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MEDIA PLANET

WOMEN IN ENGINEERING

womenengineers.co.uk

A spotlight on

ENTRY ROUTES
What are the best ways to get into the industry?

REBRANDING
The outdated perceptions that are still holding people back

ENCOURAGING CHANGE FOR A BETTER FUTURE

Roma Agrawal, a structural engineer who worked on the Shard, talks about her career and why she wants to inspire other women and girls into a career in engineering

PHOTO: NICOLA EVANS, WSP

Why should women work in engineering? Because the field provides interesting, well paid careers, says Dawn Bonfield, executive vice president, Women's Engineering Society. But much more work still needs to be done to encourage women to take up these fascinating careers.

Breaking the mould in the engineering industry

Dawn Bonfield
Women's Engineering Society

"Thankfully we have a new generation of amazing young female role models coming through, and we need to ensure that we promote and continue to employ these women up to and beyond the inevitable maternity break through retraining"

One of the important areas for change is in the rebranding of engineering, to get away from the dirty rag images to one of an exciting industry at the forefront of technological change, an entry route where jobs are meaningful, well-paid and abundant. "Engineering" should be thought of not as a profession but more of a skill which can be learnt in school, in a similar way to, say, swimming. Then we will not only teach children how to find solutions to difficult questions but we will also introduce the term early on into a child's vocabulary as something with an understandable outcome. Then, when the next generation comes to an age where they are looking at career options and pushing boundaries, we introduce specific disciplines such as civil engineering, medical engineering or chemical engineering.

We have the problem of women returning to engineering after a career break. We need flexible working, on-site childcare, a structure for return, a support system and, crucially, a company culture which values retaining these employees.

Change is on its way in STEM diversity

The Government's recently launched Your Life campaign has created a flurry of activity with as many as 100 companies and organisations pledging action on diversity. There is real need for collaboration, shared knowledge, access to information, and help from organisations such as the Women's Engineering Society who have been working in this area for 95 years.

We desperately need something that maintains the interest in the longer-term of girls who show an aptitude for STEM activities in school. We need to feed their interest with information about summer schools, competitions, Apprenticeships, degree courses, bursaries, great projects, work placement opportunities, open days or visits, and role models.

We need to acknowledge that something slightly different is needed for girls. Thankfully we have a new generation of amazing young female role models coming through, and we need to ensure that we promote and continue to employ these women up to and beyond the inevitable maternity break through retraining.

We need to redirect some of the women who currently go into medical and veterinary science towards engineering courses. Currently, a huge proportion of the girls that take STEM subjects go into these professions, but we could show how medical engineering is a short step away from medicine. And we need to overcome the barrier that we have erected around girls and physics A-levels.

The Women's Engineering Society welcomes the current focus on diversity, and will happily work with companies to deliver the change that we are all looking for in the hope that it doesn't take another 95 years to see true diversity in engineering.

EDITOR'S PICK

FOR EXTENDED, INTERACTIVE, AND EXCLUSIVE CONTENT VISIT

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MEDIA PLANET

Question: How should women go about building a career in the traditionally male-dominated sector of engineering and where will that take them?
Answer: There are many routes available, from academic study to Apprenticeships and an engineering qualification can take them to virtually any sector in the world.

Build a blossoming career in STEM

"The options for women in engineering are almost limitless," says Helen Wollaston, director of WISE, a national campaign to increase the number of women in the UK's STEM (science, technology, engineering and mathematics) workforce. "One of the key messages is to keep up with physics, maths and computer sciences. There are a lot of opportunities in the labour market and many different types of entry routes, but you need these core skills."

Wollaston is keen to point out that these days, technology is needed in almost every business, from banking to manufacturing to working in the public sector. "Most girls have no idea about this: they think engineers mend washing machines," she says. "In actual fact, they are needed for broadcasting, software, medical engineering and a great deal else."

Getting women to take the route into engineering therefore needs to start when they are still at school, with events held by WISE such as Create Your Future, a workshop involving girls, parents at teachers being held at Walsall College on 28 June. "Key themes resonate with girls, such as 'making a difference', and so we show them how engineering can help drought irrigation in the developing world or how they could work in health engineering — examples which capture their imagination," Wollaston says. Girls also like team work and collaboration, and so are encouraged to see that engineering requires people skills.

Breaking myths

"We run these workshops outside school hours, on Saturdays or after school," says Wollaston. The groups meet in a cafe-style format and the girls are encouraged to ask the role models anything they want, for example, what hours they work, who they work with, where they have been and what they like best about their jobs, in a bid to help break down the myths and stereotypes. Parents and teachers are invited as well, so that they can find out more about the opportunities available.

"Last year, only 440 girls did an engineering Apprenticeship in England, compared to over 13,000 boys"

Helen Wollaston, Director, WISE

"Research carried out by King's College, London has shown that a high proportion of people who go in to science already have a scientist in the family," says Wollaston. "We want to help girls with no so-called 'science capital'. It can be very daunting if you feel you're in a minority. WISE connects them to a support network."

Entry routes

Wollaston also emphasises that the entry route into a career in engineering is not just through going to university. "There are a growing number of Apprenticeship programmes," she says, which can, in turn, lead to higher education where it's deemed applicable, with the employer paying the fees. "We want to get this message out to more girls and their parents. Last year, only 440 girls did an engineering Apprenticeship in England, compared to over 13,000 boys. But girls can use this to their advantage: their scarcity means they will be in demand."

