BRITAIN'S INDUSTRIAL FUTURE

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Interview with Ron Dennis. chairman of McLaren Page 3

FINANCIAL TIMES SPECIAL REPORT | Thursday June 24 2010

Still plenty of life in the old bulldog

Many of those active in manufacturing see cause for cautious optimism, reports Peter Marsh

xpressions of concern about the UK's global position in manufacturing have been voiced for so long that it that it may seem odd to come across some voices of optimism.

"I feel that British manufacturing and engineering is in a good position to do well in the next few years," says Maurice Critchley, the 61-year-old chief executive and owner of Gloucester-based Severn Glocon, a maker of specialist valves for the oil and gas industry.

"We've got a lot of good people and technology, a strong historical base and the English language is helping us sell our goods and services in many parts of the world.'

Mr Critchley has built up his company over the past 20 years to expected sales of £60m this year. Assuming that figure is reached, it would be up approximately a third higher than the figure for 2009, when pre-tax profits came in at a healthy 15 per cent of revenues.

The company has 370 employees and makes two-thirds of its sales outside the UK, mainly from relatively fast-growing economies in emerging markets, including India, Brazil, China and Saudi Arabia.

Towards the other end of the age spectrum is Mark Cropper, 34, who next month takes over as chairman of Kendal-based James Cropper, one of the world's leading makers of highvalue coloured paper for use in a range of applications from luxury goods packaging to books.

Mr Cropper, the sixth generation of the Cropper family to be in charge of

the company and currently deputy renaissance over the next 10 years, chairman, is also in an upbeat mood. built largely on the strengths of mid-"We've got several hundred customers but the capabilities of the company the surface of what's possible," says Mr Cropper.

James Cropper, with sales last year of about £75m and 600 employees, has added about 20 staff during the recession. "We don't have standard products," says Mr Cropper. "We ask customers what colour or texture of paper they would like. Then we make it for them."

Such points of view illustrate a feeling among some in UK manufacturing that the sector could be in line for a



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End of destocking signals uptick The engineering sector has made the necessary painful adjustments, writes Michael Kavanagh Page 2

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EPM aims high in China

The West Midland expert in carbon fibre is finding new markets, reports Jonathan Guthrie Page 4

sized companies in fairly narrow product areas and offering what amounts are such that we're only scratching to a mix of customised goods and consultancy when selling around the world

> This sunny perspective may seem at odds with the difficulties suffered by manufacturing during the 2008-09 recession, when the sector saw output decline by a larger amount than the economy as a whole. Also, the basic figures usually used to describe manufacturing paint a picture of long-term decline.

> Last year, manufacturing in the UK accounted for only about 11 per cent of the economy, compared with more than 30 per cent in the 1960s, and just above 20 per cent in 1997. Meanwhile, the industry has suffered a loss of 4m jobs since 1980, making the total fewer than 3m.

> In 2009, the UK accounted for only about 2.6 per cent of global manufacturing output, down from 1980's 5.4 per cent. Last year's position was a long way below the heights that the country reached in 1880, when Britain's global manufacturing share was 23 per cent, making it by far the leading producer of factory items.

> The UK kept this heady position of "the world's workshop" for only a relatively short period – fewer than 40 years. It took over from China as the biggest manufacturer in about 1860 and relinquished this position to the US during the 1890s.

> In spite of the changes over the past century, the UK was the world's seventh biggest manufacturer last year, just behind France. The fact that manufacturing output as a percentage of the economy is much smaller than 50 years ago partly reflects the fact that in the



Continued on Page 2 Bright future? JCB, maker of excavators and forklift trucks, has been a continuing success story

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Still in control

although at

arm's length

Britain's Industrial Future

Plenty of life in the old bulldog

Continued from Page 1

UK, as in other advanced economies, productivity increases have made manufactures cheaper relative to other parts of the economy such as services.

Meanwhile, the same productivity advances – caused by a mixture of machines, technology and better working methods - have led to a lot fewer people being required to turn out increasing volumes.

As for other trends that have affected world manufacturing, the UK may be in a good position to exploit one of the most pronounced set of changes: the way manufacturers are, to a large degree, performing service functions as well

The blurred nature of the dividing line between the two activities can be seen in activities such as Formula One racing, a field where the UK is a world leader. In this sector, companies such as McLaren, Brawn GP and Williams F1 make small numbers of high-value racing cars.

But they combine this performing what with amounts to a service activity: using the vehicles to entertain paying customers for a global and increasingly popular sport.

"The UK 'gets' the idea of offering a service to customers better than many other economies, so it is no surprise that many British manufacturers are good at offering services as well as making products," says Matt Alabaster, of the PwC consultancv

While the UK has a few large and globally impormanufacturers tant examples include the Rolls-Royce aerospace group, the JCB excavator maker and Johnson Matthey, a chemicals and materials specialist it has a much larger number of relatively small manufacturers, many of them world leaders in niches



No longer in such a spin: one of Weir's gas turbines being dynamically balanced before installation

End of destocking signals slow and steady recovery

Engineering

Michael Kavanagh on a sector that has had to adjust

ompared with the carnage of 2009, this has been a for the UK's industrial engineering sector

back of recovery in demand managed to protect margins to abandon commoditised, during the first quarter. and expect to improve on

them as demand picks up. The good news since then for investors in most UK Like Weir, IMI, the Midengineering stocks is that lands-based manufacturer, updates by many comphas seen its shares more anies in the sector continue than double in the past to point to a recovery in year. In its last trading trading, in spite of fears of update – brought forward to a double-dip recession in April to reflect materially Britain and anaemic improving conditions - it demand in key trading part- remained cautious about use in a wide variety of while, continue to be be maintained in the second

more price-sensitive, manufacturing lines in favour of securing global niches in the supply of more bespoke components and missioncritical systems that can still command a premium price even in a downturn.

