

WOMEN IN ENGINEERING



THINKING DIFFERENTLY ABOUT SEARCH

Why are there so few women engineers in the UK?

According to the Institution of Mechanical Engineers, fewer than 1 in 10 engineers in the UK is female - the lowest percentage in Europe, according to the Women's Engineering Society. Countries like Latvia, Bulgaria and Cyprus lead with nearly 30%. The fact that the UK has so few female engineers has not gone unnoticed.

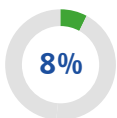
Historically the engineering profession in the UK has put this down to poor marketing. More recent studies suggest the reasons why there are so few women engineers are more systemic.

According to the Women's Engineering Society, too many students in general and women in particular thought choosing engineering means they would become a mechanic. A number of studies in both the UK and the USA suggest that a lack of female role models in engineering and a perceived glass ceiling means women are not sufficiently represented at the top of the profession, therefore women do not see engineering as accessible or aspirational.

The statistics speak for themselves



of new apprentices are female.



of engineering apprentices are women.

According to government statistics in England in 2016/17, the total number of active apprenticeships reached 912,200; about 74,000 new starts (15%) were in engineering-related roles. However, while 53% of new apprentices are female, there is a striking gender imbalance in engineering – only 8% of engineering apprentices are women.

On the face of it poor marketing and a lack of female leadership in the profession can't be the only factors at play here. These traits are common to a number of other professions like financial services that have much greater female representation.

Engineering has not been a women friendly environment

A report in 2017 from the Institute of Mechanical Engineers entitled Stay or Go focused on the experience of female engineers early in their career. The report strongly suggested the sector had "a very masculine narrative".

Female engineers are regularly mocked, told to "toughen up" and assumed to be administrative staff, the report found, with 63% saying they experienced unacceptable behaviour or comments – three-times that in finance or medicine. Surveyed women reported male staff hanging pornographic images around worksites and scoring female colleagues for sexual attractiveness.



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of engineers are women



of engineering graduates are female

Almost 40% of UK female engineers stated that they were simply not treated equally – including by their managers, the people they managed or by their peers. Over 60% believed it was easier for men to progress within the engineering sector – marginally higher than in finance, but significantly higher than in medicine.

Statistics also revealed that female engineers were restricted before careers even began, with half leaving the profession after completing degrees.

It is tempting to believe that these attitudes are confined to the UK but that is not the case. In the US 13% of engineers are women and 20% of engineering graduates are female. This means the US is better than the UK at attracting women into the profession but 40% of women engineering graduates in the US either quit or never enter the profession.

In the US there is a widespread cultural belief that men are more scientific and better leaders than women, something highlighted in a study by sociologist Carroll Seron at the University of California.

Professor Seron and three other professors asked students on four engineering courses in the US to write diaries of everyday experiences. Although the women would not vocally report sexism to staff, many described gender stereotyping and sex segregation, with female engineers often expected to be secretaries while men led projects.

The study showed women face resistance because of widely-shared, often unconscious views. Middle managers must be educated on the benefits of diversity and inclusion, to support women and encourage more co-operative working environments.

The future for women in engineering looks much brighter



It is fair to say that a huge amount of effort is now being made in the UK to make the profession more attractive to women.

In 2017 the Institution of Mechanical Engineers and Gatsby Charitable Foundation commissioned ICM Unlimited to undertake a survey of current and newly qualified female and male engineering apprentices and undergraduates, as well as non-engineering apprentices. This research made a number of recommendations aimed at getting more females to build a career in engineering.

1. Employers, FE colleges and other organisations should broaden their targeting to include young women with interests in creative crafts and the arts.
2. Engineering careers initiatives should develop programmes that target young women aged 15–25, since female engineering undergraduates and apprentices appear to make their career decisions later than their male counterparts.
3. The engineering community should ensure that it offers practical support and advice to organisations who wish to promote the value of engineering apprenticeships in schools.
4. Engineering UK, along with its partners in the engineering community, should draw on the report's findings, as they work together to reposition the Tomorrow's Engineers programme; specifically to act on the knowledge that women choosing routes into engineering careers tend to make this decision later, and that their hobbies and interests are less likely to be 'tinkering' and more likely to be linked to creative crafts and arts.
5. STEM Learning Ltd should recruit a cadre of female engineering ambassadors who are trained to highlight specific messages about engineering apprenticeships, including:
 - The creative problem-solving aspects of engineering.
 - The suitability of engineering careers, even for those who have not harboured a longstanding interest in the subject.
 - How the changing nature of engineering and technology will require future engineers with a variety of skills and interests.

Significant effort is being made to raise the profile of engineering amongst women and celebrate their contribution to the profession.

High-profile personalities are getting involved. Jenson Button, the former Formula One champion and Santander UK ambassador appeared alongside a host of high-profile speakers at the Formula Student World Finals at Silverstone, run by the Institution of Mechanical Engineers. Button said "female engineers are already making a big difference in motorsport, but that we need a far higher percentage in order to address imbalances. I've worked with very competitive women at the highest levels of engineering, but we need many more to enter the field".

A number of high-profile publicity initiatives have already taken place. Backed by the Women's Engineering Society and sponsored by Scottish Power, the Top 50 Women in Engineering initiative aims to boost female uptake of engineering roles and careers by celebrating the notable achievements made by women in the sector. The most recent winners were noted in a supplement with the Sunday Telegraph on 24 June 2018. [See list](#)

Women already in the profession are also playing their part. Kerry Knight, Mechanical and Electrical Fitter with BAE Systems, Lesley MacRury, Network & Communications Manager at Scottish Power are amongst a raft of female engineers working hard to promote their profession.

Significant progress has been made to raise the visibility of engineering as a profession amongst women. The situation now is best summed up by Denise Giddy, Global Machinery Manager at Air Products who was a highly articulate and visible supporter of International Women's Day on March 8th 2018. She stated:

"There is still some way to go. STEM outreach and positive female role models have really helped raise awareness of the opportunities that a career in engineering can offer. However, while chemical engineering, for example, seems to attract a good percentage of women, other disciplines such as my own are still dominated by men. If we're to attract the very best skills, this needs to change, and I hope that positive stories such as mine, can play a significant part in bringing about this change by showing that there are many women – like me – who experience respect, professionalism and an environment in which they have equal opportunities to make a difference and get ahead".

What Next?

It is too early to tell whether these initiatives will result in the UK seeing a similar proportion of female engineers found in countries such as Latvia, Bulgaria or Cyprus. Anecdotally attitudes towards women in engineering are changing for the better and there is no doubt that women are every bit as capable as their male colleagues. If the UK economy is to thrive then we need more engineers and a larger pool of truly gifted engineers. That will only be achieved if the profession becomes a much more attractive profession for the 46.5% of the UK workforce made up of women.

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