

# *Opportunity for all in a world of change: Manufacturing*

## *Introduction*

**1** The Government's White Paper on enterprise, skills and innovation sets out the steps that Government and business must take to secure economic success in the decade ahead. They are designed to ensure that all people in the UK, in all regions and communities and in all sectors of the economy, are given the opportunity to achieve their full potential.

**2** The White Paper sets out why a strong manufacturing sector is vital to our future prosperity. For the UK to succeed as a global economic force, our manufacturing industry must be at the leading edge of the economy, producing high value added output and world beating products. To achieve this, manufacturing businesses must grasp the opportunities presented by new technologies, new ways of working, and new markets. Many of our manufacturing companies are already doing this, and are world leaders in their fields.

**3** Manufacturing today is facing the twin challenges of globalisation and new technology. As a result there is huge restructuring, both in the UK and elsewhere in the industrialised world. Government has a responsibility to help: first and foremost by ensuring economic stability; and secondly by investing in skills, science, transport and basic infrastructure. We should not seek to resist or to hold back the forces of change, but to enable industry, and all those working or aspiring to work in it, to adapt to change and exploit new opportunities.

**4** This document summarises the proposals in the White Paper to help individuals and businesses in manufacturing, so that:

- they have the skills they need to adapt to a changing world;
- existing businesses are able to transform themselves through new ways of working and new technology; and
- new industries and firms of the future are encouraged to develop and succeed.

## The State of Manufacturing in the UK

**5** A strong manufacturing sector is a vital part of the British economy. It contributes a fifth of our national income (nearly £150 billion per year) and nearly two thirds of our exports, employing 4 million people. It includes many of our most innovative businesses, and is a major source of growth in productivity, exports and R&D.

**6** The share of manufacturing in national output has been declining over time, as it has in all mature economies, reflecting changing patterns of demand and the outsourcing of some tasks to the service sector. Competition from overseas has become more intense, yet our performance as measured by output, exports, productivity and investment is improving. Exports in particular have grown strongly, up over nine per cent over the last year.

**7** The total number of jobs in manufacturing has fallen over time in the UK, as in other major economies, despite the rise in output, reflecting increasing productivity and outsourcing. There is considerable variation within manufacturing as a whole, with employment in some sectors (for example aerospace, motor vehicles, computers, office machinery, and communication equipment) growing by over a quarter over the last six years.

**8** At their best, our manufacturing companies, big and small, are forward-looking: investing in new technologies and equipment, providing world class skills and training to their workforce, and winning new markets and new opportunities. Nevertheless, this encouraging picture should not hide the fact that the work needed to be done to keep pace, or to keep ahead, of the competition is very challenging, especially for manufacturers in more mature sectors.

## Manufacturing Foresight

The Manufacturing 2020 Panel, a team of experts from industry, academia and public service (led by Nick Scheele, Chairman of Ford Europe) has been looking into the future of manufacturing in the UK. They reached the following fundamental conclusions in a report published last year "Manufacturing 2020: We can make it":

- manufacturing will remain of major importance to the UK economy;
- manufacturing is changing – and redefining itself as a provider of lifetime service around a manufactured product;
- the internet is a major enabler and will initiate a paradigm shift;
- much remains to be done to secure the UK's position in what will be a European manufacturing "competition" – but the UK can succeed.



**9** The Government has set the foundations for business to take up this challenge, through:

- **building economic stability** – with inflation and long term interest rates at their lowest levels for over 30 years, government borrowing down £44 billion and employment up over 1.1 million since 1997;
- **fiscal support for manufacturing** – with permanent enhanced investment allowances for smaller firms, 100 per cent allowances for small firms investing in IT, a new R&D tax credit worth £150 million a year and the lowest ever corporation tax;
- **investing in infrastructure** – with a ten year plan to upgrade transport, measures to improve and speed up the planning system, and a competitive framework in telecommunications and energy to deliver better services and lower costs to business;

