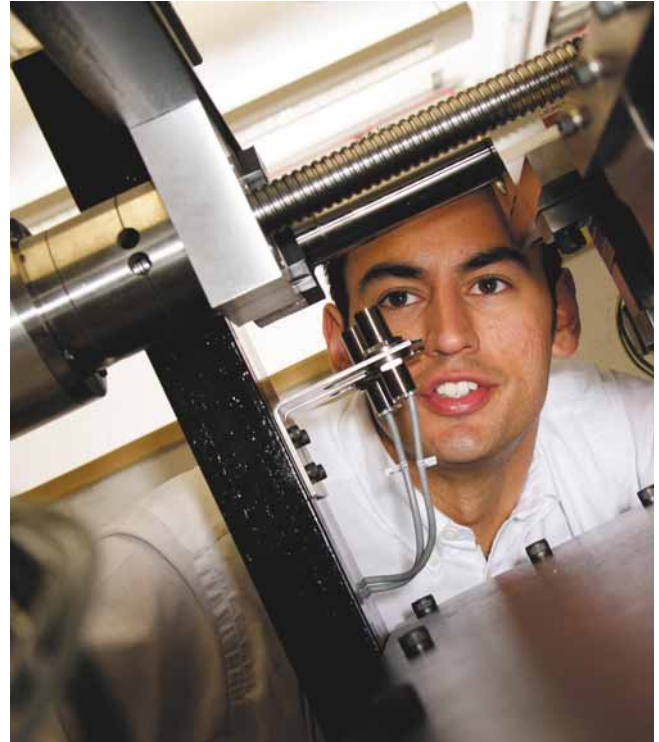
This subject was frequently raised in the consultations for this strategy. Whilst the UK is perceived to deliver high quality engineers, it still does not deliver enough of them. The Manufacturing Strategy puts forward a number of policy proposals in relation to:

- The development of a single seamless service for accessing skills needs
- Simplification of the skills system
- Development of a “Talent Map” to provide employers with a clear representation of the education, employment and skills systems
- Extension of the number of “high quality apprenticeships”
- Steps to improve the public perception of manufacturing
- Promotion of manufacturing career prospects to young people.

The UK government has also recently launched its “Manufacturing Insight” programme, which seeks to challenge public perceptions of UK manufacturing generally, including campaigns in schools to build enthusiasm for a career in manufacturing. An additional 1,500 places for manufacturing apprenticeships have also been created, in addition to 9,000 previously announced.

In December 2008, the UK government announced a £250 million investment in training scientists and engineers. This investment will be used to create 44 training centres across the UK and fund more than 2,000 PhD students to develop solutions to major concerns such as climate change.

These initiatives are clearly important to UK Advanced Engineering businesses as they seek to further enhance their capabilities.



“It is vital that all stakeholders work together to support the global engagement and delivery of the UK’s world-class Advanced Engineering capabilities.”

Professor Mike Gregory
Head of the Institute for Manufacturing



Advanced Engineering opportunities for the UK

UK Advanced Engineering stakeholders identified a number of trends in the global environment that could represent future opportunities.

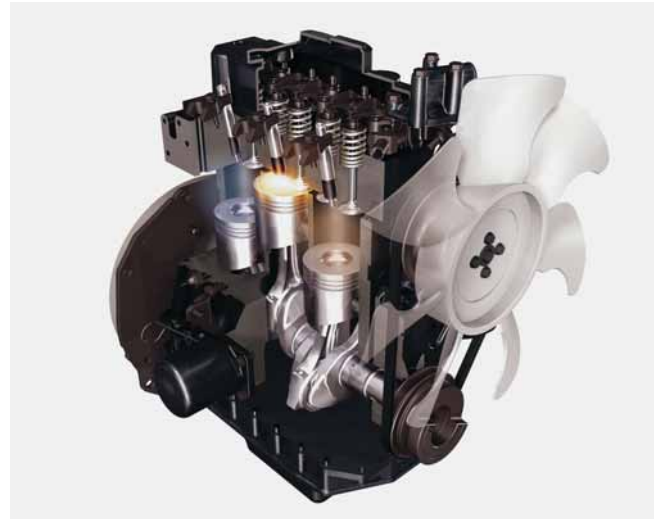
The key opportunities are seen as those relating to technology development and the specific opportunities arising from climate change and demand growth in emerging markets.