Last year, WISE introduced a new category of WISE Apprentice to their annual awards, in order to identify role models who will inspire more girls to follow in their footsteps. Nominations for the WISE Awards 2014 are now open.

VIRGINIA BLACKBURN
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INSPIRATION

The appliance of science can take you a long way

Question: Do people have to choose between a career in academia or the industrial workplace?

Answer: No — some people are able to divide their time between the two.

The benefits and opportunities of a career in civil engineering cannot be overstated; it can open the door to a fascinating and diverse future. One person who discovered this is Denise Bower, Professor of engineering project management at the University of Leeds. Bower is also executive director of the Major Projects Association, improving the delivery of major infrastructure projects and a fellow of the Institution of Civil Engineers (ICE) where she chairs the Capacity Building Panel, developing civil engineers throughout their careers.

She works closely with Government body Infrastructure UK and is involved with an array of influential groups — from the all-Party Parliamentary Group on Smart Cities to the Construction Industry Strategy Advisory Council, shaping Government's construction policy. She has even found time to author text books, is an editorial advisor for Project Management World and judges the Wolfson Economics Prize.

Female engineers are pictured working on the Crossrail project
PHOTO: CROSSRAIL

Denise Bower, Professor of engineering project management, University of Leeds

Bower became interested in civil engineering when she realised that it enabled her to bring together her interests in maths, physics, history and geography in a practical way. "The more I looked into it, the more I realised how exciting a career I could have," she recalls. "I went to UMIST to do a BEng in civil engineering, got an ICE QUEST scholarship and was sponsored by a civil engineering contractor. This allowed me to balance my academic, professional and practical interests from the start."

Work-life balance

This pattern continued throughout Bower's career. After a spell working as a civil engineer on-site, she returned to UMIST to take a PhD in project management and then became the Shell project management lecturer, still working on-site part of the week. "The nexus of engineering and projects was where I really found my niche as it allowed me to play to my strengths — initiative, practicality, leadership and optimism," she says. Bower managed to juggle this with having a growing family. Eventually she moved to the University of Leeds where she became professor of engineering.

During her 20 years teaching and building links across the academic community, she has always stayed close to industry and sought involvement in influential initiatives. "I wanted to make a direct impact," she says, explaining her role on Government's Infrastructure Client Group, producing an "Infrastructure Routemap" to help infrastructure providers grow their capability. An approach that has been applied to major projects including Crossrail and HS2.

Bower is currently part of a panel producing ICE's *State of the Nation: Infrastructure 2014* — an influential report being launched this week making recommendations to policy makers to improve our infrastructure, ahead of the General Election.

"I wouldn't change a thing," she says looking back at her career choice. "Civil engineering has opened so many doors for me, and I am proud to be making a difference to the way major engineering projects are run."

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Civil engineering – help to shape the world

Civil engineers design and construct some of the world's most jaw dropping structures from the Sydney Opera House through to the London 2012 Olympic Velodrome and China's Jiaozhou Bay Bridge — at 26.4 miles long, it's the length of a marathon.

But civil engineering isn't just about building iconic structures. It's also about designing, creating and maintaining the infrastructure around us that we depend on every day — our roads, railways, bridges and waste facilities, our energy and water supply and our flood defences.

Meeting challenges

Civil engineers keep this infrastructure running and adapt it to meet major challenges such as population growth, the effects of climate change and disasters such as floods and earthquakes. Put simply, they have to innovate and come up with solutions to complex problems — they literally shape the world in which we live. There are many different specialisms within civil engineering and many different ways to enter the profession — and not all require a degree.

INSTITUTION OF CIVIL ENGINEERS
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COMMERCIAL FEATURE

Implementing small actions on a large scale to make a difference

An engineering career offers many rewards, including variety, challenge, teamwork and the chance to make a difference to people's lives. However, numbers of female engineers are low, as is the percentage of engineers from black and minority ethnic backgrounds when compared to current UK demographics. With 45 per cent of the working population being female and a recent Policy Exchange report forecasting a growing British ethnic mix, the time for change is now. By attracting and nurturing a more diverse workforce, the engineering sector can reach untapped talent and create a more inclusive and productive industry.

"We need to encourage and inspire more people from every background to be engineers — not as an issue of political correctness — but as a business imperative"

Allan Cook CBE, Chair, DLG, Fellow of the Academy and Chairman, Atkins and SEMTA

The Royal Academy of Engineering is working to increase the diversity of those considering and entering the engineering profession, as part of a STEM Diversity Programme funded by the Department for Business, Innovation and Skills.

The Academy's Diversity Leadership Group (DLG) brings together senior representatives from 40 engineering employers and associated organisations with a shared aim to work together on practical actions to improve the situation. Allan Cook CBE, Fellow of the Academy and Chairman of Atkins and SEMTA, chairs the DLG.

He says: "Confidence has increased in the engineering and manufacturing sector. However if we are to make full use of the opportunities this renewed optimism will bring we need to increase the skills supply. We need to encourage and inspire more people from every background to be engineers — not as an issue of political correctness — but as a business imperative."

The DLG focuses on attracting a diverse future generation and making engineering work environments more inclusive. The DLG works closely with Engineering UK, WISE and other organisations to maximise its impact and capitalise on work underway elsewhere. Although keen to encourage more women to discover the rewards that engineering can offer, the DLG wants to go beyond that, achieving inclusion and acceptance for all talent including ethnic minorities, disabled people and those with no family history in the profession. Success depends on demonstrated leadership commitment, tackling unconscious bias at all levels of organisations and implementing small actions on a large scale to make a difference.