Spirax-Sarco, designs steam systems for

customers see no advantage in substituting technically advanced niche products with alternatives that may have cost a few pounds or dollars less, explains Mr Nicol.

In a report this month, Oliver Wynne-James, an which analyst at Panmure Gordon, paid tribute to the leadership of many UK equipped to carry out different elements of the manufacturing process. "We are not doing it for

capability of the people,'

Ms Kingston-Warren says.

She adds: "The UK is

known for design and intel-

lectual property and other

countries have skills we are

not known for any more.

Some countries have strong

traditions of craftsmanship,

while others are focused on

However, while outsourc-

ing the supply chain has

undoubtedly given many

companies a competitive

edge, there are some in the

industry who believe that losing the skill-base so cen-

tral to the process could sound the death knell for

If designers are separated

from the manufacturing

process, there are concerns

that the two will become

chairman of Kesslers Inter-

that by moving manufactur-

ing abroad, the UK risks

age to China and other

"If we lose the manufac-

turing process, we won't be

able to produce designers

who understand what to do,

as they won't have the

manufacturers to work

"The question is whether

we are in a position to

keep developing new and

better intellectual property

countries doing the manu-

facturing catch up on that

with," Mr Kessler says.

developing nations.

abstracted

joint

manufacturing in the UK.

technology"

increasingly

from one another.

George Kessler,

Building abroad cost, we are doing it for preneed not mean mium. Otherwise, it makes losing oversight, sense to stick the whole says Ed Hammond operation in China. But we move around all over the world, depending on the

The exodus of manufacturing to countries where labour-intensive work costs less has long been a cause for concern for those who champion the UK's relationship with making things.

Offshoring

However, for a small number of British companies, outsourcing the physical manufacturing, far from being a national loss, is indicative of the progress the industry has made in the past 25 years.

The imbalance of labour and material costs between the developed and developing nations and advances in technology have fuelled a boom in "virtual manufacturing". Producers of anything from pushchairs to car parts have taken advantage of the favourable economics of manufacturing abroad, while keeping the intellectual core of the busi-

ness in the UK. Andrew Hall, a director at national, a manufacturer of Arup, the global engineer- point of sale displays, says ing group, says it makes sense to work off a costbase that is most effective ceding its industrial heritbut that it does not mean a loss for British industry.

"We have a great collective of intellectual horsepower in this country which is being put to good use in researching and designing a huge range of products, and there is nothing to suggest we won't maintain that," he adds.

Economics may be the main driving force behind outsourcing the supply and designs. Once the chain but it is rapid advances in technology that have made it possible.

front, the industry in the The ability to do three-UK is lost. dimensional modelling and The issue of the manufacgood year so far ners across western Europe. the extent to which the industrial processes, and listed engineering comp-UK's industrial engi- Most companies, mean- increased momentum could Rotork, the valve actuator anies. He said: "Manage- around the globe mean taken abroad, wholesale, is and gearbox maker whose ment teams excelled during companies can be more not new, however.

Such companies include the engineering seals maker AES and Deep Sea Electronics, which makes monitoring equipment for diesel engines

David Cameron, the prime minister, and other leaders of the Con-Lib coalition have expressed a general wish to see manufacturing strengthen its economic position, in the light of the need to rebuild an economy hit by upsets in the financial services sector in the past few years.

Mr Cameron and fellow ministers have given few clues as to any new "industrial strategy". However, many onlookers think that efforts to boost the fortunes of these mid-sized groups should form the central part of any emerging set of policies.

"While the [mid-sized manufacturers] are in general a lot smaller than their counterparts in Germany, they constitute a strong part of UK manufacturing and so could act as a good base for growth," says Hans Roehm, head of global manufacturing at the Deloitte consultancy.

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destocking and an upturn in orders from customers, many UK companies that acted early to reduce capacity, from late 2008, have

weathered the sharp falls in demand to deliver remarkably robust margins, respectable profits and even a smattering of improved dividends. Few companies are will-

ing to predict a quick recovery to peak production levels of 2007 or 2008, however. But many, such as aerospace and auto parts maker GKN and steel cutting and welding supplier Charter have signalled an end to widespread shorttime working and a willingness to add to headcount.

Although business failures among suppliers in the sector continue, Spectris, a precision instrumentation and controls company, followed the lead of Renishaw is restoring full pay and conditions for staff on the

Private companies are

fiercely independent,

reports Peter Marsh

pany is much better off staying

"Hell would have to freeze over

"One of the things I really

before I contemplated the step of

becoming a publicly quoted com-

do not relish doing is having to

mop the brows of a lot of sweaty

investors in the cause of trying

to inform them what the com-

privately owned.

pany," he says.

Amid signs of an end to encouraged by recovery in North American demand continued and strong growth in the emerging economies of Asia and Latin America in particular. Weir Group, the Glasgowbased industrial pumps and valves maker, was the latest engineering company to upgrade guidance on its trading and expected

profits this week. Keith Cochrane, chief executive, pointed to a recovery in orders from its global customer base concentrated in the mining, power generation and oil and gas sectors. Weir's shares moved higher making for a 109 per cent rise

over a year in which the FTSE 100 index has recovered by just 17.5 per cent. Weir Group is not alone in achieving market-beating

jumps in its share price. Other engineering companies, although hit by sharp falls in sales volumes during the recession, have

half across its range of valves, air conditioning and dispensing products.

'Investors should trust the sector not to throw away gains made since mid-2009

But IMI said: "There is more certainty around margin improvement, which is underpinned by a strong programme of cost-reduction initiatives, including further transfers of manufacturing to low-cost economies.

Martin Lamb, IMI's chief executive, in common with the heads of many other UK engineering groups, says this recession has been different in nature from previous ones

This is because many companies have managed

products are widely used in the should, we believe, be a specialist water, waste and oil industries, have also trusted to repeat any necesenjoyed sharp recoveries. sary mitigation work.

