

# POLITICS OF ENGINEERING

*Ingenia* invited representatives from the three largest political parties, in advance of the 2015 general election, to tell its readers why engineering is important to them. Here are their responses – in alphabetical order of party.



**Rt Hon Greg Clark MP**  
Minister for Universities, Science and Cities

Dating back to Brunel and beyond, the UK has been a world-leader in engineering. Ensuring we have a world-class engineering industry is part of the Conservatives' long-term economic plan to deliver sustainable growth, create more jobs and help secure a better future for hardworking people and their families. By investing in infrastructure and research, encouraging innovation and nurturing engineering talent, the Conservative Party will ensure the UK's engineering industry remains one of the world's best.

In government, we've set aside £4.6 billion each year to 2015/16 for home-grown science and engineering infrastructure and research. And we've committed £5.9 billion of capital to support scientific distinction up to 2021 – the longest investment pledge to science capital in decades. We want the UK to continue to play a leading role in developing new technologies, and we want the industry to continue to employ thousands of our talented school and university graduates. We've funded projects that boast outstanding expertise in engineering to help them achieve even more. Last year, for example, we were delighted to announce £235 million of investment for the Sir Henry Royce Institute for Advanced Materials. A majority Conservative government would continue to invest in engineering, centred on the Science and Innovation Strategy published last year.

Innovation is the lifeblood of engineering, and we've taken action to nurture great ideas. Thanks to £1.4 billion of public and private investment over the last five years, we've developed a network of seven Catapult centres, where scientists and engineers work side by side on research and development, turning ideas into new products and services to generate growth. Additionally, we're improving the competitiveness of research and development tax credit schemes and we've introduced the patent box to make it easier to protect and profit from new inventions. For companies that need an investment boost to get their ideas up and running, we've given over £150 million to the UK Innovation Investment Fund – a venture capital fund that supports technology-based businesses, including in the digital technology, clean technology and advanced manufacturing sectors.

But there's little use in all this investment if we don't have the right people with the right problem-solving skills to do the job. That's why we're reforming the education system – so that the UK produces the next generation of engineers. In 2014, we launched the 'Your Life' campaign to help boost participation in science, technology, engineering and maths (STEM) in schools nationwide. Our goal was to raise the number of A-level maths and physics students by 50% in three years and to double the number of undergraduate degrees taken by women in engineering and technology by 2030. The results so far are encouraging: more than 75,000 young people started apprenticeships in STEM subjects in 2013/14 – that's an increase of over 40% in just four years.

On top of this, by working closely with industry, we've provided an extra £400 million

for university science departments to develop world-class facilities so the UK can meet the science industry's demand for highly skilled young people. We've linked that funding directly to commitments on equality of opportunity, to ensure that the talent is drawn from the broadest possible pool and that background isn't an obstacle to success in this highly competitive environment. We're also giving financial support to part-time engineering students who have previously studied for a degree, and we're introducing loans of up to £10,000 for young people who want to undertake postgraduate study.

A Conservative government will be committed to investing in engineering because we want to see our strong and worldwide reputation in this hugely important industry continue to go from strength to strength.



**Liam Byrne MP**  
Shadow Minister for Universities,  
Science and Skills

Engineering has been at the heart of the UK's path to prosperity for centuries. That was true in the ages of Matthew Boulton, George Hudson and Isambard Kingdom Brunel, and it's no less true as we compete in the global economy today. To win in the global race to the top, the UK must put engineering at the heart of its strategy for growth.

Engineering matters because we're on the threshold of an incredible new age that will present big chances and challenges for the UK. A global middle class is set to reach

three billion people. A third of global growth is set to come from China by 2025. Booming sectors such as driverless cars and advanced manufacturing will be worth tens of billions of pounds in just a few years. UK engineering expertise will be key to redesigning this new world.

The jobs of the future will be created by harnessing these mega-trends. However, we can only succeed in meeting the challenges of the 21st century if our engineering base is built on strong foundations.

Those foundations will allow us to build the right kind of recovery: one based on decent, high-pay, high-skill jobs that are essential for growing a bigger knowledge economy.

Right now, we're at risk of slipping behind when we should be racing ahead. Major manufacturing businesses say that the UK is falling worryingly short on training the engineers we need. It is estimated we will need approximately 780,000 more engineers between now and 2020 to meet industry demand – 156,000 per year. Currently, we are training less than half that – leaving Britain with a shortfall of more than 400,000 engineers by 2020.