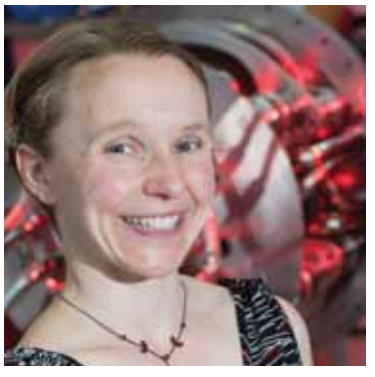
■ To find out more or to get involved with our work, contact: diversity@raeng.org.uk

ROYAL ACADEMY OF ENGINEERING
DIVERSITY LEADERSHIP GROUP

COMMERCIAL FEATURE

We are bottling the stars

Dr Jenny Cane, design engineer at CCFE (Culham Centre for Fusion Energy), is involved in the search for the ultimate energy source: nuclear fusion. This could produce an alternative source of power which will ultimately replace the old pollutants, oil, gas and coal, and which, unlike today's nuclear power, is almost risk-free.

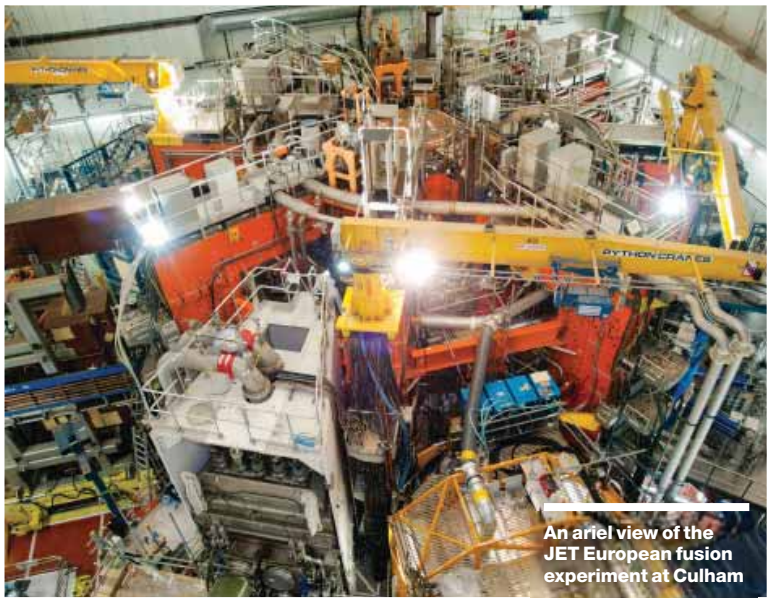


Dr Jenny Cane
Design engineer, CCFE

"The most important thing for me is to use my engineering skills to work towards a more sustainable future"

"I entered engineering because I wanted to use technology to make the world a better place, but also because I wanted to work on truly exciting projects," says Dr Cane, who studied aerospace engineering at Bath and Oxford. After seven years with a wind turbine company, she moved to CCFE last August to work on developing fusion energy.

"Fusion is like taking the sun and putting it in a bottle," she says. "We are using the same reactions that power the sun. We are fusing atoms together, resulting in a huge release of energy, which we could use to generate carbon-free electricity in sufficient quantities to power much of the world. We are effectively putting stars on earth to produce electricity — except that our reactors are 10 times hotter than our sun."



An ariel view of the JET European fusion experiment at Culham

CCFE is the UK centre for fusion research and development, where the team runs the world's largest fusion experiment, JET, on behalf of scientists around Europe. They are also playing a central part in designing and building the next-generation ITER fusion reactor. ITER is a huge international project that will for the first time produce industrial-scale quantities of fusion energy, paving the way for power stations using fusion. It is being built in Cadarache, France.

"I knew about JET and ITER before I started working at CCFE, but I was amazed to discover that CCFE is also a leading member of the European design team developing the first fusion power plant, which is expected to supply 2GW of electricity to the grid by 2050," explains Dr Cane. "The most important thing for me is to be working towards a more sustainable future, so it is fabulous to be part of a team developing safe, reliable electricity from fusion — one of the great challenges of the 21st century."

CCFE
FOR CULHAM CENTRE FUSION ENERGY

ROUND TABLE

RINGING THE CHANGES FOR WOMEN IN ENGINEERING

Leading women in the field of engineering gathered for a round table to discuss the issues facing female entrants into the profession today. They were ICE fellow Professor Denise Bower of Leeds University, Roma Agrawal, a chartered structural engineer at WSP, Michelle Richmond, director of membership at the Institution of Engineering and Technology (IET), Louise Aiken, Sigma Engineer at BAE Systems and Helen Kilbrine, process director at Fluor. The moderator was Virginia Blackburn.

Virginia Blackburn: What led you to want to have a career in engineering?

Denise Bower: I wanted a career that allowed me to bring together my academic and practical interests. My dad's a builder and I liked being on site, so that led me to civil engineering.

Roma Agrawal: I always loved maths and physics and knew I wanted to be a scientist from the time I was very young but what I didn't know was how to apply that, so I decided to do a physics degree. I wanted a technical career, but I wanted to contribute by making real things you could touch and engineering was the answer to that.

Roma Agrawal
Chartered structural engineer, WSP

Michelle Richmond: I was desperate to leave school at 16. I applied to banks and for an Apprenticeship and I got the Apprenticeship first so it was fluke rather than passion that

Denise Bower
ICE fellow and Professor, Leeds University

led me going into engineering. Having found how to apply engineering principles I fell in love with it.

