

National Manufacturing Debate 2011

May 25, 2011

Cranfield
UNIVERSITY

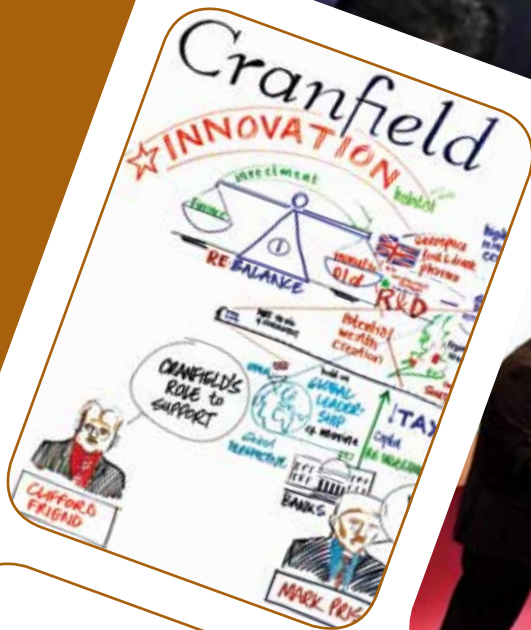


Mission is possible
Economic rebalance
is within our grasp
A report on The National
Manufacturing Debate 2011



THEManufacturer

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with *The Manufacturer*



National Manufacturing Debate 2011

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Contents

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- 3 Keynote speakers
- 4 UK manufacturing offers real opportunity
- 5 Introduction from The Manufacturer
- 6 Executive summary of the debate
- 10 National manufacturing debate 2011
- 9 Investment in manufacturing
- 10 Support for UK manufacturing
- 12 Manufacturing as a means of rebalancing the economy
- 13 Manufacturing competitiveness
- 14 Skills and education in manufacturing
- 16 Delagates' comments
- 18 Conclusions
- 19 Action points

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Keynote speakers



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for Business and
Enterprise



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Engineering



Sir Alan Rudge
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Andreas Pelz
Global Chief of
Service Engineering,
Rolls-Royce plc



Chris Cassley
Economics
and Enterprise
Directorate, CBI

UK manufacturing offers real opportunity



Professor Rajkumar Roy, Head of Manufacturing Department Cranfield University

UK manufacturing can deliver long-term stability to the British economy with a regional balance. The sector is enjoying an unprecedented limelight in recent months and we need to build on that to re-establish more manufacturing activities in the UK. The manufacturing sector includes automotive, aerospace and defence, oil and gas refining, chemical and pharmaceutical, food and drink and clean technologies. All these sectors can contribute to the growth of UK manufacturing. This year's National Manufacturing Debate focused on investments, incentives and innovation challenges for UK manufacturing as well as the potential for **long-term job creation** and **regional balance**. A recent report (Dec 2010) from the Department of Business Innovation and Skills (BIS) shows that the overall R&D intensity in the UK is close to countries such as Germany and UK manufacturing invests well in intangibles such as design and brand equity. When it comes to government support (direct and indirect) to business R&D, the UK is in 10th position among the OECD countries, Korea being the best (OECD, 2010). We are behind Belgium, Austria and Spain.

There is a need for more government investment in business R&D across manufacturing companies. A large proportion of our medium and large-scale companies are foreign owned and government needs to encourage them to invest in the UK long term. The number of majority British owned small companies is getting smaller. We must support small manufacturing companies to grow and potentially collaborate to compete and win business. It is also necessary that UK manufacturing supports job creation across the regions and therefore improve the regional economic balance. This can only be achieved if we promote all the manufacturing sectors and build on individual regional strengths.

Providing incentives to companies to invest more in the UK in capital infrastructure and to create additional manufacturing activities is essential and will create new jobs. We need to support more actual production of products in this country and strengthen the 'Made in the UK' brand. There is also an opportunity to support the development of new manufacturing sectors such as 'through-life engineering services' that supports the competitiveness of complex UK products. In summary, the UK needs to build on its manufacturing heritage and promote the making of products in the country through a favourable investment environment, strong incentives for companies creating local jobs and innovative new manufacturing sectors.

Introduction from *The Manufacturer*

Big Debate suggests group theory is solution to lofty ambitions

In the July issue of *The Manufacturer*, the lead story discusses the benefits of collaboration.

Humans are gregarious, and we collaborate naturally in society, academia, business, government and education. The National Manufacturing Debate 2011 (NMD) reinforced the power of the group, as 200 manufacturing decision makers spent the day acquiring new knowledge and sharing ideas and frustrations, improving the chances of finding solutions.

But there is a parallel to draw between the NMD and the type of intra-group collaboration mentioned above. There is a real danger of talking among ourselves, so knowledge is confined within the tribe.

I attend many industry events and, in manufacturing perhaps more than other sectors of business, community members are always fervent in their support, always eager to talk up the importance of engineering, manufacturing and a better skilled workforce and high value production. My fear is that we, as a community, are sometimes merely preaching to the converted.