- **improving education and skills** – raising standards in schools, colleges and universities; establishing *learnirect* to offer cost-effective and accessible learning, and working with business (through the new Learning and Skills Council) to help develop the skills of the workforce;
- **investing in the knowledge base** – an extra £1.7 billion, with the Wellcome Trust, in basic scientific research, and a 20 per cent increase in DTI's innovation budget;
- **supporting links between business and universities** – through Faraday partnerships to bring new products and processes in key industrial sectors to market, and LINK programmes which encourage business to work with the research base in universities;
- **supporting people and communities through change** – helping those made redundant to find new, quality jobs, for example through Rapid Response Units;
- **helping established industries to modernise** – supporting sectors such as automotive, chemicals, metals, aerospace, oil and gas to adopt best practice in production and supply chain management, through industry forum adaptation programmes;
- **supporting business directly** – through Regional Selective Assistance grants, export credit guarantees, venture capital funds, resources for the Regional Development Agencies to support innovation, enterprise and skills, and establishing the Small Business Service and British Trade International to improve training and support for small firms and exporters.

**10** Much has been achieved, but the world is not standing still around us and we need to keep raising our game if our manufacturing industry is to remain competitive in the decade ahead, exploiting to the full the challenges of new technologies and markets. This document summarises the series of practical measures set out in the White Paper through which the Government proposes to help manufacturing stay ahead.

## *LINK Surface engineering Benefits worth millions*

The LINK Surface Engineering programme, launched in April 1994, looks set to make a major contribution to British industry. Within the next five years, commercial sales alone are expected to reach around £420 million. This would represent a direct benefit to the UK economy worth 75 times more than the total government investment of £5.62 million. Further research and development and other non-tangible benefits are also anticipated.

A wide range of industrial sectors have been represented in the programme, from conventional engineering, where improvements in wear and corrosion resistance are required, to biomedical and sensor applications. More unusual areas include surface treatments for pottery, textiles, shoes, electrical insulators and print nozzles.

Project partners include small firms and technology organisations as well as blue-chip companies such as Ford, BAE SYSTEMS and Marconi Caswell.

To date, more than 90 academic papers have been published in refereed journals. Twenty surface engineering processes and materials have been patent-protected by the partners for future commercial exploitation, with many more expected to follow as exploitation plans are fulfilled within the next three to five years.



## Skills

**11** Modern manufacturing increasingly demands people with high level skills who can innovate and adapt quickly to changing requirements. We have raised the standards in our schools, colleges and universities, but demand is still outstripping supply in key aspects of workforce skills required in manufacturing, especially at technician level.

**12** We will create a world class technical and vocational educational system, for example through:

- offering more vocational options to young people, including new vocational GCSEs and opportunities to use CAD/CAM and other practical technologies;
- investing £100 million to develop vocational specialisms in colleges and more resources in Modern Apprenticeships for work-based learners;
- encouraging a better exchange of knowledge by working with business to increase significantly the number of business placements for science, technology and engineering teachers.

**13** We will equip businesses with the skills they need to compete on the basis of high value added goods and services, for example through:

- investing an extra £45 million in a smaller, stronger network of National Training Organisations to encourage employer involvement in skills;
- promoting more collaboration between firms, including through learndirect online learning centres that offer flexible learning.

## Electroparts

Electroparts is one of a number of small firms which have benefited from the services of Electronics Yorkshire, an industry-led venture with the simple, but challenging, aim “To provide the region’s electronics sector with the tools it needs to maximise its potential”. Electroparts is a small but growing company, formed in 1990 with two employees and currently employing 14. They provide a manufacturing facility for electrical and electronic sub-contract assembly, and are currently formulating a business plan which will expand the business both in the UK and mainland Europe over the next two to five years, using the Internet as a key tool for trading and marketing their services. The technical and training resources available at Electronics Yorkshire has enabled Electroparts to diversify and refine their business and double their customer base during the last year. Managing Director Carol Swallow says, “The facilities of Electronics Yorkshire have allowed us to train our people on new techniques and equipment, making sure we are ready to respond to the ever changing requirements of our customers, and providing the company with quality information to target our investment in equipment and resources.”



## Communities and Regions

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We need a new approach to regional policy designed to build the capability of all regions and communities.