Louise Aiken: I excelled in Maths and Science in school and my parents encouraged me to pursue these subjects (my Dad is an engineer) which, combined with the fact that I wanted to get involved with cutting-edge technology, led me to Engineering.

Helen Kilbrine: My family worked abroad so I attended an international school where I studied a wide range of subjects for a Baccalauréat which certainly helped show where my true aptitude lay. I discovered I was good at science and maths which led to a 20-year career in chemical engineering which I am thoroughly enjoying.

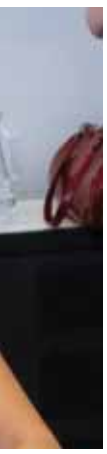
VB: All of you come from an engineering background and that is common among women in engineering. So how will we find women whose parents work in the arts and to whom it would not occur to go into engineering?

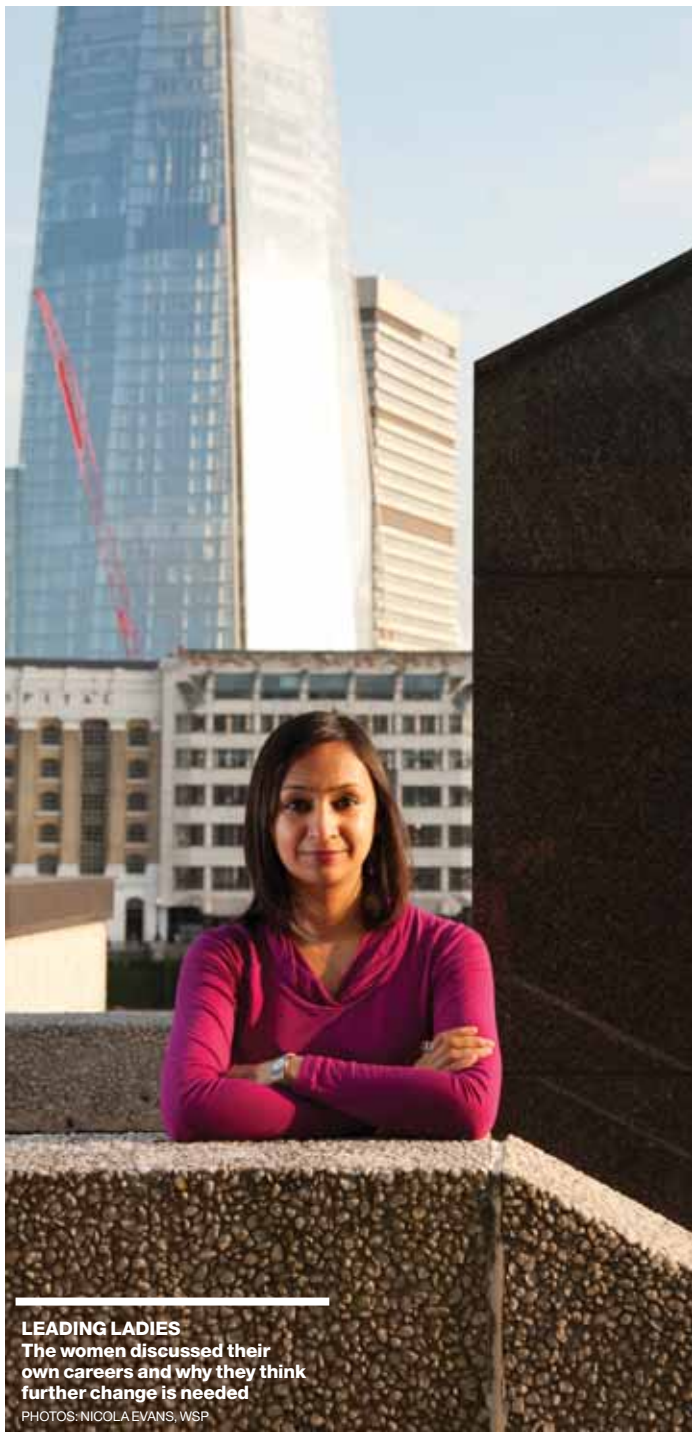
RA: For me it's about creative awareness because there's so much about engineering that goes into the arts. Fashion and technology can work together. Make people aware that the sets in theatres that they're watching are designed by engineers. Sound systems are designed by engineers. The manufacturing process for your clothes are designed by engineers. Engineering is at the heart of everything, but we need to make that link.

DB: Language can narrow how people perceive engineering. We need to make that link: rather than talking about "building a bridge" we could talk more about "creating a crossing to connect communities". Rather than "building the Olympic stadium" we could talk about creating the theatre for the greatest event this country has staged.

LA: The key is to ensure that STEM is promoted early to primary school children and that teachers ensure that both sexes get involved, as gender is not a barrier at such an early age.

Helen Kilbrine
Process director Fluor Ltd





LEADING LADIES
The women discussed their own careers and why they think further change is needed
PHOTOS: NICOLA EVANS, WSP

HK: Industry, Government and Education need to work together to do everything we can to promote the study of STEM subjects. I am involved in Fluor's schools outreach programme which includes running an annual engineering competition for local secondary

Louise Aiken
Sigma Engineer, BAE Systems

schools. Our women engineers also go into schools to talk to students about how studying STEM subjects can open up a world of opportunities.

VB: Should we think about rebranding engineering and if so, how?

MR: We need to put forward that it's modern and relevant. On the other hand, engineers are incredibly proud to be called engineers and wouldn't want to be called technologists. So there must be a balance between public perception and the worth an engineer feels as a professional.