The NMD counters this in part by involving ministers and university students in addition to companies and business groups. The Debate's core subject is ambitious – long term job creation and regional economic balance, through manufacturing. But the key audiences to play to with such a grand ambition are the general public, via the mainstream media, and a much greater proportion of government than one minister. I genuinely believe that we need to elevate this debate to a national, and public, platform, lest these big picture issues – and their solutions – remain locked within our own fiefdoms; manufacturing companies, academia and trade organisations.

Launched last month, the Government's 'See Inside Manufacturing' campaign is part of a centralised effort to promote the modern face of manufacturing to schoolchildren, parents and careers advisers by getting these groups into factories.

Starting with the automotive sector, it is intended to expand next year throughout other manufacturing sectors. McLaren, Johnson Matthey, the Institute of Engineering and Technology, EEF and the CBI are just some groups who have backed it.

This is a great initiative and there is also broader evidence that the mainstream media is starting to pay more attention to the industrial economy. In June, BBC2's *Made in Britain* is the first big budget documentary on manufacturing in my memory, and *The Times* and *The Sun* both published supplements on the top 100 UK employers of apprentices, many of whom were manufacturers.

The NMD was a wide ranging, high quality debate and congratulations to Cranfield University and the sponsors for initiating the debate and delivering a programme of real value. To help engineer real change, the next step is twofold: to make the next annual debate (May 29-30 2012) focus on the feasibility of solutions, not root problems, and to take these subjects to a public platform by better engagement with the media.

Will Stirling
Editorial director

The Manufacturer and *Lean Management Journal*





The Big Debate - over 160 delegates across manufacturing sectors attended the 2011 National Manufacturing Debate

National Manufacturing Debate 2011

Executive summary

The morning session heard from keynote speakers about their perspectives on manufacturing. This was followed by a lively debate in the afternoon session that focused on several key areas for the manufacturing community. The discussion focused on investment in manufacturing, the promotion of manufacturing, manufacturing competitiveness, skills and education for manufacturing and the contribution of manufacturing to rebalancing the economy.

Key points raised at the National Manufacturing Debate were:

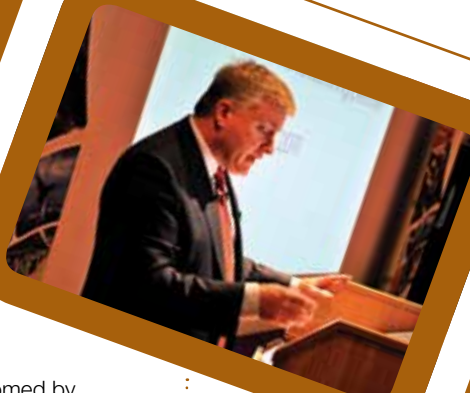
- UK Government is encouraging R&D investment in small businesses through reformation of the tax system.
- Government does not create wealth, but rather creates a long-term framework for investments.
- Investment is the foundation for the manufacturing sector, and Government is keen to nurture this investment environment.
- Government is closely monitoring the banks to ensure that they meet their agreed lending targets.
- UK manufacturing needs targeted incentives to regenerate local manufacturing in all sectors. Government needs to get more involved in supporting business R&D to develop an environment for companies to make long-term investments in the UK.
- 50% of manufacturing GDP comes from small and medium-sized enterprises (SMEs), so it makes economic sense to "fix existing issues" before trying to find new areas. The UK must create an environment for investment, which benefits both existing organisations and provides a platform for new ones to grow.
- The "short-termism" prevalent among lenders was considered to be inhibiting UK manufacturing growth.
- Despite media portrayals to the contrary, the UK is still one of the world's leading manufacturing nations. Manufacturing represents the majority of UK exports. The UK is 7th in the world for manufacturing.
- The UK cannot rely on a narrow group of business sectors. A successful economy is broad, and has both financial services and design and manufacturing.
- The UK economy is still dependent on manufacturing.
- Developing a favourable image for manufacturing in the UK will help the sector grow.
- The service side of manufacturing needs to be promoted to develop a better understanding of the sector. 'Manuservices' now forms a large part of many big companies' business models.