During the period of consultation, the challenges brought about by the global economic downturn became apparent. The Government's Action for Business team is working on a programme of activity co-ordinated across the Department of Business, Enterprise and Regulatory Reform and other Government Departments that will support businesses in meeting current economic challenges and help them prepare for the upturn when it comes.

The position of the new UK Advanced Engineering marketing strategy is that, whatever the scale and timing of the recovery, the sector has fundamental, underlying capabilities for which there will be substantial and growing demand in the global economy in the medium to long term.

According to UK stakeholders, this demand is likely to come from established markets such as the USA and Western Europe, as well as from the "BRIC" economies of Brazil, Russia, India and China.

While recognising that the communication of core marketing messages about UK Advanced Engineering should apply across all countries, the new strategy suggests that certain markets would need to be prioritised for targeted activity, both for trade and inward investment.



Yamazaki Mazak Corporation

Today, the Yamazaki Mazak Corporation is the world's largest producer of computer-controlled metal cutting machine tools, with annual global sales of over US\$2.5 billion.

Mazak supplies machines to make everything from jewellery to jet engines. Its customers come from a wide range of industries and include manufacturers of sub-sea equipment for the oil industry, makers of moulds for contact lenses, customers supplying to the aerospace, automotive and construction industries, and manufacturers of machinery of all kinds.

After considering Germany and Belgium, Mazak chose the UK for its European base. In 1981, the company established a sales force in Worcester, followed in 1987 by the opening of a new factory which now covers 29,000 square metres, and has the capacity to make 160 machine tools a month.

"Our business in the UK has lived up to and even exceeded our expectations," says Dr David Jack, Group Managing Director Europe for Yamazaki Mazak. "The UK has a clear advantage for a global company over other European countries, namely the language. However, the UK also offers a favourable tax and employment regime."

SWOT analysis

Based on all these findings, the following SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis was formulated to give an overview of the current competitive position of UK Advanced Engineering.

Strengths	Weaknesses
<p>A very high level of problem solving and ingenuity.</p> <p>Existing strengths in certain product and technology areas.</p> <p>Developing strengths in others.</p> <p>A good trading partner.</p> <p>Strong on whole-of-life approaches, after-sales service and customer care.</p> <p>Openness to new ideas.</p> <p>High quality of research and development and enhanced transfer of technology between academia and business.</p> <p>A good base for business in relation to factors such as the legal environment, ethical approach and overall economic environment.</p>	<p>The number of skilled engineers that are available, currently and in the future.</p> <p>Perceived to be high cost.</p> <p>Some issues of on-time delivery.</p> <p>Poor quality of individual and collective marketing.</p> <p>Less likely to be seen as entrepreneurial, technologically advanced and innovative than is the case in reality.</p> <p>Comparatively few high-profile engineering brands.</p> <p>Sometimes seen as a post-industrial economy that is not focused on manufacturing.</p>
Opportunities	Threats
<p>The desire of various markets for “solutions to problems”.</p> <p>Climate change and the low-carbon economy.</p> <p>Worldwide needs for cost reduction and lean manufacturing.</p> <p>Demand growth in emerging economies.</p> <p>Globalisation of supply chains.</p> <p>Risk sharing within supply chains.</p> <p>Activity being brought back to the UK due to negative experiences elsewhere.</p>	<p>Globalisation of supply chains (and risk sharing) and potential failure of UK businesses to respond effectively to these changes.</p> <p>Intensification of competition in many markets.</p> <p>Political instability in some potential target markets.</p>

04

Orders in UK aerospace soared 65% to a record **£43.8 billion** in 2007.

Aerospace exports accounted for 62% of sales reinforcing the global nature of the market.

Key capabilities

The research carried out to formulate the new strategy highlighted many UK strengths in Advanced Engineering.

The aim of this marketing strategy is to promote and showcase UK strengths in a co-ordinated and coherent manner. The UK has great capabilities in a wide range of technologies that fall within the scope of Advanced Engineering and all of these will benefit from the single, compelling voice approach. They are too widespread to detail in this strategy, therefore outlined below are some of the strengths in technical themes:

Design Engineering and Product Development

The UK has a strong capability in areas such as the design of products and components, as well as of buildings and other structures and of new business models and ways of working.

