



"I help to reduce the amount of water, energy and chemicals we use when we wash our clothes."

THAILAND



ENGINEERING

A

BETTER

WORLD



STEVENAGE

UK



"I am trying to find out if there is life on Mars."

www.wes.org.uk

 @wes1919

 **wes**
Women's Engineering Society



Girls outperform boys in physics at GCSE and A level.



Other than medics, engineering students are the most likely to secure full-time jobs and earn good salaries.



Engineering generates 26% of the money in the UK's economy – that's £486 billion, enough to buy everyone in China two mountain bikes!

HAVE YOU EVER WONDERED WHAT ENGINEERS ACTUALLY DO?

Engineers work together to create solutions that help others. An important part of being an engineer is caring about the world around you and wanting to change it for the better.

Engineers use science to design the solutions to global problems, making sure that their strategies are simple and inexpensive. They work in industries that look at improving renewable energy, the environment, global health, and the basic infrastructure in our towns and cities. Engineers designed your smartphone, make sure you have electricity and clean water in your house, and even made your shampoo. They travel the world, sharing ideas between different countries that can make the future better for everyone.

Amazingly, we don't have enough engineers in the UK to do all the jobs that we need them to do. This means that engineers are in high demand – they are always able to find a job, and they are highly paid!

We know the best engineering solutions are the result of collaboration between diverse groups of people with different skills. People working in engineering might be logical, sociable, analytical, great communicators, collaborative, funny, empathetic, organised, supportive, creative – and any combination of those qualities – just to mention a few. There is no such thing as a 'typical' engineer. Instead, every engineer brings a unique set of skills, and all engineers are united by a desire to make a difference in the world.

This booklet contains stories of women working as engineers in energy, infrastructure, pharmaceuticals, space exploration, sports, and product manufacture (from pet food to vacuum valves!). Engineering is in everything.



"If you value team work, solving problems, resourcefulness and creativity, then engineering is the career for you!"

KATE MACTEAR



GRADUATE MECHANICAL ENGINEER

BAE SYSTEMS

I develop new technology for Olympic and Paralympic GB athletes.

Following my degree in Mechanical Engineering at the University of Bristol, I joined a graduate scheme at BAE Systems. This two-year process allows you to move around the company trying out all of the different business units. At the moment I am working with UK Sport to provide Olympians and Paralympians access to our engineering expertise and sports technology to help them achieve their medal dreams.

Projects in practice

I usually have four or five projects running at any one time. Recently, we have developed an ergometer for the Olympic track cyclists to test their performance efficiency; and we are working on virtual-reality technology to help familiarise triathletes with new race courses. We helped to design and manufacture a new sled for the GB skeleton team. Since using the new design, both Amy Williams and Lizzie Yarnold have won gold medals at the winter Olympics!

JAZ RABADIA MBE



SENIOR MANAGER OF ENERGY

STARBUCKS

I save energy with one of the biggest brands in the world.

While studying Mechanical Engineering at City University, London, I realised how I could apply my engineering skills to make a difference to the world's energy crisis. I am now energy manager at Starbucks, where I help the company reduce the amounts of electricity, gas and water used in stores across Europe, Africa and the Middle East.

Logic and creativity

A career in engineering is less about what you do and more about how you think. It is about being able to be both logical and creative to find solutions to global problems,

working in partnership with people from different cultures and backgrounds. If you value team work, solving problems, resourcefulness and creativity, then engineering is the career for you!

Like the rest of the world, the UK has identified we do not have enough women in engineering. Big businesses are crying out for good female engineers. There has never been greater opportunity to get an incredible world-changing job in the energy sector.

LOUISE WATERS



ENERGY CONSULTANT

PRACTICAL ACTION CONSULTING

I help to combat poverty by ensuring everyone has access to safe and sustainable energy.

During my Mechanical Engineering degree, I chose options that related to sustainability and international development. I have used these to move into the field of global technology, where I identify how important energy access is as a solution to poverty. Our vision is to provide all people with access to safe, sustainable energy within the next decade.

Great communicators

I use my technical skills every day to communicate effectively between on-site project developers and academic researchers. I have to collaborate with colleagues in the office and keep stakeholders up-to-date, as well as setting up videoconferences with colleagues and clients all over the world. My research analysis helps to influence the decision makers who have the power to provide basic life-enhancing services to those who need them most.



NEPAL



“Our vision is to provide all people with access to safe, sustainable energy within the next decade.”



