

A 300-ACRE estate in Gloucestershire, a chateau in France, a town house in Chelsea, and an estimated fortune of £1bn; not a bad return for a man whose invention was turned down by every major manufacturer in the UK.

Spending 15 years and 5,127 prototypes to create the Dual Cyclone bagless vacuum cleaner – early versions incorporated cardboard and duct tape – Sir James Dyson embodies a dogged determination (or stubbornness, as his wife Deirdre would put it) to get things right.

Sir James feels that the future success of Britain's high-tech innovators depends on entrepreneurs getting the necessary financial backing they need to start and grow their companies. Sir James says that if his bank manager hadn't pressed his case personally, securing the £600,000 he needed for tooling, the Dyson business wouldn't exist.

He has strong opinions on the subject of innovation and is clear about where he thinks encouragement should begin. "Backing British engineering and inspiring new talent must start with the Government." He is keen to see large schemes such as high-speed rail and nuclear power get moving. "Big projects inspire engineers and universities," Sir James says. "Instead we get bogged down with endless reports and bickering."

Despite this comment he has written his own 60-page report (commissioned by the Conservative party before the 2010 election) to document his opinion on how to rebuild the manufacturing and technology industries in Britain and help pull the nation out of recession.

Ingenious Britain calls for a change in culture to "reawaken Britain's inventiveness" and move the focus of the economy away from financial services and back to manufacturing.

Sir James sees funding as one of the key issues and has called for an overhaul of the tax system. "Too often, UK investors are reluctant to take a punt on technology, science or engineering," he says. He feels that banks often shy away from innovation.

"...we produce 22,000 engineers a year,

So the answer, he suggests, is to encourage angel investment. "We need an approach that relies on the good judgement and sharp eyes of already successful entrepreneurs and technology developers."

One of Sir James' recommendations is to refocus R&D tax credits (tax relief claimed by SMEs) on high-tech businesses, small companies and start-ups. "Research and development is risky and a long-term investment," he says. "The cash-flow pressures facing many start-ups hinder R&D, suffocating good ideas before they become world-beating inventions."

He suggested that when the public purse could afford it, the R&D tax credit should be increased from 140 per cent to 200 per cent. The coalition government agreed; the increase was implemented in the April 2011 Budget, with a further rise to 225 per cent next year. "This will have a substantial impact on company investment decisions and send a far-reaching signal to both national and international companies about the government's belief in science and technology," says Sir James.

A second recommendation threw the spotlight on the Enterprise Investment Scheme (EIS). Sir James said he wanted those who backed high-tech, R&D-intensive businesses to benefit more, with EIS relief to them rising from 20 per cent to 30 per cent. Again, this year's Budget saw chancellor George Osborne almost double the maximum investment to £1m.

Sir James saw this as another positive move. He felt once again that the right signals were being sent to investors and the financial community about "the value the UK attaches to high-tech companies."

Another key issue for Sir James is education, about which he has been quite vocal, including a number of recommendations in his report. His view is that the system isn't producing enough young people with the right skills and feels that students consider subjects like science,

the billionaire design engineer views technology, funding, education and training

but half of them go to the city to be bankers...”

engineering and maths as hard work and boring. He casts the blame for this outlook far and wide, citing businesses, the business press and even TV shows for the decline in the numbers of youngsters going into the industry.

“Britain produces 22,000 engineers a year, but half of them go to the city to be bankers. Thirteen per cent of teenage girls want to go into science, but they all want to be pathologists because of the CSI programmes,” he laments. Sir James feels there is a lot of pressure on young people to avoid engineering because it is considered too “geeky”. “We need to change perceptions and inspire,” he says.

So starting in schools, Sir James is keen to see the combined science GCSE split back into separate exams. “Children like challenges,” he says. “They like experiments and they’re not getting enough of them.” He recalls the Design Technology course made compulsory by the Thatcher Government, but subsequently down-graded by a later administration to non-compulsory, leading to fewer students, especially girls, taking it.

“We need a curriculum that excites young people about the role they could play in the future,” says Sir James. Doing this requires good teachers and more of them. To address the serious shortage, he advocates better pay for science, technology and maths teachers, thus attracting higher-calibre staff.

Although heartened by the news that there has been an increase in the numbers of students taking science and maths A-levels, the challenge is then encouraging them to study those subjects at university. Sir James suggests the dearth of graduates in this area is creating a major skills gap and having a direct impact on the country’s ability to create world-beating technology.

One of his recommendations is to provide engineering undergraduates with industry-sponsored scholarships of £2,000 each. Another is to raise the salaries of post-graduate research students from £13,000 to ...continued on page 14



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£23,000 per year. When it comes to post-graduate work, Sir James feels British students are being “priced out” of research posts. “They’re too indebted to stay on,” he says. “As a result the universities are filled with foreign students who then take the expertise back to our competitors.”

Sir James isn’t just an armchair critic; he uses his own money to encourage the innovators of the future. The James Dyson Foundation was set up in 2002 to support design and engineering education, including the James Dyson Award, a student design award running in 18 countries.

In 2010, the Foundation donated £5m to the Royal College of Art (RCA) to help fund a new building in London. The Dyson Building will provide a lecture theatre, gallery space, studios and 40 business incubator units, and should open for business in 2012.

The Foundation has also added £1m to its



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fund to encourage young engineers to continue to post-graduate level. From September, four £25,000 bursaries per year will be available to students at Bristol, Bath, Corpus Christi Cambridge, and Imperial College London until 2013. Five top design universities, including the RCA and Loughborough, will benefit from £60,000 to support specific projects that show technical excellence and innovation. ©

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Industrial Designer Sir James Dyson is founder of Dyson Ltd and is best known as inventor of the Dual Cyclone bagless vacuum cleaner. www.dyson.co.uk



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