ATTRACTING THE NEXT GENERATION

Dr Scott Steedman

An enduring challenge for the profession is how to attract the next generation of engineers. The UK is simply not producing enough qualified graduates in science, technology, engineering and mathematics (STEM). Even if they have the qualifications, many graduates choose other careers. While it is good news that there are some 'engineering literate' people working in other professions, everyone agrees that we need to encourage more young people to take up careers in engineering itself. The question is, how?

The facts speak for themselves. In its 2014 report, *The State of Engineering*, EngineeringUK estimates that, over the next five years alone, the UK will need to recruit as many as 87,000 people a year who have achieved an HNC/D, foundation degree, undergraduate or postgraduate qualification in engineering. In 2013 there was a shortfall of 36,000 people against this target, slightly better than 2012 but nowhere near the levels needed.

The problems start early. Long before they reach higher education, many young people have already voted with their feet. Indeed, as they progress through their education, the pool of talent from which the UK has the opportunity to recruit tomorrow's engineers shrinks progressively.

Only 88,000 students study A-level maths in the UK, one of the lowest proportions in the developed world. Only 25,000 in the UK study physics and maths at A level. At bachelor degree level, the story is even worse. There are just 14,000 UK domiciled engineering-related graduates each year. Research for the Royal Academy of Engineering by the University of Liverpool found that of these, only about 40% (5,500) take up engineering careers.

We have to achieve a revolution in the attitudes of the public, young people and the parents and teachers who influence them, who often have negative, outdated perceptions of engineering and engineering careers. One area that we must address immediately is the poor quality of engineering related careers advice. Sir John Holman's recent report for the Gatsby Foundation, *Good Career Guidance*, confirms that England has some of the worst careers advice in schools among all the developed economies.

The outlook for the UK is stark. A shortage of talented young people affects all industries where engineering is important and hinders the UK's ability to deliver innovation and long-term growth. Putting it bluntly, our economy is underperforming through a failure to attract enough young people into STEM careers.

That said, the report by Professor John Perkins CBE FREng, *Professor John Perkins' Review of Engineering Skills*, published late last year by the Department for Business, Innovation and Skills, could be a turning point. The review was a call to arms for the engineering community to work together to counter the shortfall of young people progressing to engineering careers.

The community has started to act. For example, EngineeringUK and the Academy are developing the Tomorrow's Engineers programme, which is aimed at strengthening the relationships between engineering businesses and schools and now includes the largest engineering institutions. The Education for Engineering alliance, hosted by the Academy and including members from the professional engineering community, has set up working groups focused on how to bring employers into the process.

But we must also tackle structural challenges. There is a serious shortage of specialist teachers in key subjects such as maths, physics and computing. We must find ways to give the tens of thousands of teachers of STEM subjects an understanding of real-life applications of maths and science and a proper appreciation of how the different curricula relate to the world of engineering.

Ingenia is playing its part in capturing the imagination of young people and demonstrating just what they can achieve from a career in engineering. *Ingenia* goes to every one of the 3,300 schools and colleges in the UK that teaches STEM subjects at sixth form. But this magazine also needs to develop its presence online and in social media. By looking not only at what engineers do and how they do it, but who they are and why they do it, *Ingenia* can, and will, contribute directly to this national effort. With the support of the editorial board, readers and sponsors, it is time for *Ingenia* to go live.

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