This is based on a tradition of excellence in design, the high quality of the research base and a flexible and innovative approach to business problems and product/process development. A key example of this is automotive design, where the UK accounts for 20 per cent of the global demand for independent vehicle design engineering services.

Advanced Materials

Thanks to the UK's continued innovation in this area, it is a leading provider of high value-added solutions to global challenges. Indeed, businesses in the UK that produce, process, fabricate and recycle materials contribute an impressive 15 per cent of UK GDP.

A key area is that of sustainable transport. The UK has world-class expertise in the development of many metallic systems, which, coupled with strengths in composite materials, means that it is leading the way in the development of new lightweight and recyclable, structural and functional materials solutions for a number of markets. Many of the UK stakeholders consulted in the formulation of the new strategy felt that composites were a particular area of strength and opportunity for the UK Advanced Engineering sector.

To remain at the forefront of composite technology development, the UK Government and industry are working together on the £100 million Next Generation Composite Wing Programme.



Prodrive Ltd

While its roots are in motorsport, Prodrive has evolved since its creation in 1984 into a business that has differentiated its offering through developing a specialisation in the development of advanced technology for road vehicles.

Today Prodrive has broadened its areas of business still further, transferring its skills into sectors including aerospace, marine and defence. These include the development of new technologies for the reduction of carbon emissions in everything from cars to domestic heating systems. Prodrive also has its own manufacturing facilities and supplies components for everything from Formula One cars to space satellites and high performance winches for racing yachts.

Prodrive operates on a global scale and offers mainstream automotive manufacturers an opportunity to differentiate their own products through limited editions that employ Prodrive technology. A recent example of this is the Alfa Romeo Brera S launched in May 2008. Tony Butcher, managing director of Prodrive's automotive technology business, said: "We were able to bring our skills in chassis, engine and suspension development to bear on this classic Italian sports car. Alfa saw so much value in the work we were carrying out for them that the marketing of the car was based around our involvement, with the product's proposition 'Best of Italy, Best of Britain' emphasising the international cooperative nature of the project."

The UK is also recognised as a world leader in plastic electronics, which facilitates the creation of inexpensive flexible devices and the integration of electronics with fabrics and a whole host of non-silicon devices.

In addition, the UK has an international reputation for nanotechnology research, with over 1,400 companies active in this area.

Advanced Manufacturing and Process Intensification

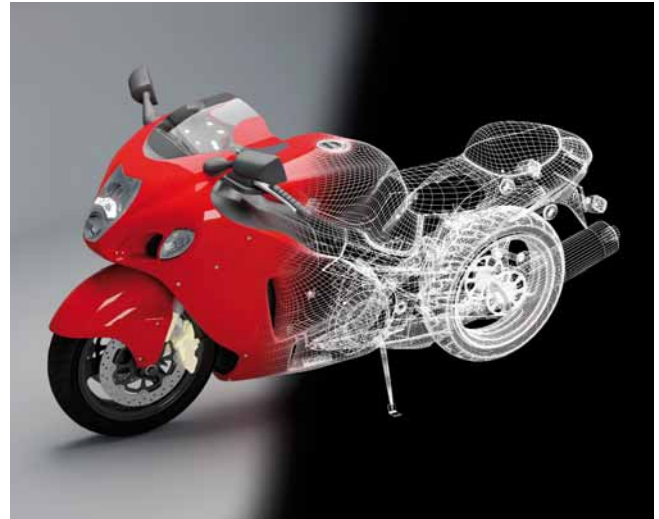
UK businesses are active in a number of areas of advanced manufacturing, including manufacturing simulation, software, metrology and rapid prototyping. The UK has developed significant strengths in the ability to re-engineer processes to reduce non added-value costs and/or to enhance productivity.

The UK also has considerable expertise in precision engineering – a factor in an emerging trend for previously outsourced work in this field to be brought back to the UK.

As well as these three core areas, the UK has extensive capabilities in servicing part of the value chain. In the aerospace sector, for example, the Society of British Aerospace Companies reports that the total UK turnover for maintenance, repair and overhaul totalled £6.1 billion in 2007.