RA: The person who comes to fix our boiler is called an engineer and I think that's a major problem. Children don't understand what engineers do and what our profession is about. We need to get away from the man in the boiler suit and showcase role models, and say fashionable women like ourselves can be engineers.

DB: School children aspire to make a difference. We need to find role models that everyone can relate to at all stages of their careers. These should be men as well as women — people who are great at bringing the excitement of engineering to life.

RA: The more the merrier. We need lots of different examples from different backgrounds — someone who has a physics degree, someone who is an electrical engineering apprentice. It proves there are so many different ways of getting into engineering.

MR: Access to the profession is extremely good, compared to how you become a lawyer or an airline pilot. Access and progression is one of the joys of being an engineer.

DB: Statistics show that there are now more women coming into engineering — 18 per cent of the Institution of Civil Engineers' graduate members are female. But we still

Michelle Richmond
Director of membership, IET

lose many in their thirties. We must focus on sustaining people in their careers, not just what people study at school.

LA: The diversity of engineering is not really understood for example automotive is very different to aerospace and it is important that people realise just how many STEM career opportunities there are, improving overall awareness of engineering as a valued career.

HK: Yes, we should definitely think about rebranding engineering. We have some of the world's best engineers here in the UK working in a range of industries such as Automotive, Aerospace and Infrastructure, to name a few, but we should do a better job of promoting them and our successes.

VB: Someone said there should not be a "pink door" into engineering. What problems do you find within the profession?

DB: We need to bring the art of the possible to life by having more women giving key note talks, being recruited and developed into leading roles, but we must only do this on the basis of "the best person for the role" and create the conditions for success.

LA: Some people underestimate your abilities as a female engineer because they think that you only got in because you are female, therefore it is important to ensure that that both males and females enter the profession on even criteria, and that we ensure that females have the right skills to compete with them, rather than create special entry routes.

HK: Today in Fluor there are more women in senior positions than at any other time during its history in the UK so there are signs that the status quo is changing. Our young women go to industry events, schools and universities as role models as we have found that this is one of the most effective ways of changing young people's perceptions of what is a professional engineer. I think that there should be an open door into engineering and the wider the better.

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NEWS

Increased diversity is good for business

Question: Why should companies strive to have increased diversity in the workforce?

Answer: Because the need to find common ground with each other makes for a sharper focus for solving problems.

Professor John Perkins
Chief scientific advisor to the Department for Business, Innovation and Skills (BIS)

ENCOURAGING THE YOUNGER GENERATION: Professor Perkins discusses the importance of getting girls interested in STEM subjects at school and why we need to work hard to change the perception of engineering PHOTO: SHUTTERSTOCK

One of the most important lessons to be learned in today's business climate is that diversity in the workplace leads directly to increased profitability and an improved corporate performance. "We are a very diverse society in the UK and the workplace should reflect that," says Professor John Perkins, chief scientific advisor to the Department for Business, Innovation and Skills, honorary Professor at the University of Manchester and visiting Professor at Imperial College, London and the author of a report about skills in engineering. "We have discovered that diverse teams come up with better solutions than those in which everyone looks like one another."

UK falling behind

One huge problem, however, is the relatively few women currently working in engineering. "It's not just a perception: the statistics support it," says Professor Perkins. "We're the worst of any country in Europe. It's partly a matter of deep-seated cultural issues. If you go into any school and look at subjects such as maths or physics and see an underrepresentation of girls, then you will equally see an underrepresentation of boys in subjects like English. There are very dated views about what engineers do: people think of dirty smoke stacks with people working in overalls in oily environments, and girls think that's not for them."

Professor Perkins thinks that there are two huge arguments for getting women into engineering — the first being simply that there are not enough engineers in this country and we need more. The other, however, is a question of social justice: engineering is a rewarding profession both financially and because it is interesting. "A huge amount of effort is going into encouraging young people into STEM subjects," he says. "We are looking at materials to make sure we are not discouraging girls. It is still not recognised that engineering is very social and can also be very creative. Engineering is about changing the world, which is a hugely creative endeavour. Multiple solutions open up."

> "Engineering is about changing the world, which is a hugely creative endeavour"

And it benefits companies, too, as demonstrated in a report, *Better Decisions Through Diversity*, published back in 2010. The findings are counterintuitive. The mere presence of diversity in a group creates awkwardness, and the need to diffuse this tension leads to better group problem solving, says Katherine Phillips, an associate professor of management and organisations at the Kellogg School of Management.

"There are also a growing number of role models both at starting levels and senior," says Professor Perkins. Change is in the air.

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YOUR LIFE

A new government campaign 'Your Life' was launched on 7 May by the Chancellor, George Osborne, to boost the numbers of young people, especially women, studying STEM subjects.

Over 180 organisations, including L'Oreal, BAE Systems and Facebook have pledged concrete action to increase female participation in technology, engineering and physical science.

From September a business-led campaign to increase the number of girls choosing maths and physics A levels and to change young people's perceptions of maths and science.

It aims to double the proportion of undergraduate engineering and technology degrees taken by women to 30 per cent by 2030 and ensure more women pursue careers at all levels in the fields of engineering and technology.

COMMERCIAL FEATURE

Flying high as a systems engineer

Loraine McIlree is a systems engineer working at Airbus, a career that she has found enormously fulfilling despite the fact that it is something she never even considered embarking upon when growing up.