That is why Ed Miliband has committed Labour to doubling the rate of engineers being trained in the UK by 2020 rather than importing them from abroad or leaving businesses without the skills they need to succeed.

To achieve this, we will work with young people and businesses to create a clear vocational route through education into an engineering career. We need many more high quality apprenticeships in subjects like engineering that allow the next generation of school leavers to earn while they learn their way to degree level skills. Today, far too few of our apprenticeships reach this level, making it uphill work for our young people to find a vocational route to success. By 2025, under a Labour government, as many young people will be on a route to a higher apprenticeships as enter university.

We will work with schools to ensure more young people, girls as well as boys, do STEM subjects, taught by properly qualified teachers. And we will also work with industry to put employers in charge of the money for training young people.

Crucially, we'll take action to fix the skills gap that currently leaves entire sections of society behind. In 2013, only 14% of

engineering graduates were women. And only 4% of professionally registered engineers are female. Gaps in female enrolment in STEM subjects at A level are also a worrying sign of things to come if we take no action.

The next election is the chance to take a new direction for our country: halting the race to the bottom and embarking once more on a race to the top where we build an economy that works for everyone, not just a few.

With a clear plan in place for engineering, we can harness the talents of all our young people to build a country that is ready to face the future.



**Dr Julian Huppert MP**  
and **Ed Long**, Chair of Association of Liberal  
Democrat Engineers and Scientists

In November last year, Michael O'Leary, CEO of budget airline Ryanair, took to the airwaves to criticise Vince Cable, Secretary of State for Business, Innovation and Skills, for claiming the UK needed to produce more engineers. "China will do most of the engineering", he argued, while the UK should focus on "tourism and financial services". Needless to say, we beg to differ: engineering has a central role to play, both in driving sustainable growth and helping tackle the greatest challenges of our century. This conviction goes to the core of our party: the preamble to our constitution declares that we will "promote scientific research and innovation and harness technological change to human advantage".

In government, it has been a priority to support the sector. Vince Cable recently announced a £40 million investment in synthetic biology research to develop new technologies that could make fabricating everyday products less dependent on fossil fuels. And many parts of the engineering sector are showing improved health: car production in the UK is up by 19%; we continue to support the largest aerospace industry in Europe; and our construction industry is performing well – in the third quarter of 2013, output grew 5.7% on the previous year. Our space sector is also soaring: growing at over 7% and contributing

to historical successes such as last year's Rosetta landing.

But there is still a lot more to do.

By some estimates, we need to produce 20,000 more engineers each year than we do currently. To achieve this, having a pool of scientifically literate young people enthused from a young age is vital. Liberal Democrats want every primary school to have a STEM specialist and for all teaching of STEM subjects at secondary level to be delivered by someone with a degree, or equivalent qualification, in the subject. We also have to get across the excitement in engineering and overcome some outdated stereotypes. Tomorrow's Engineers Week, launched two years ago to inspire young people to go into engineering, is one example of how we can do this: the campaign saw a 6% increase in the number of 11–14 year olds considering a career in the sector.

Engineering is a rewarding career path and we must support multiple routes into careers, whether through university or an apprenticeship. We have made huge progress in boosting apprenticeships in this Parliament – creating over two million in total – but there is further to go. We would extend the Apprenticeship Grant for Employers for the remainder of the next Parliament, delivering 200,000 grants to employers and expanding the number of degree-equivalent Higher Apprenticeships.

We also need to ensure that no one is discouraged from going into engineering. We miss out on a huge amount of talent by failing to attract girls and women – just 8% of engineering professionals are women. By supporting initiatives like the STEM Diversity programme, we are helping challenge gender stereotypes. We want to encourage girls early in life, for example, by ensuring that every school has access to a female Science Champion.

To succeed, the UK also needs world-class facilities and institutions, both to develop the cutting edge and to translate new technology into new products and industry. The seven Catapult centres launched over the course of this Parliament have created a new model for innovation-driven growth and the Liberal Democrats would continue the expansion of this network. We would also continue to pursue an industrial strategy, investing in sectors with high-growth potential as well as green industry, such as carbon capture and storage, energy storage and ultra-low emission vehicles.