Continued>>>

Executive summary

- The desire for people to go into manufacturing is extremely low, yet manufacturing and engineering offer very fulfilling careers and are well paid.
- The UK Government has invested significantly to support innovation in the space between industry and academia. The creation of the recent EPSRC Centres for Innovative Manufacturing and TSB Technology and Innovation Centres are examples of that, with over £200 million being invested into these areas.
- Developing products in a small business is difficult and support for this would be welcomed. The problem is that a lot of businesses have an idea, but don't know how to develop and industrialise the product. There is an opportunity for universities to collaborate with SMEs to help with this.
- Manufacturing, through investment, incentives and innovation, can help with rebalancing the economy.
- UK manufacturing productivity has risen by 50% since 1997 but it is still behind countries like Korea and the USA.
- It is better to create the right environment where industry can flourish, rather than focusing on certain sectors.
- The service side is now so closely linked with manufacturing that the two areas should be considered as one.
- The best way to rebalance the economy is to increase manufacturing – a 20% gain in manufacturing is all that would be needed to close the UK's economic gap, whereas for other industries such as financial services, the percentage would be nearer 100%.
- Energy costs and security of supply affect competitiveness and Government has a role to play in resolving this.
- Industry must help itself. Government creates the conditions for competitiveness, but by itself cannot make UK manufacturing competitive.
- UK has fallen behind in global competitiveness and must become a high-tech, highly skilled economy in order to arrest the decline.
- Long term planning and strong management are essential if the UK is to regain competitive advantage.
- Protection for UK manufacturing is considered to be unrealistic in today's economic environment, where much of UK manufacturing is foreign owned.
- A crucial aspect to improving UK manufacturing competitiveness is in improving the skills and competencies of UK manufacturing personnel. This includes skills at technician and management level.
- Quality people are required in manufacturing to achieve and then sustain growth.
- UK government is providing support for apprenticeships to create a technical skills base for UK manufacturing.
- Germany is currently heavily investing in education, with a clear policy driven approach to investing in people as a means of pulling out of the recession. The UK on the other hand, appears to be withdrawing funds in education.
- Manufacturing management needs to be more professional to facilitate growth.
- It is estimated that 587,000 additional engineers would be required by 2017 to meet the needs of manufacturing. These new engineers will need to have their skills upgraded throughout their career as new technologies and methods appear.
- The number of women entering science and engineering is too low, and this means that there is a shortage of women in UK manufacturing.

Investment, Incentives and Innovation



Business Minister
Mark Prisk MP

Investment in Manufacturing

The Business Minister Mark Prisk MP delivered the first keynote speech. He highlighted the Government's investment in encouraging research and development (R&D) investment in small businesses through reformation of the tax system. However, he noted that the government does not create wealth, but rather creates a long-term framework for investments. Investment is the foundation for the manufacturing sector, and Government is keen to nurture this investment environment. Mr Prisk added that the main goal is to ensure that the UK is very competitive in the tax regime among the G20. To facilitate investment the Government is closely monitoring the banks to ensure that they meet the targets they committed to.

This was welcomed by Professor Rajkumar Roy who stated that UK manufacturing needs targeted incentives to regenerate local manufacturing in all sectors. He added that government needs to get more involved in supporting business R&D to develop an environment for companies to make long-term investments in the UK. Half of manufacturing GDP comes from SMEs, so it makes economic sense to "fix existing issues" before trying to find new areas - create an environment for investment, which benefits both existing organisations and provides a platform for new ones to grow.

Philip Greenish CBE, chief executive of the Royal Academy of Engineering, added that although UK manufacturing needs to address both the short and medium term challenges, the UK suffers from an uncompetitive tax rate. Robin Cartwright of KPMG commented that when manufacturing tries to borrow from banks, the rate of interest today is a lot higher than in the past. Banks have a dilemma to grapple with – to increase their capital reserves or to increase lending to companies, which are mutually exclusive

objectives. He suggested that more competitive lending would ease the situation. Unlike in Europe, and particularly Germany, as the UK has such a strong M&A sector, the business skills in this area tend to see deals in the short term – three or four years – not the 20-years noted by Rolls-Royce's Andreas Pelz that



Professor
Rajkumar
Roy,
Cranfield
University

Robin
Cartwright,
KPMG



is prevalent in Germany. This creates a tendency towards short-term decision making. Banks are seen as taking a short-term view and this is inhibiting investment.

This is particularly acute for SME businesses where a small investment can make a difference to the sustainability

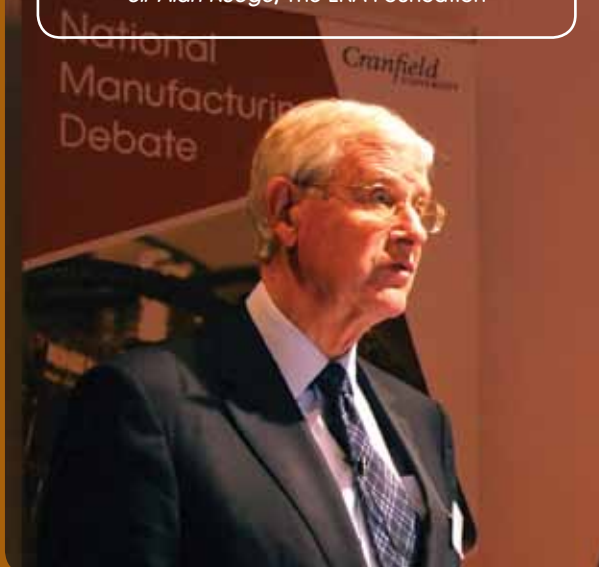
of the business. It was felt that government could do more to help with this.

In the Panel Debate held during the afternoon, over half of the delegates polled felt that manufacturing could not take advantage of bank finance for one reason or another. The issue of short term versus long term perspective to finance and investment was considered to be very relevant. The “short-termism” prevalent among lenders was considered to be inhibiting UK manufacturing growth. This is seen as being exacerbated when the decision making is centralised rather than being made locally. Additionally, when funding can be won, the cost is prohibitively high. The lack of funding means that business is being lost in the UK. Responding to this point, Steve Jenkins of Specialist Microwave Solutions Ltd commented that banks are perceived to be threatening because when times become difficult they expect their money back more quickly – this approach then discourages small companies from asking for investment. Government support for funding also came in for criticism. UK Government funding is seen as being too difficult to access. Access to European funding for both large and SME businesses would help with growing the manufacturing sector in the UK.