“The UK has highly competitive advanced engineering industries and they will play an essential role in generating employment and prosperity as economic growth returns to the global economy. The UK Advanced Engineering Strategy, prepared by UK Trade & Investment, is an important development in promoting the tremendous potential of UK businesses and the opportunities that are available through innovation and the use of new technologies.”

Paul Everitt
Chief Executive of the Society
of Motor Manufacturers and Traders



Delcam Plc

In 1965, Donald Welborn, Director of Industrial Co-operation at the University of Cambridge, saw the potential of using computers in the design and manufacture of complex 3D shapes. He set up a company to develop Computer-Aided Design (CAD) and Computer-Aided Manufacturing (CAM) software, which uses a drawing tool to describe geometries that are then used to define a tool path that directs the movement of a machine tool to replicate in 3D the exact shape that was drawn.

By 1991, the firm, now known as Delcam Plc, had gone through a series of buyouts and changes, growing into a listed company based in Birmingham, with over 500 direct employees. Its product ranges reach all industries, including automotive, aerospace, engineering, medical and dental, and consumer products such as jewellery or engraving.

In the late 1990s, Delcam approached UK Trade & Investment and the British High Commission in India for help in developing plans to improve service for its Indian customers. These initial meetings with UK Trade & Investment led to Delcam setting up a physical presence in India in 2000, although initially only working with national distributors and dealer networks.

“An important part of the service that we offer is being close to our customers,” says Vineet Seth, Delcam’s Managing Director for India and the Middle East. “We soon realised that we were not able to accomplish this with a dealer network as we were missing out on vital follow-up support and contact. In 2000, we opened up a liaison office in Pune and by 2002 we had a wholly owned subsidiary, an office and 50 employees.”



Hybrid engine block

Meeting the challenge

Given the UK's expertise, it should be well placed to exploit the opportunities for both international trade and investment that exist in global markets. However, whilst there are undoubted strengths, UK Advanced Engineering firms are also facing considerable challenges.

Stakeholder consultation found that UK Advanced Engineering companies believe that the UK excels at being a reliable and honest trading partner, producing high-quality problem-solving engineers and delivering first-class after-sales service.

At the same time, however, they perceive weaknesses relating to on-time delivery, the UK's high-cost base and the low number of engineers that it produces.

Furthermore, they feel that there is a lack of awareness of UK capabilities in both established and emerging markets and that both UK companies and the UK as a whole do not market themselves effectively. This is backed up by UK Trade & Investment research which suggests that the UK is less likely than some of its competitors to be thought of as entrepreneurial, technologically advanced and innovative.

Decisions about which opportunities to target are often taken on an ad-hoc basis and without taking advantage of the market information that is available. Moreover, UK companies seeking to export their strengths overseas often let themselves down by things like lack of translation, poor-quality websites and a lack of proactive selling. Addressing such marketing deficiencies is a key aim of the new UK Advanced Engineering strategy.

Many of the areas identified as 'weaknesses' were seen to be the perception of overseas markets. UK stakeholders believed that the underlying capability was there and the challenge was one of better, co-ordinated marketing to change misperceptions.

An obvious example of this is the so-called weakness that the UK is sometimes seen as a post-industrial economy that is not focused on manufacturing, when, in reality, it remains the sixth-largest manufacturer in the world, boasting manufacturing industries that annually invest in excess of £10 billion in research and development.

Technology areas of expertise

UK Trade & Investment has identified the following specific technology areas where the UK has acknowledged expertise in delivering products to end-user markets.

This is clearly not an exhaustive list and, indeed, UKTI identifies an extensive range of products / technologies in which the UK has strengths, which include, but are certainly not limited to automation, CAD/CNC integration, forgings, instrumentation, metallurgy, robotics and telemetry. Such products / technologies are applied across a very wide range of end-user sectors.

End-User	Various Engineering Sectors	Aerospace	Automotive
Technologies	Advanced steel making Plastics and processing machinery Process and packaging technology Radio Frequency Identification Composites	Gas turbines Satellites Wing design Unmanned Aerial Vehicles Maintenance, Repair and Overhaul	Engine design Intelligent transport systems Low-carbon technology Fuel cells

05

“Strategy means planning and for me, planning means getting ready to implement actions for our future. This UK Advanced Engineering international marketing strategy is a key part of the process of keeping the benefits of international trade to the Advanced Engineering sector at the top of the agenda and to keep its profile high and recognised.”