The improvement reflects growing confidence in maintenance and capital expenditure plans by their customers, although output has not reached peak levels. Jim Nicol, chief executive

of automotive and industrial components maker Tomkins, has himself had to lead a cost-reduction programme in response to the significant downturn in the group's end markets.

He has overseen a substantial reduction in headity," he says. count and the relocation of many of its operations to lower cost regions.

But even as demand has contracted and recovered, a made since mid-2009. key motivation for customers has been to maintain be rolled out again and, this the operational performtime, balance sheets and ance of their products and revenue mixes are much to continue to develop new healthier. Our scenario of technologies.

That is why industrial nue growth is intact."

the sector.

higher margins on low reve-

2009 recession and involved all the way along the process, irrespective of location.

Mamas and Papas, a The sector may not be pushchair maker, shares a out of the woods yet. But, similar philosophy to Arup with regard to the geoin spite of the threat of a graphic diversity of its mandouble-dip recession amid macro-economic uncertainufacturing process. The ties in big economies, Mr company, which operates 60 stores and had revenues Wynne-James argues that of £121m in 2009, says it is a the recent market wobble widened the valuation gap misconception to think that and the possible gains availthe most important part of able to canny investors in manufacturing is the physical building of goods.

"We forecast a rise in "You could reverse the organic margins and a question and ask why we period of heightened mergdon't do the building in the ers and acquisitions activ-UK, with the designers in east Asia, or wherever the product is being put together," says Gill King-"Investors should trust this sector not to throw away the hard-won gains ston-Warren at the Huddersfield-based company. "Contingency plans can

As well as reaping the benefits of lower labour and material costs, Mamas and Papas says the flexibility to outsource work beyond the across the drawings. We UK means it is able to find the parts of the world best will work.

Pure, the UK's largest maker of digital radios, which has manufactured in China since 2002, says that most of its competitors were using the country to design and manufacture their products and were simply "buying and badging a radio which was made from scratch abroad"

The company, which has 30 per cent of the UK's market for digital radios, says it has a team of 450 engineers working with its designers in Kings Langley to ensure that the process was cohesive as possible.

Tim Lewis, director of manufacturing and purchasing at Pure, says: "For cost reasons, work has to be done in China but to get the best quality products, we want as much involvement in the manufacturing process as possible. We don't want just to send want to prescribe how it

'Hell would freeze over before we became quoted'

Family ownership

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pany is doing.' For the past 17 years, Mr Wernick has been chief executive of Wernick Group, which is 100 per

cent owned by his family and was set up in Wolverhampton in 1934 by his grandfather as a maker of small poultry houses for farmers. Now based in Essex, the com-

pany has expanded over the years into one of the UK's biggest producers of modular buildings, ranging from prisons to school classrooms and temporary exhibition areas.

Such family-owned companies

the UK equivalents of the Mittelstand companies in Germany – are among the largely unsung success stories of British manufacturing. "We think of ourselves as mak-

ers of sophisticated manufactured products, coupled with offering a large element of serv-David Wernick has strong views ice to our customers," says Mr about why he thinks his com-Wernick.

"We specialise in creating a building to order and then putting it into operation - sometimes in just a matter of days, when, if the customer built a conventional structure, the same

job could take months.' With 470 employees, the company had sales of £60m last year, compared with £66m in 2008. "We did see some impact from the recession. With a lot of our

sales dependent on government spending, we are going to be very watchful about how cuts in public spending might feed through to lower orders," Mr Wernick says.

He thinks that being private gives the company advantages over competitors that are part of publicly owned groups. "If we want to take a specific

course of action, we can just get on and do it, rather than feel we have to worry about what our investors might think," he points out.

Another manufacturer that prides itself on its family ownership is Bailey Caravans, based in Bristol, the UK's second biggest producer of touring caravans after Hull-based Swift.

The company was started in 1948 but was bought in the 1970s by brothers Patrick and Stephen Howard. While the pair are still directors, Bailey is now run on a day-to-day basis by Stephen's sons, Nick, who is managing director, and Simon, who is marketing director.

'If we want to take a specific course of action, we can just get on and do it'

"Making caravans is a lifestyle business where we find our customers are both very enthusiastic about the product and also very demanding," says Nick Howard.

"There's a great deal of difference between a [touring] caravan for the UK market and one built for sale in, say, Germany. British caravans are styled rather in the manner of a country cottage, while the comparable products built in continental Europe are liable to be more utilitarian."

One of the advances made by Bailey in the past few years has been development of a new process for building caravans based on assembly techniques devised by engineers at the University of Bath.

The methods use aluminium structures in place of timber elements traditionally used to construct caravans. The process cuts the time taken in production while also producing a better level of insulation.

"We launched the first caravans made using this process last year and our customers seem pleased with the results," says Simon Howard.

Bailey's caravans sell for up to £18,000 and revenues reached £85m in 2008, only to fall to £77m last year, a level of sales that the 350-person company hopes to maintain in 2010.

A venerable family-owned company that is a mainstay of the Lancashire textiles industry is Burnley-based John Spencer, which started in the 1860s.

David Collinge, its managing director, is the sixth generation of the Spencer family to be in charge.

The company has slimmed markedly since the late 1960s, when it employed 600, but has maintained a tradition of weaving its own specialist cloth for

David Wernick with one of his company's modular buildings

applications such as upholstery. It now has 32 employees, generating sales of £3m last year.

Last year, the company took a gamble by moving for the first time into retailing, through the acquisition of Ian Rankin, a company that runs two fabric shops in London

"Ian Rankin was a company we knew very well, since it sold a lot of our fabric," Mr Collinge explains. "When it came up for sale, it seemed an attractive idea to buy it, on the basis that we thought we would see some

advantages through having a direct link with the retailing side of the business."