*Steve Jenkins,
Specialist Microwave
Solutions*

Sir Alan Rudge, The ERA Foundation



Support for UK manufacturing

Despite media portrayals to the contrary, the UK is still one of the world's leading manufacturing nations. Manufacturing represents the majority of UK exports however, the country cannot rely on a narrow group of business sectors. A successful economy is broad, possessing both internationally-competitive financial services as well as design and manufacturing.

Sir Alan Rudge noted that manufacturing provides 50% of UK total exports and employs three million people. Manufacturing constitutes 12% of GDP, but that figure was around 20% in 1997. However the UK is 7th biggest manufacturing nation, so it is still a significant global player. The UK economy is dependent on manufacturing and it is in this area that the best option for closing the budget deficit, and trade deficit, exists.

Dr Gareth Williams said Airbus was a good example of UK manufacturing being represented across Europe. 80% of Airbus manufacturing is in Europe although 80% of the products are sold outside Europe. The UK operation designs and manufactures wings, landing gears and fuel systems for all Airbus aircraft. Robin Cartwright noted that the UK is so well known for its service economy, particularly its financial services, that people have forgotten about manufacturing.



Dr Gareth Williams, Airbus

In the UK, organic chemistry, biotechnology and civil engineering are in the lead. Unfortunately, few large UK manufacturers still exist in the UK.

Mark Prisk MP said that the media sometimes give the impression that the UK doesn't make anything anymore, yet manufacturing makes up the majority of UK exports. He reiterated the view that it is key that UK manufacturing is able to show people what it does. Developing a favourable image for manufacturing in the UK will help the sector grow. In addition both delegates and speakers felt that educating the media about the service side of manufacturing was essential to develop a better understanding of the sector.

The perception of manufacturing continues to suffer in the media. One way of improving the perception is to take a broader view of manufacturing. Professor Sir Mike Gregory suggested a definition of manufacturing as "the full cycle from understanding markets and technologies, through product and process design to operations, distribution, services and sustainability". It is a very broad range compared to the traditional view of manufacturing as the factory floor, and this needs to be developed to help improve the image of manufacturing among the younger generation. Their desire to go into manufacturing is extremely low, yet manufacturing offers a very fulfilling career.

Andreas Pelz noted that Rolls-Royce has established very good links across Europe. Only by being part of something can you hope to influence it, he asserted. This suggests that a closer involvement with Europe is essential to help create the supportive environment necessary to allow UK manufacturing to flourish. Airbus and Rolls-Royce clearly have close links with Europe, and this was considered to be beneficial to these companies.

Manufacturing enjoys a more positive image in Germany than the UK. Engineers have a better reputation in Germany and there is a strong

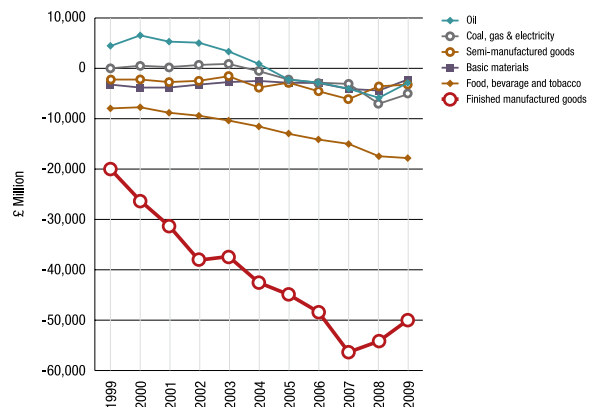


Professor Sir Mike Gregory CBE,
Institute for Manufacturing

focus on developing manufacturing for the future. Different attitudes to manufacturing based on region were noted by some delegates. Overseas students are often keen to learn engineering subjects, whereas UK students are more predisposed to learning management subjects.

National Manufacturing Debate 2011

Investment, Incentives and Innovation



The finish line: the trade deficit in finished manufactured goods is the UK's biggest. Source: The ERA Foundation



Andreas Pelz,
Rolls-Royce

On the subject of innovation, it was suggested that more could be done to support UK manufacturing in this area, particularly for SMEs. UK Government has invested significantly to support innovation in the space between industry and academia. The creation of the recent EPSRC Centres for Innovative Manufacturing and the Technology and Innovation Centres from the Technology Strategy Board are examples of this, with over £200 million being invested.

Although the UK has a higher technology manufacturing sector than some other European countries, it still struggles at times to get support for innovation, particularly for smaller companies. This is an area where UK universities can contribute more – the example of Land Rover having a R&D base at Warwick University was suggested as a good example of collaboration. However, small companies need greater support and improvement is needed. Developing products in a small business is difficult and support for this would be welcomed. The problem is that a lot of businesses have an idea, but don't know how to develop and industrialise the product. There is an opportunity for universities to collaborate with SMEs to help with this. Sir Clifford Friend pointed out that the growth of the SME sector is very important to the economy, and the real impact that universities can make is in supporting innovation with SME businesses.