SHARON ROSS



SENIOR CLUSTER ENGINEER

MARS PETCARE

I help to ensure our pets have the best nutrition possible.

I work as a Project Engineer for Mars Petcare. Our passion for pets is at the heart of everything we do – whether it’s the world-class science that helps to create great-quality nutrition, or the engineering that helps to create some of the best-loved petcare brands.

A better world for pets

We believe that pets make our lives better, and that’s why we can bring our dogs to work with us. When I’m not playing with dogs in the office, I spend my days designing, installing and starting up new machines and lines in our factories. I lead sustainability projects to reduce our carbon footprint, because we know we have a responsibility to the planet, people and pets.



EUROPE

ABBIE HUTTY



SENIOR SPACECRAFT STRUCTURES ENGINEER

AIRBUS

I am trying to find out if there is life on Mars.

I entered the Engineering Education Scheme while I was at Sixth Form, then I did a Mechanical Engineering degree at the University of Surrey. Today I lead a team of specialists who are designing the structure for ExoMars, the first ever European Mars Rover mission, which is due to launch in 2020.

Mission to Mars

Our mission is to design a piece of equipment that can look for extraterrestrial life forms. I have to think of practical strategies for development and testing, then discuss my results with other experts. My team of engineers makes decisions about which innovations are best, then I have to make sure that we will finish the whole project on time and on budget!

If our mission is successful, I will have helped to get one step closer to answering one of the biggest questions of our time: are we alone in the Universe?



STEVENAGE

UK



JO DOUGLAS



PHD RESEARCHER

UNIVERSITY OF BATH

I help to reduce the amount of water, energy and chemicals we use when we wash our clothes.

Before I began researching laundry detergents, I had no idea what Chemical Engineering involved. I was really excited to discover that it connected the three subjects I’d enjoyed most at school: maths, chemistry and physics. My research looks to demonstrate how we can reduce the amount of water, energy and chemicals we use when we do the laundry. I am studying the clothes-washing habits of

households in developing countries. Worldwide, we do so much laundry that even a small change could help to protect the environment massively!

Global impact

On a typical day I design and run experiments in my lab, develop a new piece of equipment for testing, analyse research data, and discuss results with my colleagues. I am really lucky to have been able to share my research and work with people all around the world, including people in Germany, Thailand and the USA.

“I am really lucky to have been able to share my research and work with people all around the world.”

KATIE SWANICK



SENIOR CIVIL ENGINEER

COSTAIN

I help thousands of people move across London safely, every day.

I was 16 years old when I attended a Construction Industry Training Board (CITB) conference that inspired me to take up work experience with Costain – the company I now work for. My work experience at Costain showed me that Civil Engineers are vital for creating and improving the UK's infrastructure – the roads, railways and services that enable communities to function.

Innovate and inspire

I am a Chartered Civil Engineer, which has given me the opportunity to work on lots of major infrastructure projects. At the moment I am working on Crossrail, a new

train line running across London. It is the largest and most complex civil-engineering project in recent UK history. On site, I provide and manage all relevant technical and design works. I ensure that contractors implement safe and efficient decisions during construction.

I am incredibly passionate about promoting the construction and engineering industry to young people. As well as attending school events, I mentor graduate engineers towards Chartership.

Sure, it can be challenging, but my job always gives me a great sense of accomplishment and pride. I love that my family and I, and the rest of the UK, can benefit from what I have helped to build.



MANCHESTER

UK

"I love that my family and I, and the rest of the UK, can benefit from what I have helped to build."



LOUISE HOSKING



GRADUATE ENGINEER

EDWARDS VACUUM

I help combat climate change by developing systems that reduce and remove the amount of global-warming gases emitted by industry.

I work as a Graduate Engineer creating system flow charts that identify the important 'rules' for how our products should work. The flow charts identify system modifications that can make products work more effectively. For example, they could illustrate an important function we need to incorporate into one of our vacuum or gas-abatement products to make sure the technology works as efficiently as possible.