Regions which are heavily reliant on manufacturing are particularly exposed to global competition, and Government has a responsibility to help manufacturing businesses in these areas to increase productivity and move into higher value added products. We must enable them to anticipate and respond to change and necessary restructuring, as well as helping manufacturing in high growth areas build on success and remove barriers to further growth.

The industry led Textile and Clothing Strategy Group identified opportunities for the region as being technical textiles, the application of new technology in traditional areas and a diversification into wider activities such as technical tapes and healthcare. DTI- supported initiatives on technical textiles are underway, based at the Bolton Institute and UMIST, and the Institute is also working with the Foresight Link programme to develop environmentally sustainable fire resistant fabrics.

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The Government will take a number of new measures to extend manufacturing excellence in every region – investing in skills, making the most of new technology, supporting industries of the future, raising innovation in every region. In particular we will:

- establish top class university innovation centres and new technology institutes to boost R&D, innovation and technology transfer and to provide business in the regions with the skills they need in ICT and high technology. The institutes will provide courses mainly at technician level, bringing together teaching and skill development with work to support the transfer of new technologies and business practices. The centres will be world class, long term partnerships between major business interests and the university sector, creating new dynamic links for growth. They will be at the heart of cluster development and support for new start-ups and businesses growing in incubators. The first five of these centres are for:
  - microsystems and nanotechnology in the North East;
  - chemicals in the North West;
  - communications and computing technologies in the South West;
  - business to business e-commerce in the West Midlands; and
  - aerospace manufacturing in Yorkshire.
- develop a new Manufacturing Advisory Service, in partnership with the Regional Development Agencies, with £15 million from Government, to provide small and medium sized manufacturers with hands on help with new manufacturing technology and best practice. This new service will complement existing DTI programmes, and will be delivered in concert with the Small Business Service. It will be based on regional centres for manufacturing excellence offering practical advice on a wide range of manufacturing issues to diagnose problems and provide tailored solutions. There will be a supporting national network to ensure manufacturers in all regions have access to the best expertise.

**16** As the economy changes, some industries and the areas where they are concentrated will face traumatic change. We will work with those affected to manage the process of change. To support this work we will:

- create a Job Transition Service, managed by the Employment Service, to help growing companies tackle skill shortages and enable individuals affected by redundancy to find the right jobs more quickly. This Service will work with potential employers to analyse their skills needs, match them against available recruits and run skill development programmes to close the gap. It is being developed in partnership with a number of communities affected by recent major redundancies in the steel and automotive industries.

### *Investing in New Sources of Success*

**17** The Government has invested heavily in the UK's research, infrastructure and skills base. But we need to do more to keep ahead and to spread the benefits of research to business, enabling the manufacturing industries of the future to develop and grow. We have an excellent science base but a persistent weakness in exploiting to the full its commercial benefits. By taking up and adapting new technologies we can develop world beating industries and transform established sectors. We are examining the case for further measures to encourage R&D among large as well as small companies, following the introduction of the R&D tax credit for smaller firms.

**18** The new steps we will take include:

- a series of new activities and projects to ensure that business can commercialise fundamental new capabilities offered by technologies such as sensors, photonics and nanotechnology and to assist manufacturing companies to integrate them into world beating products and processes;
- an additional £30 million to be spent through UK online for business, to help businesses move beyond having a web site or trading online to transform themselves through effective use of ICT. This new resource will be used to identify and spread best practice in the most critical business processes, deliver guidance and support services tailored to the needs of individual sectors, and support a range of activities provided with the help of members of the Information Age Partnership and others;

## R Griggs and Co Ltd

R.Griggs and Co Ltd is one of the UK's largest footwear manufacturers. It produces the famous Dr Martens brand and employs about 2,000 people. The company hosted trials, which were part-funded by DTI, to evaluate the effectiveness of a biological system to treat volatile organic compound (VOC) emissions. It was so impressed with the results of the trials that it installed a biotrickling filter, which degrades VOCs to water and carbon dioxide.

The new biological system enabled the company to comply with current legislation. A BIO-WISE case study found that the system was 16 per cent cheaper than conventional systems and cost 23 per cent less to run. In addition, it has superior environmental performance compared to conventional incineration.