Mark Prisk MP
"Yes we can!"



economies such as China, India and Brazil. A worrying fact is that China is growing at 10% per year, with India not far behind.

Several speakers noted that it was better to create the right environment where industry can flourish, rather than focusing on certain sectors. The size of the task of rebalancing through manufacturing growth is considerable, and should not be underestimated. Sir Alan Rudge said that the only realistic way to rebalance is to increase manufacturing – a 20% gain in manufacturing is all that would be needed to close the gap, whereas for other industries such as financial services, the percentage would be nearer 100%. He sounded a warning that energy costs and security of supply affect competitiveness and government has a role to play in resolving this. Sir Alan, however, took the view that we should save the economy first, then turn to saving the planet. When pushed on how to achieve this rebalancing, Sir Alan felt that it only required determination. If the will was there then it could be achieved. Philip Greenish told the audience that sustained leadership and sustained focus would be required to achieve results.

Delegates at
the National
Manufacturing
Debate



Manufacturing as a means of rebalancing the economy

In his opening keynote speech, Mark Prisk MP posed the question: "Can we in manufacturing, through investment, incentives and innovation, help with rebalancing the economy?" His view, paraphrasing President Barack Obama, is that "Yes we can!" He cited the importance of manufacturing in retaining a sustained balance in long term job creation.

He told the audience that enterprise creates wealth, business and jobs. The dependence we have on the South East region has to change in the future.

The CBI's Chris Cassley observed that since 1997 manufacturing productivity has risen by 50%, but is still behind Korea and the USA. Over the next two decades the world economy is going to double, mainly due to emerging



The CBI's
Chris Cassley

On the subject of the environment, Chris Cassley noted that the low carbon market will be \$20 trillion by 2020. This represents a huge opportunity for UK manufacturing and the sector needs to establish its position in this market. Over the next two decades the growth of the world economy is offers scope for manufacturing growth. UK manufacturing needs to be at the forefront of productivity, innovation and skills to take advantage of this opportunity.

Delegates however said that although there was significant opportunity, there were still major issues inhibiting growth in UK manufacturing. Access to investment has already been mentioned. Another key issue that is still unaddressed is the broken supply chain for some sectors. This is inhibiting growth and potentially allowing overseas competitors to make gains at the expense of the UK.



Sort out the economy, then save the environment
- Sir Alan Rudge questions the wisdom of punitive green taxation

National Manufacturing Debate 2011

Investment, Incentives and Innovation

Manufacturing competitiveness

Mark Prisk MP stated that the UK government is keen to ensure that UK manufacturing becomes more competitive, and is willing to support the sector in order to facilitate improvement. However, he pointed out that industry must also help itself. Government creates the conditions for competitiveness, but by itself cannot make UK manufacturing competitive.

Industry journalist Ken Hurst moderates the Big Debate

Margareta Groth told the delegates that manufacturers need to be good at many things to remain competitive. She likened manufacturing to a decathlon. Sweden is a small country, and relies on exports for the economy. In manufacturing in Sweden, people work together and trust each other, where several initiatives that improve competitiveness are facilitated by that inherent trust. This environment, along with the long tradition of cooperation between trade unions, employers, government and employers to promote innovation, and improve skills in the industry supports manufacturing to the benefit of all. Manufacturing is identified as a key strategic area in Sweden. A key aspect of making manufacturing competitive is the attention paid to people. The commitment, attitude to collaboration, innovation and skills enhancement all benefit through people working together.

Philip Greenish explained that UK has fallen behind in global competitiveness and must become a high-tech, highly skilled economy in order to arrest the decline. Long term planning and strong management are essential if the UK is to challenge Germany in manufacturing competitiveness. The aim of the



Dr Margareta Groth, VINNOVA - manufacturing is joined up with policy more in Sweden than the UK



Royal Academy of Engineering is to place engineering at the centre of society. The RAE works through high level people to raise the profile of engineering and industry.

Chris Cassley told the conference that since 1997, although manufacturing productivity has risen by 50%, it is still behind countries like USA and Korea. The improvements made have been due to techniques applied and much has been done, but more improvements are needed. He suggested UK productivity would need to increase at around 5% per year.

During the Debate, the idea of protection for UK manufacturing was raised. This was considered to be unrealistic in today's economic environment, where much of UK manufacturing is foreign owned, and where protectionism would be counter-productive. A key aspect to improving UK manufacturing competitiveness was in improving the skills and competencies of UK manufacturing personnel.

Skills and Education in Manufacturing

In his keynote speech, Mark Prisk MP highlighted the need for a collaborative approach to skills and training. Universities such as Cranfield are at the cutting edge of research and are in an important position in terms of enabling the transfer of this knowledge into industry. Quality people are required in manufacturing to achieve and then sustain growth.