Peter Mathews, CMG
Chairman UKTI Advanced
Engineering Sector Advisory Board

Strategy recommendations

In order to ensure that the strategy fully achieves its aims, it is vital that businesses, of all shapes and sizes, maximise the opportunities that a long-term repositioning of the UK Advanced Engineering sector in international markets can bring, and that they, as well as other stakeholders, are fully committed to the repositioning process.

The strategy therefore recommends that the following three broad programmes are put into action:

- A series of activities aimed at **promoting the messages**.
- An **additional support programme for SMEs**, to improve the provision of information and help to develop marketing capability.
- **Internal marketing of the strategy to UK businesses**, with the aim of building confidence in, and commitment to, the proposed messages.

Under these three programmes, possible activities could include:

Promoting the messages

- The development of a comprehensive set of marketing materials to enable the communication of key messages, which would be continually updated and could be used by a range of parties, including individual companies, trade associations and Government bodies.
- UK Trade & Investment and the Advanced Engineering Sector Advisory Board (AdESAB), working in partnership with the English Regional Development Agencies and the Devolved Administrations, to demonstrate their commitment to the messages and helping to ensure a UK-wide approach to promoting the UK's Advanced Engineering capability.
- Major annual international showcase events for UK Advanced Engineering in both the UK and key overseas markets.
- The development of a relationship-building programme which would involve key stakeholders arranging meetings with relevant contacts in overseas markets to communicate the new propositions about UK Advanced Engineering.

Additional support programme for SMEs

- The development of a more simplified and co-ordinated approach to the provision of information to companies, which would summarise the key medium-term opportunities in international markets and advise on how firms can best exploit them.
- The development of a marketing toolkit providing a one-stop shop for UK Advanced Engineering marketing materials. A UK-facing part of the toolkit would be a template that could provide SMEs with the opportunity to compose a marketing strategy for a specific market using the information available on the site.
- Initiatives to encourage groups of Advanced Engineering businesses to work together in their international marketing efforts, involving, for example, the sharing of investment in marketing materials, sales resource and local presence.

Internal marketing of the strategy

- An annual conference, to take place for the duration of the strategy, which would highlight the sector's main successes and illustrate the changing opportunities that exist for UK Advanced Engineering businesses.
- The promotion of key UK marketing messages by UK Trade & Investment, trade associations and major Advanced Engineering businesses via existing communications channels.

Managing delivery

It is recommended that the strategy as a whole will be overseen by the existing structure of the AdESAB, with business-led sub-groups, involving the wider stakeholder community, taking responsibility for individual components.

06

“The British Chambers of Commerce fully support the strategy of UK Advanced Engineering led by the UK Trade & Investment Advanced Engineering Advisory Board, something which is a key factor in today’s and tomorrow’s future economy for the United Kingdom.”

David Frost

Director-General of the British
Chambers of Commerce

Repositioning the UK

Based on the consultation work undertaken in the development of the new strategy, it is clear that UK companies feel that potential overseas customers and investors view them as having a good technological background and being solid, reliable, honest and trustworthy business partners.

However, in their opinion, the UK is not always seen as having the same depth of Advanced Engineering capability and innovation as some of its competitors. Instead, it is viewed principally as a service-based economy that does not see manufacturing (and, within this, Advanced Engineering) as a priority.

In short, it is clear that the UK's true strengths are not being effectively conveyed to the rest of the world.

The new strategy will seek to reposition the UK Advanced Engineering sector in more positive terms to reinforce its attractiveness as a trade and investment partner.

This repositioning needs to reflect the developing needs of international buyers and investors and to be built on firm foundations in terms of genuine UK capability. It will differentiate the UK from its competitors in a way which is credible within the sector and which reflects the needs of the marketplace.

Emphasising inventiveness and innovation

The key point of differentiation proposed by the strategy revolves around the concept of innovation and inventiveness. Whilst some competitors will emphasise cost or specific dimensions of quality, it is the UK's ability to provide creative, knowledge-intensive solutions which offers UK businesses the greatest prospects in overseas markets.