Howard Johnstone, Group Administration Director said, "We are delighted to have found such a clean and environmentally sound solution to our needs through this use of biotechnology. We are also very proud to be one of the first UK companies to use biotechnology in this sort of application."



- a major new £25 million genomics programme to help business take up this rapidly developing science and apply it in new ranges of commercial products, processes and services. The programme will encourage bio-manufacturing, a high priority area for a new Faraday Partnership;
- an extra £10 million for the Waste and Resources Action Programme, to develop new markets for recycled materials and to promote technologies and processes which reduce waste;
- a major initiative with industry and others to achieve a UK solar photovoltaic demonstration project in line with those of our main competitors; and
- a £30 million fund over the next three years on innovative schemes to meet local requirements for broadband infrastructure, to see how we can ensure that as many businesses (and people) as possible across the UK have access to affordable broadband services.

## A Climate for Enterprise and Growth

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In addition to the need to develop our skills base, our regional capabilities and our capacity for innovation, British manufacturing must have a regulatory and financial environment which fosters enterprise and growth and an ambitious business culture. Much has already been done by Government in this area. In addition we will take new measures to:

- relax insolvency rules so that honest business people who fail are given a better chance of starting again;
- give a new role to the Office of Fair Trading and other regulators to assess when laws and regulations create inappropriate barriers to entry and competition, thereby holding back innovation and progress;
- simplify and refocus DTI business services, so that they respond more directly to business needs, and with a new 30 day goal for processing applications for government support.

### The Inner Tube

Inspired by the way recycled tyre inner tubes are used to make



products ranging from water carriers to shoes in many third world countries, Julie McDonagh began to test market the commercial opportunities in the UK for products made from recycled inner tubes. She identified a market for high fashion bags and hand luggage, and started her business in 1996 with a £2,000 loan from The Prince's Youth Business Trust and £1,000, which she raised by selling her car. Initially, Julie operated from a small factory unit using a second hand sewing machine to produce 10 bags a week for a handful of customers.

Four years later the business has grown from producing ten bags a week to 200 per day. Her products, which also include bikinis, filofaxes, vases, sunglass cases, cosmetic bags and mirrors, are now sold in 50 designer stores in the UK, and are exported as far afield as New York and Hong Kong with distributors worldwide. Over the last year exporting has become a major part of the business, and currently accounts for 60 per cent of turnover.

January 2001 saw the opening of the first Inner Tube retail outlet in Portsmouth. Inner Tube Ltd has also secured contracts with large buying groups who require exclusive designs. In 1999 Inner Tube launched its website [www.innertube.co.uk](http://www.innertube.co.uk) and has seen a steady growth of sales in this area.

## Global Ambition

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The success of British manufacturing also depends on constructive engagement by business and Government in Europe and overseas, to build export markets, to learn new processes and build new partnerships, and to attract new investment. We have a good track record on exports and on inward investment. We will now build on that by:

- transforming Invest UK and Trade Partners UK to meet the changing needs of business, investing £20 million in their online operations over the next three years;
- launching a global partnership programme to help British firms into international collaboration at home and overseas, with the world's best as their partners;
- promoting a better business environment in Europe by pushing for a major study of the benefits of achieving European economic reform.

## Pentwyn Splicers

Two years ago, Pentwyn Splicers was under severe pressure. This small Pontypool firm which manufactures splicers – machine tools used in the textile industry for joining yarns cleanly, without knots – was watching its business disappear with the migration of textile manufacture overseas. It became vital for the company to make good a decline in UK turnover by increasing the export sales of two highly competitive new splicers (subsequently Millennium Product Award winners). Lessons learned from a project on e-business, run by Cardiff University, were incorporated into customer support activities. Managing Director Graham Waters used information technology as a cost effective means of informing potential customers, around the world, of Pentwyn Splicers' new competitive products. Significant new business was secured in Poland, South Korea, Saudi Arabia, Turkey and Japan. As a result, exports now represent 70 per cent of total sales. Pentwyn Splicers continue to operate in an extremely competitive market but Graham Waters is optimistic about the future, "We are seeing the stirring of sales in markets where we've never been before."