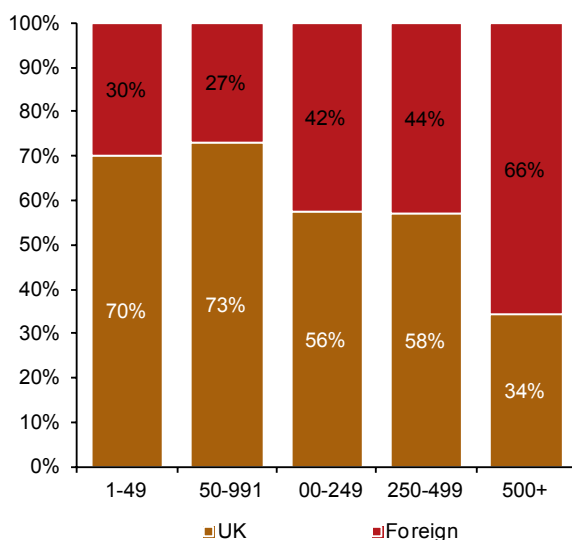
The topic of skills and education affects capabilities across the manufacturing spectrum and influences both short-term and long-term performance. It was generally agreed that the shortfall in skills is across all manufacturing sub-sectors and the UK skills provision landscape is not sufficient to support the growth and productivity improvement that is required.

Some delegates gave examples of business opportunities that could not be developed due to insufficient skills. The UK Government is providing support for apprenticeships to create a technical skills base for UK manufacturing with big companies such as Airbus leading the way with 400 workers currently completing apprenticeships. In addition, UK manufacturing management was also considered to be below the required standard. There is clearly work to be done to improve the skill-sets and competencies of UK manufacturing managers. Outsourcing overseas has led to a loss of skills in the UK.

On the subject of what universities are able to do to

The bigger they are, the more alien - Ownership nationality by UK company size

Source: EEF/GIK NOP Shape of British Industry survey, 2010



Estimates are that 587,000 additional engineers will be required by 2017 (Engineering UK)



National Manufacturing Debate 2011

Investment, Incentives and Innovation

support UK manufacturing, there was a general feeling that universities are in the best position to help SMEs by offering an opportunity to tap into the experience and knowledge of these institutions. Airbus's Dr Gareth Williams noted that Germany is currently heavily investing in education, with a clear policy driven approach to investing in people as a means of pulling out of the recession. The UK on the other hand, appears to be withdrawing funds in education.

Philip Greenish found that there was a decrease in international excellence in maths and science. A long term strategic approach is required that allows manufacturing to work closely with schools to influence young people. This needs to be matched to a change in how engineering is perceived.

Manufacturing management needs to be more professional to facilitate growth. Again this is an area where universities can support UK manufacturing.

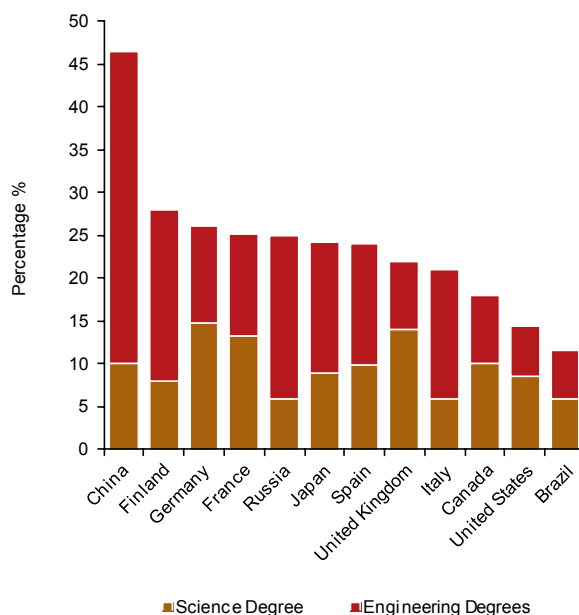
Engineering UK estimated that 587,000 additional engineers would be required by 2017 to meet the needs of manufacturing. These new engineers will need to have their skills upgraded throughout their

career as new technologies and methods appear.

Some delegates voiced the view that the UK has lost too many skills. Without the home grown capabilities, companies, particularly SME businesses, were having to turn to recruitment from overseas in order to meet their business requirements. The current limits on immigration are hurting some SME businesses. For the long term, it is essential that UK manufacturing invests

in up-skilling its personnel at all levels.

Part of the problem is that 50% of the population is under-represented in UK manufacturing. There are too few women in this area. A long-term issue, the number of women entering science and engineering is too low, and this means that there is a shortage of women in UK manufacturing. To address the shortage of skills in the sector we must attract more women into manufacturing.



Could do better - % of employees in manufacturing with science and engineering degrees at first stage university level (2006)

Source: BIS analysis based on ONS Labour force survey data

Delegates' comments



Steve Hope
General Manager, Plant
Engineering & Safety Division,
Toyota Motors Europe:

"Attendance at the National Manufacturing Debate reconfirmed that manufacturing will remain an essential element of any developed economy.