"My sixth form college was strong in maths and physics, which I enjoyed, but engineering was not on my radar," she says. "But then the college offered us the chance to attend a talk on engineering. I went along — and discovered that lots of people don't realise what a good fun career it is to be in."

Loraine went on to read mechanical engineering at the University of Bristol, somewhat to her family and friends' bemusement. "They said, 'Will you have greasy hands? Do manual work?'" — and after considering a career in the financial sector, went for engineering instead. She first joined a small engineering company making aircraft parts and then moved to Airbus, where she started as a systems engineer working on landing gear. She was then promoted to airworthiness manager, following certification procedures for the wings, fuel systems and landing gear and is now working on the chief engineer's team on the A380, the largest commercial aircraft in the world. "At Airbus, we range from private planes seating 100 people to over 500 people on the A380," she explains.

Personal life

Along the way Loraine got married and had two children, a girl and a boy, now 11 and eight. Lorraine has always enjoyed an excellent relationship with her colleagues, working as they do as a team and she says of her male colleagues: "They were brilliant. They were scared of me being pregnant in the office in case something happened to me, but they were very supportive." After maternity leave Loraine returned to her career in Engineering. "It's great, be-cause I can work flexible hours," she says. However, it was the arrival of those children that set her off on a new path, becoming a STEM ambassador for schools.

Loraine McIlree
Systems Engineer, Airbus

"I was in the school to collect my children and I saw they'd been asked to draw pictures based on the topic of giants," she says. "One of them had drawn the plane I was working on. So I went in to talk to them about the plane and how big it is by explaining they could all get on with two grown-ups and all their friends and there would still be room for more. I explained how we made the plane and it all went on from there I do a lot of work in local schools because people see the Airbus site but don't know what we actually do. It is also important to talk to them because when children are asked what they want to do when they grow up, their reply will typically be influenced by someone they've met."

Last year, Airbus got involved in the Industrial Cadets scheme, whereby 12-14 year olds are mentored by industry professionals through specific assignments to teach them about a possible career. "I was a mentor to a group of girls in a local school," says Loraine. "They were given an environmental task to do: to pick a building in the school and research it to make it more environmentally friendly. They had to do the research, work out the benefits and the possible financial rewards. They wrote a report in a typical engineering style using clear and concise language and made a presentation to Airbus. They learned to assign roles, communicate clearly, plan tasks and follow to complete on time. It was a competition — and we won."

Loraine was also a founder member of Airbus UK's women's network, holding lunchtime lectures with internal and external speakers and addressing topics from new material technologies to developing confidence. "These were not just for women, but if something is arranged by women, more women tend to attend," she says. Loraine is also on the women's committee for the Royal Aeronautical society promoting the position of women in Engineering today. Her older child is a daughter: would Loraine like her to follow her into engineering? "I don't think she will - but yes, I would love it," she says.

For more information, visit
www.industrialcadets.org.uk

AIRBUS GROUP

INSIGHT

"Retraining women will allow us to hold on to the top talent"

The underrepresentation of women in engineering careers is a complex problem that urgently needs to be addressed, says Dr Katie Perry, chief executive, the Daphne Jackson Trust.

Ailie MacAdam, pictured, is Crossrail's Director of central section
PHOTO: CROSSRAIL

Dr Katie Perry, Chief Executive, the Daphne Jackson Trust

"Many women returning to the workplace seek flexible working, not necessarily part-time hours"

"Yes, we need to encourage more females to study sciences and engineering at school and university, and yes, we need to provide strong role models and mentors to demonstrate just how rewarding careers in engineering can be. But like other careers that require high level skills, and where technologies and thinking change rapidly, as soon as individuals, particularly women, look to their own future career path, they begin to see pitfalls.

"Carefully planned maternity leave often turns into a career break that lasts more than two years, and it's easy to see why some choose to move into less rapidly changing fields, where a step back doesn't have to mean losing a foothold. Fortunately, both commercial and academic organisations are recognising that here is a pool of highly skilled women that could be tapped, and who, with the right support and retraining could return to engineering careers and make an invaluable contribution to the UK's engineering skill base.

"The Daphne Jackson Trust is a charity that offers part-time paid fellowships to women and men wishing to return to research careers following a break of two or more years. Nine out of ten Fellows are women returning after a break to bring up children, and one in six is an engineer. One of the Trust's first returners, Professor Andree Woodcock, now leads the Integrated Transport and Logistics team at Coventry University."

Returning to work

"As an organisation, the Trust not only sees past career breaks, it knows that people acquire new skills during them. The Fellowship provides the mentoring and retraining that individuals need to rebuild their confidence and upskill, empowering them to make a successful return to work.