With a third of the company's employees now working in the two shops, which provide a similar proportion of total sales, Mr Collinge says the move has worked out well.

"It has been a fantastic move, since we can use the shops as a way to gauge trends [in areas such as designs and colours] among customers, especially in the world of upholstery," Mr Collinge says.

Britain's Industrial Future

Car industry hopes boost to manufacturing will help

Automotive

The sector is keen to shore up its skills base, reports John Reed

Whether by design or necessity, Britain's automotive technical centre in Birmingsector gamely embraced globalisation long ago.

Hand-wringing over who controls the car industry is try where most vehicles are exported.

maker, and the best known upheaval in the industry. "British" brands, from Mini, Bentley and Rolls-Royce to ability to make things Jaguar and Land Rover, are all foreign-owned

proving a lure for Chinese "We need more high-value carmakers.

Automobile, Chang'an to employ 200 people. And

one of the country's biggest and even US carmakers producers, is to establish a taking a lead in new techresearch and development nologies such as rechargecentre in Nottingham due able hybrid and electric

activity

cars, industry lobbyists say China's Shanghai Britain's industry will have Automotive has opened a an uphill struggle to avoid design centre at its UK being cut out of the loop. Carl-Peter Forster, the ham that employs nearly German chief executive of 300 engineers

India's Tata Motors – which The dilemma is no longer owns Jaguar Land Rover over who should own the and former head of General considered passé in a coun- plants but how to keep Motors' Opel/Vauxhall diviautomotive R&D and other sion, is better qualified than jobs in the country at a most to comment on the Nissan is the biggest car- time of technological issue.

In Europe, he says, the "We can't just rely on our continent - home to Germany's luxury carmakers, here," says Paul Everitt, the industry's biggest R&D the chief executive of spenders - forms the "natu-The skills base in the the Society of Motor ral centre for the auto-English Midlands is also Manufacturers and Traders. motive industry". The UK

needs to hone its education, name for moderate indusskills base and support With German, Japanese, for R&D and "constantly pull" or the force of gravity tends to draw investment and jobs back to central Europe.

"Over the past few dec-ades, the UK has lost ground, [although] this erosion has slowed recently", Mr Forster says. "The new market-disruptive technologies provide an opportunity for the UK to stay in the game and become stronger - or the threat of dropping out completely.'

While the US and France bailed out their carmakers during the crisis that began late 2008, Gordon in Brown's government was initially cool toward requests from carmakers for financial aid

However, it later gained a

trial activism by endorsing - and financially supporting the goal of making Britain a European hub for the production of low-emission automotive technology.

The former government approved a £20.7m grant for



Nissan to produce its plug-in Leaf car in the UK, and a £360m guarantee for Ford to develop a new generation of low-emission 'eco-boost" engines and other low-CO₂ technologies in Britain. This month. David Cam-

eron's government affirmed

its support for both those projects. Ahead of the budget, carmakers were still waiting to hear about the fate of £230m of support over four years promised by the old government for lowemission cars, including an incentive of up to £5,000 for people buying them.

Yet Britain's aid for the industry pales compared to the prodigious sums of public money being lavished on low-CO₂ automotive technology elsewhere.

Last year, France's government granted PSA Peugeot Citroën and Renault €6bn in low-interest loans, on top of aid for their electric car programmes.

The US Department of Energy has approved billions of dollars in low-interadvanced economy. est loans for automakers including Nissan, Ford, and to leave no stone unturned to get to grips with it?"

electric-car start-up Tesla in the name of fiscal consol-Motors. The US also earidation has raised worries marked \$2.4bn of federal in the industry that the limstimulus money for the ited existing levels of support for UK carmaking development of advanced automotive batteries. might be under threat.

In Britain, both coalition In addition to upholding parties gave carmakers loans and grants promised hope before the election by the industry by the outspeaking about rebalancing going government, David the economy toward manu-Cameron's team needs to facturing and voicing sup-"create an environment" for port for a "green invest-R&D, says Mr Forster at ment bank". Tata Motors.

The Conservatives were Such an environment sponsors of entrepreneur would be created by such and inventor James Dyson's steps as strengthening Ingenious Britain report. engineering education and This found, among other supporting collaborative projects in important techthings, that between 1970 and 2003, the UK suffered nology areas.

the sharpest decline in "We need leadership manufacturing as a share of on manufacturing", says another industry figure who total employment of any asks not to be named. "The However, the Tories' vow question is: are they going

Ron Dennis tries a new formula for success

Interview

John Reed talks to the chairman of the McLaren Group

rom his first-floor office headquarters at Woking, Ron Dennis looks across an artificial lake towards huge mounds of before the new government's earth that mark the construction unveiling of its maiden budget. of a new factory.

Mr Dennis described his company's expansion, which will create nearly 300 new jobs, as "good news for UK plc".

Fresh from his team's victory at the Canadian Grand Prix. Mr Dennis sits down for an interview to expound on his company's plans in the context of a new government that promised to support at McLaren's futuristic manufacturing and tilt the econ-Norman Foster-designed omy away from its reliance on financial services.

The interview takes place While Mr Dennis acknowledges Downstairs, a group of black- that he is a contributor to the umpsuited production workers Conservative party, he admits



The start of a beautiful friendship

Manu-servicing

Selling things is often only the beginning, writes **Andrew Bolger**

The debate over how best to rebalance the UK economy after the financial meltdown can be obscured by simplistic distinctions between "manufacturing" and "service" companies.

Some of Britain's most successful manufacturers rely heavily on providing services and aftermarket products.

Almost half the £10.4bn revenues of Rolls-Royce, the manufacturer of aero and

industrial sectors such as mining, petrochemicals, oil and gas. The Glasgow-based group made record profits last year, even though orders for original equipment fell 34 per cent. But aftermarket sales dipped only 2 per cent and they accounted for 54 per cent of group revenues.