"However, it also highlighted that times are rapidly changing and we are unlikely to see a return to the same manufacturing industry that I remember from my childhood and my early career. We can foresee that while there will be exciting times ahead, there will clearly be many challenges to overcome as we redevelop our manufacturing base in the UK. These challenges will range from what type of products we should focus upon, to how a manufacturer should seek to add value for the customer while still remaining competitive in an increasingly global market.

"Sir Alan Rudge spoke strongly on the direction of energy policy in the UK but I am confident that despite CO₂ regulation and energy pricing the UK can still be a leading manufacturing location"

"A take-away for me from this debate was the need to evolve our business model with respect to our product and the way we do business with others for their product or service. Specifically for Toyota, manufacturing excellence is at the core of our business and in the spirit of Kaizen (continuous improvement) we will be tackling these problems head on. "Environmental issues were controversial at the debate but, as the pioneer of the hybrid vehicle, Toyota will definitely keep environmental issues fully on our agenda. For manufacturing we will focus on our model 'sustainable plants' in the UK and France. Sir Alan Rudge spoke strongly on the direction of energy policy in the UK but I am confident that despite CO₂ regulation and energy pricing the UK can still be a leading manufacturing location. We need to consider the whole product lifecycle when making strategic decisions for our companies; production is only a part of a manufacturers' role today."

A selection of delegates' comments about the Debate and the issues faced by UK manufacturing follows:



Mohamed Badawy
PhD Researcher, Cranfield
University

Mohamed's research is an integral part of the European project "ENSURE", which aims to develop a cost model for long term digital preservation.

"The UK government allows overseas students to stay and work for two years after their graduation, with the Post Study Work visa programme. Students stay, after finishing their studies, with the hope of gaining more practical experience in their technical areas. Many of my friends are from overseas and most of them are engineers. All of them have faced huge difficulties in finding a job in the UK, because of the strict regulations enforced on companies to employ European nationals. By turn companies don't want to be burdened with all the required regulations of the UK Border

"The Government is contradicting its actions in giving overseas graduates work permits for two years and then blocking their path by refusing the requests of companies who want to employ them"

Agency, so they turn these qualified overseas engineers away and keep looking for other European nationals.

"In other words, the Government is contradicting its actions in giving overseas graduates work permits for two years and then blocking their path, from the other side, by refusing the requests of companies who want to employ them on longer contracts; or by making the process convoluted and complicated. It is natural that most employers would like the chance of holding on to their employees, after having trained them.

I heard that companies [in the UK] are struggling to employ qualified engineers, but the USA, Canada and Australia are doing much better in finding skilled workers. I believe that the skill is available in the UK and it is in fact being developed in UK education facilities; but then exported to other countries, when it is realised that finding a job here is a very tough task.

Gary Brooks

A consultant at FISP, poses a Q&A following the debate

What is manufacturing? When an industrial giant like Rolls-Royce makes nearly half its income from selling services and ARM, one of our most successful companies, 'just' designs chips, it is clear that dividing the exporting sectors of the economy crudely into manufacturing and services is no longer appropriate.

Why does this matter? When men in red braces and stripy shirts that are 20-years out of date pontificate on the decline of British manufacturing, they cut off British engineering from the two nutrients vital to continued success; finance and fresh talent.

What can we do? It was notable that our European cousins were shocked by the lack of status afforded to engineers. While the government should simply make the term "engineer" a restricted designation, we can all also contribute at a local level by pushing for appropriate names for the Maintenance and Service departments.



"We will only get innovation in manufacturing through an aggressive professionalisation of British manufacturing management"

Just as importantly we should professionalise Manufacturing Management. The money men seem to naïvely believe that money should flow to the places in the world with the lowest wages, causing trade distortion and inflation. We must be more logical – the only source of wealth is innovation. We need continuous innovation in both our engineering and our manufacturing to continue to generate wealth for both the country and the world. We will only get innovation in manufacturing through an aggressive professionalisation of British manufacturing management.

The Third National Manufacturing Debate will be held at Cranfield University next year on May 29-30

Information and booking for next year's debate can be found at www.cranfield.ac.uk/sas/manufacturingdebate

For any other enquires please contact **Dr Patrick McLaughlin**, senior lecturer in Manufacturing Management (p.mclaughlin@cranfield.ac.uk) on **01234 750111**

Conclusions



UK manufacturing is still a very significant contributor to the UK economy. However, a great deal can be done to increase both the performance and the total contribution of manufacturing. Following the banking disaster of 2008/2009, UK manufacturing is struggling to find and gain investment for growth. The banking community is more cautious about making investments and where it chooses to do so, manufacturing businesses are finding the cost to be prohibitive. Despite statements that progress is being made, manufacturing is not enjoying the investment needed to facilitate growth.

Part of the problem is the image that manufacturing has in the public eye. There is still a tendency to paint a picture of manufacturing as a spent force, an area of the economy that is no longer relevant and in which therefore there are no career opportunities. The reality is that manufacturing can offer a challenging, interesting and rewarding career. Manufacturing represents 50% of UK total exports and employs three million people. The image of manufacturing as a dead-end inhibits the ability to attract high calibre people.