UK inventive engineering is currently being applied across the world to address the pressing challenges of the day, including, in particular:

- addressing the impact of climate change and the development of the low-carbon economy;
- worldwide needs for cost reduction within manufacturing processes;
- supporting the development of infrastructure in emerging economies and
- working with partners to exploit effectively the opportunity for a global approach to the supply chain.

Across the UK Advanced Engineering sector, companies apply their innovative thinking and techniques to high-value manufacturing approaches and technologies in order to address these challenges in a way that represents genuine, long-term value-for-money solutions for trade partners and investors.

By reinforcing the UK's strengths in Advanced Engineering inventiveness in the minds of potential customers and investors, the task for individual firms to sell their goods and services (or those promoting inward investment) will be made easier.

Fundamental:

The UK's Advanced Engineering community is renowned for generating creative ideas and turning them into cutting-edge and bespoke solutions.

Supporting:

The UK has led the way in adapting to global competition, developing superior capabilities in high-quality, cost effective manufacturing.

Evidence:

Nissan's design studio in London and development facilities in Cranfield were principally responsible for its bestselling global model, the Qashqai.

Evidence:

The SLR McLaren is built in the UK by UK companies and has 37 patents created for revolutionary use of carbon Fibre.

Promotional message

To help achieve the necessary repositioning, the strategy proposes that UK Advanced Engineering stakeholders have access to a toolkit website containing a number of marketing messages to help them in their promotional efforts to attract both international trade and inward investment.

Each messaging stream will contain the fundamental positioning statement, emphasising how the UK Advanced Engineering sector wishes to be viewed in overseas markets, underpinned by a number of supporting messages communicating key facts to international buyers and investors.

Underlying these, in turn, will be a set of evidence statements for each Advanced Engineering sub-sector, containing facts and figures that back up the messages. To maintain relevance and accuracy, these statements will be updated on a regular basis.

For example:

The fundamental positioning statement: The UK's Advanced Engineering community is renowned for generating creative ideas and turning them into cutting-edge and bespoke solutions.

Supporting messages:

- The UK has led the way in adapting to global competition, developing superior capabilities in high-quality, cost-effective manufacturing.
- The UK is an open economy that welcomes partnership working and has a proven track record of coming up with great ideas to solve technical problems.
- UK engineers listen to their clients' needs and deliver the long-term solutions that are right for their customers.

Illustrative evidence statements:

Automotive has been used as an example and similar supporting evidence will be developed for other sectors.

- Six out of ten Formula 1 teams are located in the UK.
- The Mercedes SLR McLaren is built in the UK by UK companies and has 37 patents created for revolutionary use of carbon fibre.
- More than 40 companies manufacture vehicles in the UK.
- Six of the top-ten global automotive companies and 19 of the top 20 automotive parts makers have a UK manufacturing presence.

- The UK motorsport industry contributes over £5 billion per annum to the UK economy, 50 per cent of which is accounted for by exports, and turns over more than France, Germany and Italy put together.
- There are more than 50 automotive design engineering companies based in the UK, who collectively handle an estimated 20 per cent of the global demand for independent vehicle design engineering services.
- Nissan's design studio in London and development facilities in Cranfield were principally responsible for its best-selling global model, the Qashqai.

The diagram on the previous page shows how the messaging is designed to flow.

Opening doors

Once these messages have been drawn up and made available to UK stakeholders, the tools will be in place for individual businesses, particularly SMEs, to enhance their marketing capability.

Companies seeking to promote themselves in international markets will have access to a comprehensive set of propositions and supporting material that will allow them to place their own marketing statements within the framework of an overall UK message.

Over time, the continued reinforcement of these propositions will enhance the reputation of the UK's Advanced Engineering sector, thus opening doors to businesses that were previously closed.

Please refer to page 27 for an example of a previous UKTI advert that was designed using this positional messaging approach.

"Every day, on TV somewhere in the world, the best of UK motorsport high-performance engineering is seen WINNING. Fast and on-time delivery of innovative engineering solutions is the "stock-in-trade" of this world class sector, based in Motorsport Valley. They regularly prove, against stiff competition and in front of vast audiences, that the UK is, simply, the best place in the world for this type of Advanced Engineering."

Alistair Fergusson

Managing Director of ALCON – Chairman of the Motorsport Industry Association

A force in India: Engineered in the UK.