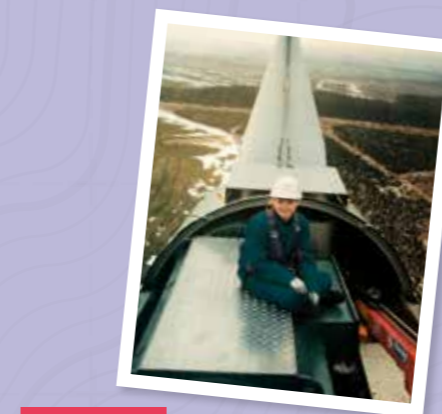
My working day involves discussing our current technology with my colleagues, then working out how we might improve it and translating that into diagrams. I have to visualise these in my head, then use software to make the flow charts accessible for my colleagues across the company. Edwards Vacuum is a global company, so my meetings occur cross oceans and time zones: all made possible by videoconferencing.

Diversity in expertise

My first degree was in Geology, which has prepared me for the wide-ranging set of skills that jobs in engineering need. I love my job and find real satisfaction in the fact that I work in an industry that welcomes and utilises diverse expertise.

BURGESS HILL

UK



CLARE LAVELLE



ENERGY CONSULTING LEADER

ARUP

I am working with the energy industry to tackle energy 'trilemma' challenges.

I enjoyed physics and maths at school, and was interested in how technology works. My dad was an engineer, so I grew up understanding what engineers do, and the potential job opportunities. I realised that a career in engineering is accessible to anybody who is inquisitive.

Everyday is different

I don't really have a typical day, my career is incredibly varied. I have climbed wind turbines to carry out maintenance, presented to a crowd of over 350 at a conference in Rio, and published technical reports on emerging renewable technologies, among many other diverse experiences. I enjoy working in the energy and renewables industry, because I am motivated by the fact that I am doing something socially useful – lots of my colleagues feel the same and I love working with like-minded people. The decisions we make have the potential to have a significant benefit to society. They might alleviate fuel poverty, address climate change, or provide secure energy that is fundamental to our economic health.

SCOTLAND



"I am motivated by the fact that I am doing something socially useful."

CHARCHITA MISRA



TECHNICAL OPERATIONS MANAGER

GSK

I develop technologies and medicines to help people live longer.

My grandfather was an Electrical Engineer who worked with Nobel prize-winning Indian physicist C.V. Raman. I was inspired by his stories about bringing electrical infrastructure to rural communities; and with my love of science as a subject at school, I looked for a career that would improve lives, too.

Better health for all

GSK is a science-based business that develops new technologies and medicines that help people to feel better and live longer. One part of my job in operations is to ensure

that we develop and manufacture our products cost-effectively, so that medicines can reach as many people across the world as possible.

Any issues with our medicines – from the way they are tested to the way we manufacture them – can cause major financial and business risk. I make sure that we are always working according to the strict rules of the pharmaceutical industry. As long as I get that right, safe medicines can reach the people who really need them.



LONDON

UK

THERE ARE MILLIONS OF WEBSITES THAT ARE COMMITTED TO INCREASING THE NUMBER OF WOMEN IN STEM. HAVE A LOOK AT OUR FAVOURITES:

Tomorrow's Engineers www.tomorrowsengineers.org.uk

Born to Engineer www.borntoengineer.com

Science Grrl sciencegrrl.co.uk

Women in Engineering wie.ieee.org

Institute of Engineering Technology faraday.theiet.org

Young Engineers www.youngeng.org.uk

Engineering Community engineering.community

Girl Geeks www.girlgeeks.co.uk

Future Morph www.futuremorph.org

Stemettes www.stemettes.org

AEROSPACE ENGINEERING

Designing air transport vehicles such as planes, satellites and space rockets. This really is rocket science!

CIVIL ENGINEERING

Designing and building structures – buildings, bridges, roads and even whole communities. Think big, like the Shard!

MEDICAL ENGINEERING

The link between engineering and medicine – including technologies to help diagnosis, monitoring and treatment. Alternative to medicine!

MECHANICAL ENGINEERING

Designing things, knowing how things work, why they work and how to improve them. Involved in almost anything you can think of!

PRODUCT DESIGN

The combination of design engineering and manufacturing to create functional products. For the really creative people!

ENVIRONMENTAL ENGINEERING

Protecting people from the adverse effects of damage to the environment, such as pollution and global warming. Solve one of the most important issues of our generation!

ELECTRICAL ENGINEERING

Focusing on the design and manufacture of electrical systems for buildings, transport and construction. Think phones, virtual reality and even driverless cars!

SPORTS ENGINEERING

The technical application of maths and physics to help solve sporting problems. Want to be involved in the next Olympics?!

CONTACT US

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🐦 @wes1919

🐦 @YMB1919