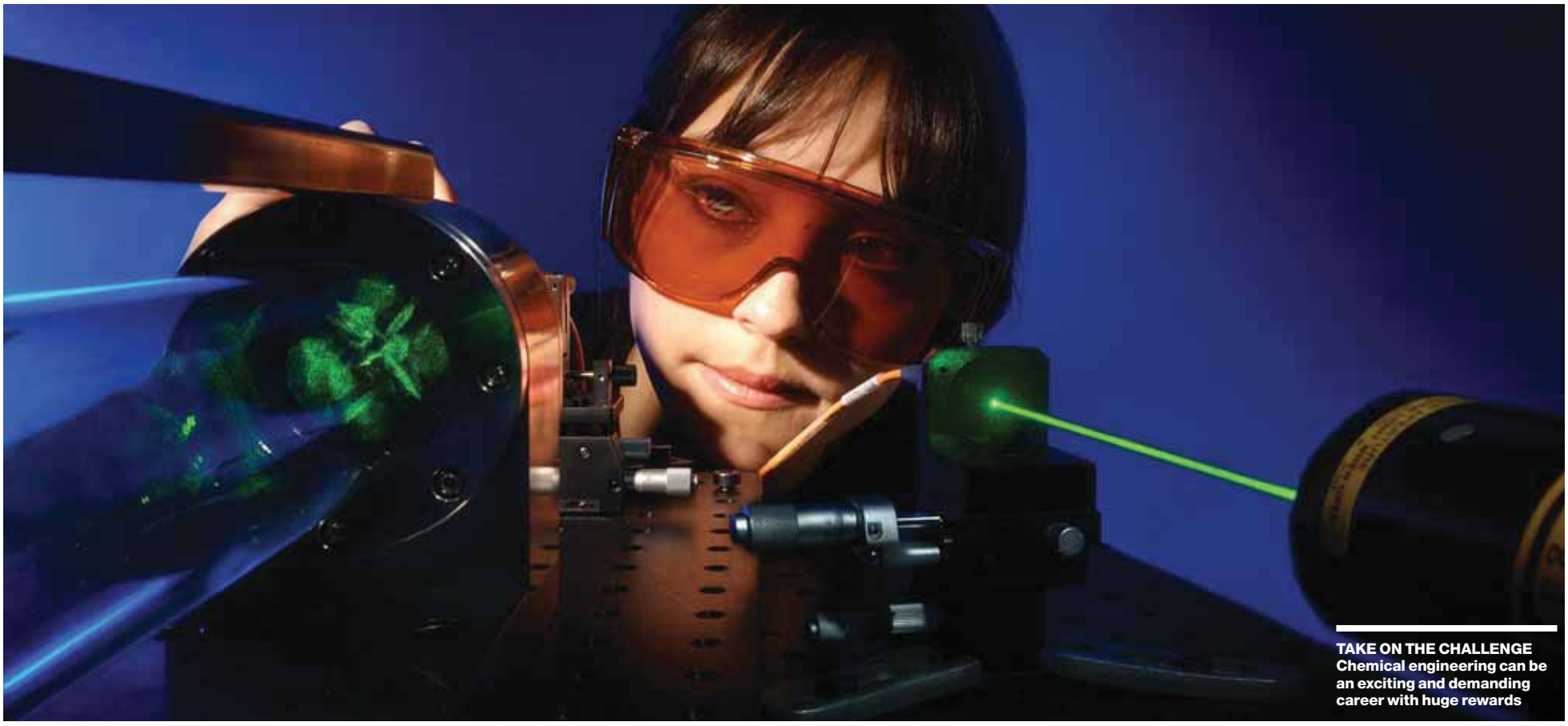
"Career breaks often extend beyond five years, during which time an individual's circumstances can change dramatically, making it harder for them to travel at short notice, relocate or work unsociable hours. Many women returning to the workplace seek flexible working, not necessarily part-time hours. For example, being able to work remotely, or adjust hours to fit with school terms, makes the work-life balance manageable, and the return to work sustainable. Bespoke training, identified by, and tailored to the individual, is also key to a successful return. Most Daphne Jackson fellows are returning to academic research, and the retraining the fellowship provides effectively puts them back on a par with their peers.

"Two thirds of universities in the UK have hosted a Daphne Jackson fellow, and increasingly, as organisations look for better ways to ensure equality and diversity in their workforce, more sponsors, including industry partners such as Rolls-Royce and Selex are supporting the scheme. But more needs to be done, and it's time that every research institution and R&D team stepped up to sponsor and host Daphne Jackson Fellows."

DR KATIE PERRY
Chief executive, The Daphne Jackson Trust

COMMERCIAL FEATURE

Breaking stereotypes to ensure more women enter engineering



TAKE ON THE CHALLENGE Chemical engineering can be an exciting and demanding career with huge rewards

As a champion of women in engineering, Heather Parkes from the Atomic Weapons Establishment (AWE) talks about her experience at one of the UK's leading centres of excellence for engineering.

To mark National Women in Engineering day, (June 23) chartered chemical engineer Heather, who has been working at AWE since 2005, is keen to encourage the next generation of female students into the field.

Working together to keep our world safe and secure, AWE in Berkshire employs leading experts in a range of disciplines — scientists, engineers, technicians and craftspeople. This unique workforce delivers warheads for the UK's deterrent, and uses its nuclear expertise to support national security.

Here, Heather explains why engineering is a great career path for women.

Heather Parkes
Chemical engineer, AWE

Why did you choose AWE?

My main draw to AWE was my desire to work in a challenging environment. Ultimately as a chemical engineer I was intrigued by the variety of scope of the technical work AWE engineers do. We are a centre of scientific, engineering and technological excellence, with some of the most advanced research, design and production facilities in the world. AWE is committed to supporting diversity and the development of female talent. Through its Skills Academy, schools liaison and technical outreach work, AWE aims to build a pipeline of its own female talent by fostering and encouraging an interest in science and technology.

Why and how did you get into engineering?

Early on, I gravitated to mathematics and science subjects. While completing my A-levels in maths, chemistry, physics and further maths, I participated in an initiative to motivate students into engineering — The Engineering Education Scheme, run by the Engineer Development Trust. Through this programme I was involved in an engineering project which lasted for six months. The organisation set us up with a local engineering firm. The process taught me a lot about working in the field of engineering, as a part of a team and how to apply the theoretical learning to a practical role. After this experience, I knew that I wanted to embark on a path in engineering but it also firmed up my choice of chemical engineering. I think experiences like this can help people early on find their path.