Keith Cochrane, chief executive, says: "Our installed base delivers an aftermarket channel that enables us to stav close to customers.

"Our services, spares and support services ensure that we build ongoing relationships with customers and can be responsive to their needs.'

Weir now has 90 service centres around the world marine engines, in 2009 that both support customcame from services, com- ers and act as distribution pared with 40 per cent 10 centres for spare parts that years ago – an annual com- can be required frequently. Companies that are pri-

are tinkering with three prototype models of the company's forthcoming MP4-12C road car. This is due to be shown to prospective customers in Europe, the US and the Middle East.

With its stylish décor, spotless, white-tiled floors and hushed atmosphere, the operation looks more like a scene out of a James Bond film or *The Matrix* than any conventional car factory.

In the context of an industry struggling to regroup after a deep crisis - and a country about to begin a painful austerity programme - it has the feel of fantasy about it.

McLaren certainly is dreaming big. Under Mr Dennis' direction, the company is expanding beyond its Formula One franchise and performance-car small-volume production into fully fledged topend road car manufacturing.

If all goes to plan, Woking where Mr Dennis was born – will become Surrey's equivalent of Maranello, the Italian hometown of Ferrari's showcase production plant.

Even as McLaren battles Ferrari on the racetrack, the 12C - to be priced at £160,000 to £170,000 – will take on the Italian producer's 458 Italia model as another car so coveted it can command a waiting list despite its high price.

With series production still several months away, the company says it has more than 2,000 people clamouring to place orders.

In March, at a launch attended by McLaren's star drivers Jenson Button and Lewis Hamilton, of time.

that he is no policy expert. He does speak passionately about his vision for high-tech manufacturing in the UK.

"The whole process of working shouldn't make you dirty, shouldn't make you smell", he says. "That's what's unique about our organisation – we brought to bear standards where people don't have to experience that.

Mr Dennis is a notorious stickler for cleanliness and order. McLaren's production floor is white so that spills can be seen and cleaned up quickly; the facility uses a higher-than-normal standard of air-handling equipment to filter out contaminants, according to McLaren's boss.

"Engineering isn't about dirty fingernails and dirty collars any more", he says. "An incentivised, forward-thinking engineering company will pursue a completely different path, which in itself creates different efficiencies and a workplace that has pride.³

Unlike finance, where the goals and rewards are both short-term, he says, manufacturing needs long-term support.

This starts with education, where government needs to continue its commitment to universities, and "there should be no back-off of funding for science"

Students in technical fields who achieve the highest honours, he says, should have their fees waived by the government if they commit themselves to work for a UK company for a certain length

Dennis: 'The moment you're paying back more than half of your income, it's a step too far

is a world where long-term incentives are required to attract and retain the very best brains". This incentivisation, he adds,

needs to extend to tax credits for companies for research and development that should also embrace capital expenditure on new plant and equipment for the purpose of R&D.

"What I hope for from the new government is that they genuinely realise that there needs to be a well-balanced incentivisation between the service industries -

Selling top-end cars to the demanding rich and servicing them is potentially a tougher challenge than F1

be it finance or retail - and manufacturing industries such as pharmaceuticals, engineering, and so on", he says. Mr Dennis' perorations can

sometimes sound convoluted and some of his proposals may prove over-optimistic in the context of a government with a clear new brief to slash public spending. However, his views carry some weight, coming from the head of a

"The manufacturing industry... company that epitomises high value-added manufacturing. Mr Dennis, who started work at 18 as a mechanic, also ranks among Britain's wealthiest self-made

> men. As such, he speaks eloquently about the 18 per cent capital gains tax - which he says incentivises high earners to leave Britain and the 50 per cent income tax they pay.

"The moment you're paying back more than half of your income, it's a step too far," he says. "It's not all about money what's leaving the country is brains'

Company share schemes, he adds, need to be amended in a way that encourages managers to build the long-term value of their companies, rather than short-term returns.

"The tax system should be incentivising companies to grow and reinvest in themselves rather than delivering profits", he says. "Shareholders should be incentivised to stay in for the long haul". A secretary knocks and opens

the door to Mr Dennis' office. "The crown prince has moved the meeting back to 2:45", she declares.

By Mr Dennis's own accounting, McLaren is living by the principles he supports. The company has not issued dividends for many

years and has limited bank borrowing to the £35m cost of its new factory.

The rest comes from equity. At a group level, the company is owned by Bahraini Mumtalakat Holding Company, Mansour Ojjeh's TAG Group, and Mr Dennis himself.

Ben Stansall

McLaren is in the process of raising £260m from Middle Eastern and East Asian investors for a 48 per cent stake of the new roadcar company. A final deal, says Mr Dennis, will be announced within this calendar year.

He aims to expand the company to a value of £1.5bn to £2bn within five years

McLaren is now in the process of naming its first 35 dealers, a network due to double in size as the business expands.

While few doubt that McLaren's famous perfectionism will yield an acclaimed road car, analysts and competitors note it faces potentially bigger challenges than it does in Formula One when it comes to handling the more prosaic – but arguably tougher business of selling and servicing top-end cars to demanding rich customers around the world.