Fast track to the world^{UK}



It's no coincidence that Tata Group has located its European R&D headquarters at Warwick University. Or that they recently acquired one of the most advanced automotive brands on earth. Tata recognised that the engineering that makes Jaguar a world leader can also be a driving force behind their own global ambitions.

With one of the most sophisticated engineering industries, anywhere, you could soon be advancing your business in the UK. Interested in finding out more?

www.uktradeinvest.gov.uk

UK
TRADE &
INVESTMENT 



Satellite orbiting earth

07

“This strategy represents Government at its best and we warmly welcome it. Advanced Engineering is vital to our economy, providing high-quality and globally competitive products as well as highly-skilled jobs across the country. UKTI is a valuable resource for the UK and we are fully supportive of the aims of this global marketing strategy at this critical time where the nation’s trading success and skills base will be essential for our economic future.”

Ian Godden

Chief Executive of the Society
of British Aerospace Companies

The Advanced Engineering marketing toolkit website

A key feature of this strategy is the development of a marketing toolkit that would be a one-stop shop for UK Advanced Engineering marketing materials. As the strategy is implemented, the workgroups, being led by UKTI's Advanced Engineering Sector Advisory Board, will develop and refine the marketing messages and materials. This might include the development of template adverts, banners, brochure designs, exhibition stand design and possibly even the development of a UK Advanced Engineering brand. To be of most use to the wide range of stakeholders, all of these materials should be readily accessible. Hence the development of the site www.ukadvancedengineering.com

At the time of going to launch, the site has been developed but has limited information available. To give users a sense of how it might work, a country communication plan for Brazil has been included which, alongside the capability and messaging information, allows users the opportunity to interrogate the site and build a marketing plan for that market. As the implementation of the strategy starts in earnest, the site will be populated with additional information.

The site has a number of key features and is broken down into four main sections: International Marketing Strategy; Marketing UK Advanced Engineering; Marketing Tools; and Global Marketing.

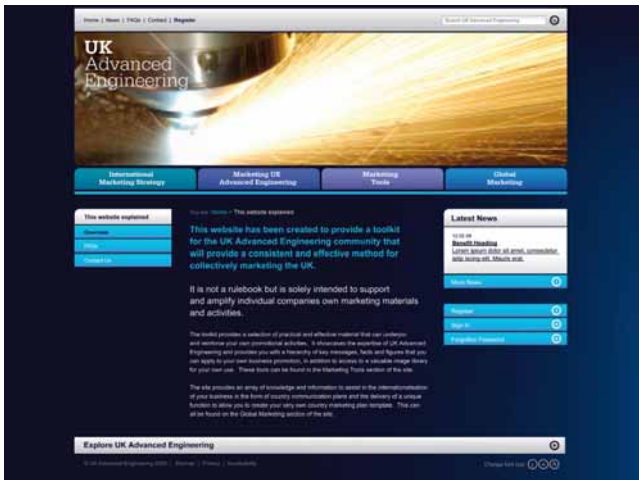


- **International Marketing Strategy** will contain details of this strategy, a separate overview, recommendations, Board members and endorsements.
- **Marketing UK Advanced Engineering** showcases UK capability and is broken down into key sub-sectors and key technology themes such as advanced materials. Additionally, it includes case studies of UK excellence and partner links.
- **Marketing Tools** defines UK Advanced Engineering messaging, explaining how the messaging could be used to supplement attempts to sell products to an international audience or to attract high-value, foreign direct investment to the UK.

This section of the site includes a series of sub-sector and technology themed evidence statements to back up the core messaging and contains a valuable library of complimentary images that can be accessed by users to add to their marketing efforts.

- **Global Marketing** contains the marketing plan template – a key recommendation of the strategy. This element of the site will provide users with the ability to produce a marketing plan for a particular country that it wishes to target. It will be of most benefit to those companies who have limited marketing experience or resource, most likely UK SMEs. It will provide them with sufficient information about a specific market, including a sector and country overview, its characteristics, how it perceives the UK and UK Advanced Engineering and opportunities in that market.

This information will assist the company in making a rational decision on the merits of targeting that market. Alongside this, the template will have access to UK capability information that can help a company position its own offer or place it in the context of a world-class sector and the marketing messages that can be deployed in support of its ambitions.