Why do you enjoy engineering?

I think a large part of the reason why fewer women take up engineering is a perception issue. There is still a belief out there that engineers have to get their hands dirty fixing things, when in actual fact there is a very diverse scope for a career path within engineering. The Women in Engineering Society are trying to break this stereotype along with initiatives like the annual WISE awards, which AWE is delighted to now champion. I love engineering because I feel challenged on a daily basis in my role. Being an engineer I get to create solutions to real world problems. That's one of the unique aspects of being an engineer — we work to fix problems that impact us all. The ideal place to get to is one were we don't need to encourage women into engineering. But until we reach that point days like today, National Women in Engineering day are crucial to spread the word about this great career path.

> "I love engineering because I feel challenged on a daily basis in my role. Being an engineer I get to create solutions to real world problems"

How is AWE supporting women in engineering?

AWE has supported me on the path to becoming chartered and I'm now supporting other engineers on this path.

AWE networks with like-minded organisations across the UK to support women in engineering. Specifically AWE now sponsors one of the annual WISE awards — The WISE leadership award. It is important to remember that on a day-to-day basis, I'm treated as an engineer, not as a female engineer.

How would you encourage a young woman into this field?

I would aim to inspire them as I was inspired, by letting them know how engineers impact the world. Nearly everything we touch in this world has been engineered from mobile phones to clothes to food. I would also tell women that a career in engineering offers a path of opportunity that can lead them across the world. I have many engineering friends who have combined their passion for travel with their love for the job. Being an engineer can take you places.

AWE

www.awe.co.uk

COMMERCIAL FEATURE

It's not just about construction, it's about improving people's lives

The Scandinavian builder of London's iconic Gherkin landmark — Skanska — has made diversity one of its top priorities. Skanska women explain how a career in the construction sector can be both rewarding and emotionally fulfilling.

Having just emerged from recession into a period of strong and sustained growth, there are now huge opportunities for women to start a promising career in the construction industry.

According to the Office of National Statistics, more than two million people are currently employed in the UK's construction industry, but women make up only 11 per cent of that workforce. And within that number, most roles are office based with less than 2 per cent based on sites.

The Government is part way through rolling out an ambitious national infrastructure plan that is expected to support 150,000 construction jobs.

Karin Lepasoon, global executive vice president, Skanska

Already, Skanska's UK operation has announced its intention to create a further 1,500 new roles by 2016 to deliver the projects it has won. This will add to its existing workforce of 5,500 people. "This is a fantastic opportunity to bring more women into our business," says Harvey Francis, who heads up the UK's human resources department. "We believe women in the workplace create a balanced dynamic and improve the working environment for everyone."

Demonstrating that women really can reach the very top of the sector, global executive vice president Karin Lepasoon sits on Skanska's senior executive team in Sweden. She regularly makes decisions that affect the company's 57,000 global employees. This year, she was named number 12 on the Top 30 list of female business leaders by national Swedish business newspaper, Veckans Affärer.

The ability of the industry to make a tangible difference to people's lives is something that resonates strongly with women. Lepasoon explains: "I agree with the person who said 'I am not laying bricks, I am building a cathedral'. It is both exciting and pleasing to be part of the development of our societies — building schools, homes, hospitals and other facilities that will help improve people's lives. And to do all this in a sustainable way, that's thrilling," she says.

Everyone has to start somewhere

Kerri Chambers, pictured right, is in the early stages of her career. The former bricklayer was named as runner-up in the Youthbuild UK Young Builder of the Year Awards, 2011. She says: "Getting involved with Youthbuild has given me the opportunity to train to become a fully qualified quantity surveyor. Working for a company like Skanska means I will be able to work on some of the country's most iconic buildings. It has given me a lot of confidence."

Kelachi Amadi-Echendu, working towards chartership with the Institution of Civil Engineers

Graduate engineer Kelachi Amadi-Echendu is working towards chartership with the Institution of Civil Engineers and has already gained experience on Crossrail. She is keen to encourage more women into the sector: "There are lots of opportunities to explore, so find out what construction companies do, speak to people already in the industry and find work placements. Don't let gender stereotypes put you off any aspect of the industry you are interested in. What counts is your enthusiasm and ability, and in my experience these will be recognised and respected regardless of gender."

Learning the ropes
Kerri Chambers, Youthbuild UK
Runner-Up Young Builder of the Year 2011

Katy Dowding, Woman of Achievement 2013 at the Women in the City Awards

Just like in its Swedish parent company, Skanska UK is pushing women to the top, with a quarter of its senior management team made up of women. One of its managing directors — Katy Dowding — was named the 2013 Woman of Achievement across all sectors at the Women in the City national awards.

A former chair of the National Association of Women in Construction (NAWIC) for eight years, Dowding explains that, as with many traditionally male-dominated professions, there used to be an assumption that construction was a 'man's job', and this ultimately means the industry has often been overlooked by women when choosing a career.

She says: "Although the word 'construction' probably creates images of cranes, bricks, mud and noise, the fact is that the industry involves so much more with a huge variety of roles and responsibilities, and that is how construction needs to be perceived."

Her advice to young women considering a career in the sector is: "Be yourself, develop your skills and be prepared to take opportunities when they come along. Women can sometimes be too cautious, so be brave and take the leap."

Skanska is recruiting, for more information on the roles available and how to apply, visit:
skanska.co.uk/careers

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