'We don't underestimate the challenge; we know it's going to be difficult", he says. "But we think we have the commitment to do the job".

pound growth rate in services of 10 per cent.

the oil and gas sector.

non-stop, non-refuelling,

jet flight across the Atlantic

For every engine it sells,

Rolls-Royce offers a long-

term service arrangement,

such as the TotalCare pack-

About 65 per cent of the

group's civil aerospace

large engine fleet and 90 per

cents of its in-service Trent

fleet are managed under

TotalCare support.

ket sector.

continuously.

age for airline customers.

in 1951.

marily focused on services Sir John Rose, chief execcan also be interested in manufacturing opportuniutive, points out that Rollsties. Aberdeen-based PSN. Royce is a long-term business, with product and which provides engineering, construction, operations service lifecycles that span and project management 40 to 50 years, and investment and investment services to the oil and gas in technology programmes industry, thinks that carbon that look more than capture and storage offers a huge opportunity to the UK 20 years ahead. Rolls-Royce's

engineering industry. Avon The government believes engine, for example, modified to produce significant improvements in power and

Original equipment efficiency, is still used in sales fell 34 per Yet it first entered the cent; aftermarket industrial gas turbine marsales 2 per cent ket 40 years ago. That engine in turn was derived and made up half from the original aero version, which powered a Can-Weir's revenues berra aircraft on the first

> carbon capture and storage is essential for curbing greenhouse gas emissions and it plans to support up to four "clean coal" power stations using the technology, which is still under development. By this process, greenhouse gases will be removed, compressed, then piped to be stored in underground reservoirs, such as old oil fields.

Another 900 corporate The potential value of the and business jet aircraft are global market for carbon enrolled in CorporateCare, abatement technology will the equivalent for that marbe £2bn-£4bn by 2030, according to an independ-Rolls-Royce has four operent study for the Departations centres: at Derby, ment for Energy and Cli-

Bristol, Dahlewitz in Germate Change. PSN, which was the submany, and Indianapolis in the US. They use satellite ject of a \$280m buy-out in feeds to monitor the inflight 2006 from KBR Halliburton, performance of jet engines the engineering arm of the Texas oil and gas services Since the first centre was group, now employs 8,500

opened at Derby in 2004, the number of inflight incidents across the civil engine fleet has fallen significantly.

The group has 30 marine service centres around the world – six of which were opened in 2009 - and its energy business has 300 long-term service contracts. On the military side, the group has long-term service contract with the UK's Min-

istry of Defence and the US Department of Defense. Rolls-Royce says that, based on its order book, market share and the scale of service opportunities, it expects organic revenues to double in the next decade, with services continuing to

account for about half. Sales to the aftermarket are also crucial to the success of Weir Group, the manufacturer of pumps to

Rising demand reveals shortage of talent

Training

A skills gap looms but engineering is more popular, says Michael Kavanagh

This year's move by Sir James Dyson, the businessman behind the best-selling bagless vacuum cleaner, to double the number of his engineering staff from 350 to 700 has helped buoy the prospects of graduates emerging on to a jobs markets still recovering from the deep headcount reductions prompted by the global recession.

A fragile recovery in engineering demand and

attempts by companies to industry will need to recruit protect their skill base by nearly 600,000 trained staff as an alternative to redundancy have helped improve the prospects for many working in the the sector.

offering short-time working by 2017 to meet demands in generation, aerospace and transport. Britain is not alone. Lead-But Sir James' recruiters of German engineering

companies, still reeling ment drive at his headquarters in Malmesbury, Wiltfrom the biggest economic shire, comes in spite of his crisis in decades, have also complained recently that acceptance that the UK they face a skills shortage along with European competitors face a skills gap, as that threatens to undergraduates have drifted mine recovery in the counaway from engineering to try many consider the engiseek employment in more neering powerhouse of attractive industries, such Europe as banking and the service

report Ingenious Britain economy. The latest annual report commissioned by David EngineeringUK, for-Cameron when leader of the by merly the Engineering opposition – called for more Technology Board, suggests government support to crethat Britain's engineering ate a renaissance in British

engineering. He insists that working on R&D can be both financially and exisgrowth areas such as power tentially rewarding.

"It will be a problem there will be a shortage of skilled and graduate engineers," he says.

"But a survey suggests that just 16 per cent of engineers are unhappy, compared with 40 per cent of media and 24 per cent in medicine," he adds.

A "happiness index" survey regularly conducted by City and Guilds, the counvocation try's largest Sir James's own recent awarding body, concurs that engineering ranks in the top 10 professions, ahead of journalists, architects and the bottom ranked fields of banking, finance, nursing and IT specialists.

In the UK, beauty therapists, hairdressers and the military top the list, while a similar survey in the US suggested that industrial engineering was among the top 10 occupation for general happiness in a league table topped by the clergy

prospects in the financial services sector also looking relatively less attractive, the starting salaries on offer to graduates in engineering-related fields are looking increasingly competitive.

Yet the low prestige associated with engineering in the UK, compared with that commanded in continental Europe continues to weigh on the sector.

But Sir Anthony Cleaver, chairman of Engineering-UK, remarks in the forward of its latest report, 85 per cent of the general public claim they would recomengineering as a career to family and friends, up 15 per cent on the previous year.

Yet he concedes that research also show that, when 11-16-year-olds were asked how desirable they believed engineering is as a career, only 15 per cent were enthusiastic.

While industrial and policy leaders such as Sir James seek ways encourage young people into the field to plug an anticipated skills gap, Sir Anthony accepts that "we still have a long way to go".

people in 28 countries. The group thinks it is well placed to participate in this new industry, because oil and gas producers, its main customers, own the pipelines, platforms and rapidly emptying North Sea reservoirs that could be used to store carbon captured from power stations.

PSN has formed a partnership with Aspentech, a Boston-based supplier of software that optimises process manufacturing, to help develop this emerging technology.

Bob Keiller, chief executive of PSN, says: "If we can apply our skills elsewhere, we will. That's where we see the real attraction of carbon capture and storage. A lot of the skills are exactly those the oil and gas industry has."

mend and firefighters. And with pay and career

Britain's Industrial Future

Benefits accrue when trades of a feather flock together

Clusters

Being in proximity can foster innovation, says Andrew Bounds

Ken Torres still remembers the glory days of Sheffield's steel industry. "You could order your castings and they would be delivered the same day. They would still be hot from the forge when they arrived," he recalls with a wistful look.

The days when forges glowed on every street corner, as "little mesters" bashed out knives and the big plants rolled out battleship plating, are long gone.