08

Each vehicle made in the UK requires half the energy to produce than it did just five years ago, saving an estimated 700,000 tonnes of CO₂ each year.

Summary – measuring success

It is obviously important to put mechanisms in place to measure the success or otherwise of the new strategy.

The main aim of the strategy is for potential overseas customers and investors to change any misperceptions they have of UK Advanced Engineering. This will enhance the UK's reputation as an engineering nation and, ultimately, it is hoped, bring about an increase in trade and inward investment for the UK Advanced Engineering sector.

While it can prove extremely difficult to assess the success of a perception-changing campaign, it has been proposed that UK Trade & Investment develop a baseline in relation to the new marketing messages by undertaking independent, objective research with potential customers and investors.

To meaningfully measure the success of the marketing strategy, it will be important to better understand international perceptions. This will be achieved through a series of independently-run, in-market consultations that score perceptions of UK Advanced Engineering against our main competitors to provide a baseline. It will then be repeated at two-yearly intervals during the life of the strategy, to gauge success of the marketing strategy in changing the perceptions of potential customers and investors.

It is also recognised that the sector's own views in relation to progress made is an important element of measuring success. The underlying research that contributed to the formulation of the new strategy provides a baseline against which future changes may be gauged.

In addition to measuring changes in perception, a specific mechanism for tracking both trade and inward investment achievements for UK Advanced Engineering will be put in place, complementing existing measures that are already used by UK Trade & Investment and other organisations.



Boeing

Boeing has been in the UK for over 40 years and the UK remains a major market for the company's commercial and defence businesses.

Traditionally, the UK has been the biggest source of supply outside of its US base and the company's presence in the UK has created 30-40,000 jobs through a number of Boeing businesses and its subsidiaries, such as Aviall, Alteon, Jappeson and Continental Data Graphics.

An important aspect of being in the UK for Boeing is its significant research and development programmes and relationships with academic institutions. In the last few years, the company has worked with a number of leading British Universities such as Cambridge University, Cranfield University and has jointly founded an Advanced Manufacturing Research Centre (AMRC) with Sheffield University.

"UK universities have a great reputation for expertise in the fields of aviation, aeronautics and aircraft development and there is a sound relationship between research and applications in the real world" says Sir Roger Bone, President of Boeing UK. Relatively few universities can do this well, but British universities really excel at it."

Acknowledgment and thanks

The authors would like to thank all of the individuals and organisations who made a contribution to the development of this strategy, whether by providing information, responding to surveys, providing personal interviews or taking part in group workshops.

The input of the following trade bodies was particularly appreciated:

- Aerospace Wales
- British Electrotechnical and Allied Manufacturers Association
- British Plastics Federation
- British Textile Machinery Association
- CBI
- Construction Equipment Association
- Engineering and Machinery Alliance
- EEF
- Engineering Industries Association
- Farnborough Aerospace Consortium
- GAMBICA
- Manufacturing Technologies Association
- Motorsport Industry Association
- North Wales Aerospace Alliance
- Process and Packaging Machinery Association
- Society of British Aerospace Companies
- Society of Motor Manufacturers and Traders
- West of England Aerospace Forum

As the delivery of the strategy progresses, the continued commitment of these and other organisations to advancing the cause of UK engineering will be crucial to our success.

In the UK, companies, including many of the world's major corporations, plug directly into the heart of global finance, global creative and professional services, global media and global talent. They enjoy access to world-class science and academia and link into a wide network of smaller enterprises, many of which are also world leaders in their fields.

A unique multicultural and entrepreneurial economy, the UK is at the hub of international business, bringing the world to a company's door. In short, it is the gateway to the globe.

Fast track to the world ^{UK}

UK Trade & Investment is the government organisation that helps UK-based companies succeed in an increasingly global economy. Its range of expert services is tailored to the needs of individual businesses to maximise their international success. We provide companies with knowledge, advice and practical support.

UK Trade & Investment also helps overseas companies bring high-quality investment to the UK's dynamic economy – acknowledged as Europe's best place from which to succeed in global business. We provide support and advice to investors at all stages of their business decision-making. UK Trade & Investment offers expertise and contacts through a network of international specialists throughout the UK, and in British Embassies and other diplomatic offices around the world.

www.uktradeinvest.gov.uk

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