Support for manufacturing is available, but not sufficient or widespread. Products and services are the outputs that will deliver the growth required. These are created

from innovation, and particularly in small and medium sized businesses, more support for innovation would be beneficial. This is an area in which universities could play a greater part.

As a means of rebalancing the economy, manufacturing offers the best and most realistic option. A 20% increase in output would resolve a large part of the problem, and this is considered to be achievable, with appropriate support. Sheer determination is required but this is the most realistic option. Energy costs and security of supply affect competitiveness and government has a role to play to resolve these issues.

With the move to high value manufacturing, the days of UK

manufacturing returning to the levels of the 1990s is unrealistic. Like most mature western economies, UK manufacturing is a smaller percentage of GDP. However, manufacturing in its broadest sense, from understanding markets and technologies, through product and process design to operations, distribution, services and sustainability, is a much larger area than the traditional factory floor perspective. It is from this broader spectrum that UK manufacturing growth will come. The opportunities are there. The low carbon market will be \$20 trillion by 2020. Over the next two decades the world economy is predicted to double. This represents a huge opportunity for UK manufacturing and the sector needs to establish its position in this market.

UK Government will do what it can to create the environment in which Manufacturing can become more competitive, but cannot by itself make Manufacturing more competitive. Although great strides have been made in productivity improvements, there remains much more to be done. Becoming a more high technology and highly skilled economy is necessary to restore a competitive



Action Points

advantage. Long-term planning and strong management are essential if the UK manufacturing sector is to be competitive.

Improving existing skills, adding new skills and increasing the capacity of skills are all essential for this improvement in productivity and growth. The shortfall is evident across all areas and levels. Work is being done in developing apprenticeships to improve technical skills capabilities, and this training must be continued throughout the individuals' careers so that their skills remain relevant. The poor level of manufacturing management in the UK is a significant area of weakness. This area requires attention to bring UK manufacturing management capabilities up to the level of the world's best.

A major challenge therefore exists for UK manufacturing. It has the opportunity to deliver growth and contribute the lion's share of growth for a rebalanced economy. This really only requires determination. If there is a will to do it, then it can be done. Can we do it?

So how do we do it?

From the keynote speeches and the panel debate, the following action points have been extracted to improve UK manufacturing growth and global competitiveness:-

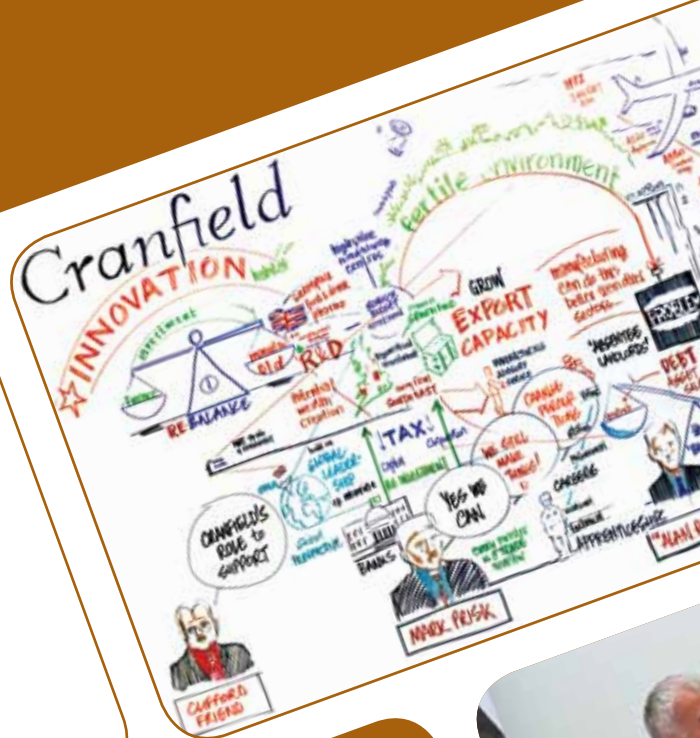
- UK Government continue to promote and support Manufacturing
- Improve the business tax rate
- Banks to make investing in UK manufacturing more accessible and competitive
- Create targeted incentives to regenerate local manufacturing in all sectors
- UK government support for Manufacturing R&D
- Take a longer-term perspective when considering UK manufacturing
- Promote UK manufacturing in the media
- UK manufacturing to do more to promote itself
- Promote manufacturing in its broadest sense – the full cycle from understanding markets and technologies, through product and process design, to operations, distribution, services and sustainability
- Educate the media, and the general public, about the service side of manufacturing
- Closer involvement with Europe to help create the supportive environment necessary to allow UK manufacturing to flourish
- Universities to help SME businesses with innovation
- UK Government to help resolve the issue of energy costs and security of supply
- Take steps to develop innovation and enhance skills through helping people work together.
- Improve the quality and quantity of skills available for UK manufacturing
- Increase the professionalism of UK manufacturing management
- Take steps to attract quality people into UK manufacturing
- Encourage more women to enter UK manufacturing
- UK Government needs to encourage companies to locate production of goods in the UK, and build on the strength in design

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