Most of the parts Mr Torres needs for his pumps must now be shipped from far away although he can still source the

city, which has developed into a centre for advanced engineering and new materials.

Britain's cities could once be classified by their industries. Alongside Sheffield with its steel, Glasgow and Newcastle had ships, Leeds textiles, Stokeon-Trent pottery and Birming-

ham cars. There were good reasons in each case: Stoke had the clay and the coal to fire furnaces. Leeds had sheep nearby and the soft water to power looms and dye the clothes. Sheffield had coal and transport links.

But what is the role of clusters in a global age? A 2008 report for the UK government's Department for Business, Innovation and Skills noted that a global supply chain was vital for modern manufacturing.

Yet it believed that having

more specialist ones from the companies in the same sector clustered together was beneficial. This was partly because smaller businesses faced difficulties in gaining access to global supply networks, it said. Specialisation was vital for that, with companies needing to share resources and technology. "Clustering – geographic con-centrations of interconnected

companies, specialised suppliers and service providers and institutions such as universities supports specialisation and creates critical mass to attract investors and purchasers," it concluded.

To encourage this, the Labour government set up an annual "cluster mark" award.

The overall winner in this its first year was the Humber Seafood Processing Cluster, which evolved from the death of the fishing industry. Hull was the

UK's biggest fishing port until the 1970s, when the closure of Icelandic fishing grounds and European Union-imposed quotas decimated the fleet. Rather than catch the fish, the area now turns them into fish fingers, breaded prawns, sliced calamari

Clusters grow organically. The question is whether governments can stimulate them

and the like, accounting for 70 per cent of the UK industry. It works with a publicly funded innovation centre to create products and with local universities and colleges to provide relevant skills training.

Another winner was the North-west biomedical cluster. One of three in the UK, it has since 2002 seen a 61 per cent rise in company numbers, a 35 per cent increase in employment in its core business and an 18 per cent increase in productivity.

Others commended were: the West Midlands niche vehicles cluster, which covers green cars powered by electricity and hydrogen; opto-electronics in Wales; and Scotland Food & Drink, which improved productivity and exports.

government Nevertheless, encouragement can be powerless in the face of the global economy.

In the report, the business department mentioned the £50m it had sunk into chemical production around Middlesbrough and Teesside. But last July, USowned Dow Chemical, the UK's

announced it was shutting its plant – news that immediately triggered the closure of nearby customer Croda International.

Ethylene oxide is hazardous and hard to transport, so Croda said it would move production of goods that depended on it closer to supplies in continental Europe. Dow had shut the plant because another product, monoethylene glycol, could not compete with new plants in the Middle East, which benefit from cheap energy.

There are fears others may follow suit. The huge Wilton complex, built across 2,000 acres by ICI in the 1940s, was sold off piecemeal in the 1990s, mainly to foreign investors.

Now, four of the six operators have announced they are closing plants and about 1,000 of the cluster's 5,000 jobs are under

sole producer of ethylene oxide. threat, although in January two of the plants were bought by a Korean company, with the help of a £1.8m grant.

The North East Process Industry Cluster, which has 500 members, and other industry bodies have given the government a list of key strategic materials of which the UK now has only one producer.

Krsto Pandza, senior lecturer in manufacturing and technology strategy at Leeds University business school, notes that historic clusters, such as Manchester's 19th century textile cluster, grew organically. The question is, he says, whether governments can stimulate them.

"We found one area where companies can benefit and that is pre-competition research and development. But the companies themselves should decide what that is, not the government.

A clear vision is needed to stay ahead

tems and landing gear.

financial assistance to com-

mercial aircraft pro-

grammes, specific support

for GKN's composite tech-

nology programme, and,

through its military equip-

ment purchases, to defence

Some in the industry,

however, think this support

does not go far enough, and

aerospace technology.

Aerospace & defence Research and training are issues, says Sylvia Pfeifer

a blue and white building on the edge of Cowes, on the Isle of Wight, engineers and technicians are researching the technology for the next generation of aircraft.

They work at a high-tech centre set up by GKN, the aerospace and automotive group, to develop lightweight carbon-fibre materials to replace aluminium in new aircraft, such as the A350 mid-size jet being built by Airbus, the European

aircraftmaker.

Britain still made

The

The industry might no and defence companies are longer be turning out entire choosing to invest. "Companies have disproaircraft but the skills remain. Today, it is a world

portionately been allocating leader in the design and resources out of the UK into manufacture of wings and the US," says John Dowdy, engines, as well as a leading a director at McKinsey, the manufacturer of fuel sysconsultancy. "The market prospects are better and government has they get more favourable played a role, providing government treatment."

The trend is evident in the geographic spread of companies' revenues, as well as their employment histories. Rolls-Royce, for example, which today generates 85 per cent of revemore than doubled its revenues since 1999. It employs 2,000 fewer people globally,

Thirty years ago,

Body of work: GKN is developing carbon-fibre to replace aluminium in the Airbus A350 jetliner – pictured in an artist's impression above

and 8,000 fewer in the UK.

five years - 65 per cent of

expenditure as a percentage of GDP almost halved from 1987 to 2007, while other public services have seen significant rises, according

to analysis by PwC. Despite the shift abroad, nues outside the UK, has the aerospace and defence sector remains important to the British economy. A Department for Business ranking of the top 800 UK Although Rolls-Royce has companies by value added continued to invest in its estimated that the top 16 UK operations over the past aerospace and defence com-

added manufacturing sectors: a redirection of education funding into engineering, diverting it from other subjects if necessary; and a concerted effort between government and industry to put equal value on apprenticeships and degrees.

investment in research and development as critical. "There is a close correlation between R&D expenditure and the creation of battlewinning equipment, which in turn leads to exports.'

McKinsey's Mr Dowdy In defence, industry execpicks out government utives stress the need for the strategic review that is under way to set out clear priorities. Key areas cited include continued investment into pilotless aerial vehicles.

where you want to excel as a nation and having the whole of the value system, from education through engineering, research and development and manufacturing and support, aligned Says Sir Kevin: "It's around those areas.

........ 100ARB

GKN, which traces its origins to a tiny ironworks in Wales in 1759, is among the world leaders in composite technology. Recent contract business jets wins include work to manufacture the all-composite front fan case for the engine of the F-35 Joint Strike Fighter, being built by a US-led consortium that also includes BAE Systems, Britain's leading defence company. The two are among doz-

ens of big and small companies that make up Britain's aerospace and defence industry, which has developed such classics as the De Havilland Comet, the Spitfire, as well as technologies that make modern aviation possible, such as radar.

entire aircraft, regional and

that the government has failed to capitalise on Britain's historic leadership in aerospace and defence.

"We haven't had a clear vision for manufacturing," says Sir Kevin Smith, GKN chief executive. Elsewhere in the world, he says, there is "a huge amount of cohesion between industrial sectors and government about what they want their manufacturing industry to be". Evidence to support Sir Kevin's view comes in how Britain's leading aerospace

and development spend over that period has been in the UK, for example – it has opened plants in Germany, the US, Singapore and Scandinavia.

These countries share good technical and vocational education and a commitment to manufacturing as a significant component of their economy. BAE Systems, meanwhile, today generates just 20 per cent of its turnover in the UK. It has made no secret of its aim to expand its

operations in the US, Saudi Arabia, Australia and India countries where defence spending is on the rise. In the UK, defence

panies added £12.6bn to the its worldwide £4bn research British economy in 2007-08. The aerospace, defence and security sectors combined generate more than £60bn a year for the UK economy, according to ADS (Aerospace, Defence, Security), the trade body. Salaries are also above average; in Derby, for example, Rolls-Royce's pay is 43 per cent above the East Midlands median.

The government can help ensure these contributions are not lost.

Dick Olver, chairman of BAE, says the UK should focus on three priorities to encourage high-value activity in the sector: targeted investment to protect its high-tech and high value-

One of the high-level international multi-energy gatherings of 2010, after G8/G20 and before COP16.

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Profile EPM aims high

The hands of the world's largest mechanical clock - currently being installed in Ganzhou, China - were made by EPM, a small Midlands manufacturer.

At first sight, this would appear to be a heart-warming tale of a traditional British metal basher exporting to far-off locations, as such businesses always have.

However, the story is more complex and bittersweet. EPM operates in the technologically advanced field of composite structures.

It was recruited by 150-year-old clock manufacturer Smith of Derby because it could produce carbon fibre hands that were as strong and light as the racing car bodies that are its stock-in-trade.

Each of the four faces of the timepiece, adorning a tower at Harmony Park in Ganzhou. is 13 metres in diameter and the minute hands are 7.8m long. The tower will open to the public next year, featuring a viewing gallery that will allow visitors to inspect a mechanism that is accurate to 30 seconds a month.

The irony in respect of the high-profile order is that EPM is shifting its strategy under pressure from Chinese composites specialists that are nipping at its heels in product areas with lower margins.

"If this were made of metal, it would weigh six tonnes," says Graham Mulholland, EPM's founder and managing director, showing off one of the mighty hands at his Draycott, East Midlands, factory a month before installation.

"But in carbon fibre, it weighs just 65kg." Other products on which EPM's 84 staff are working include a large satellite dish for the military and body shells for Formula One racing cars. The parts that FPM now makes

for automotive customers such as luxury sports carmakers Lotus and



Show of hands: Harmony Park clock

Aston Martin are markedly more complex than those it was producing a few years ago.

But the process involved - cutting out layers of carbon fibre material and embedding them in resin has changed little and remains labour-intensive.

As a result, Chinese composites businesses are beginning to compete with British specialists such as EPM at the lower end of the product scale.

"We are seeing a wave of work going offshore," says Mr Mulholland, 36. Having rejected the idea of opening his own factory in China, he is focusing on higher margin products, such as a beautifully finished engine air intake on display at Draycott.

The entrepreneur, who started the business when he was 23, also hopes to break into the clannish aerospace industry

EPM has weathered ups and down since Mr Mulholland, a competitive canoeist who became fascinated with the fibre glass construction of his boats, set up the business in his father's garage in 1997.

The company came close to collapse in 2005, after acquiring a business that did not produce the sales expected from it, partly because its former parent went bust. EPM was saved by rapid cost-cutting and the fact that the purchase price was payable in two tranches, allowing a grace period. EPM ended up employing 140 people

across three Midlands sites. However, stagnating orders then prompted Mr Mulholland to close one factory, at Ilkeston in Derbyshire, and sell another, at Coalville in Leicestershire.

The severe contraction in UK manufacturing that followed the 2008 credit crunch represented a further challenge. Turnover in the year to June fell from £5m in 2008 to £3.5m in 2009. "We are very numbers-focused, so we changed the business to break even at that level," says Mr Mulholland, who holds a 60 per cent stake. EPM made £12,000 of efficiency savings for each of its remaining staff.

Turnover has rebounded, reflecting a recovery in "Motorsport Valley", a loose grouping of racing teams and manufacturers in the Midlands and south-east England. EPM expects sales of £4.5m in the year to June 2010, for pre-tax profits of £750,000.

EPM resembles thousands of other small businesses in the manufacturing heartlands of the Midlands. It has made some mistakes, experienced adversity but survived through a mixture of pragmatism and fortitude.

The entrepreneur is also critical of some larger manufacturers, which he believes soak up millions in grant aid while passing on little of the way of orders to smaller UK suppliers. However, he is optimistic his

business can thrive, as it improves its capabilities through investment that yields such high-profile commissions as the Ganzhou clock hands.

Jonathan Guthrie

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