

Women in Engineering, written for 'Process Industry Informer' May 2015

If you work in engineering and read a lot of the engineering press you would be right in thinking that you have heard more talk about the lack of women in engineering over the last couple of years than ever before. And depending on the sector you work in, you may also have noticed more young women entering the profession, and those that do are invariably competent and do very well. This is because they have made it there often against the odds, and have had to be very determined to overcome a number of barriers to get there. But why do we want more women in engineering, and why is it so difficult to attract them?



To understand this we need to take a look back at the history of women in engineering, and the corresponding history of the Women's Engineering Society which was established in 1919. During the First World War women were encouraged into these technical roles in their thousands to make the bombs and munitions, aircraft wings, and an array of other engineering equipment that the war effort required. And they did this with great success - there is evidence to show that women were especially suited to the 're-engineering' of production processes to improve efficiency, and were used as consultants to make improvements to these processes even after the war finished. But the end of the war brought an act called the Restoration of Pre-War Practices which prevented these women from continuing in these technical roles, and so the die was cast and we reverted to an industry which remained the domain of men. Come the Second World War a very similar situation occurred, but again after the war women were no longer encouraged to remain in these roles, and the ones that we know to have been successful at this time are all extraordinary women who went against the grain.

So in general terms engineering has continued to attract either only the most determined women, or those who have something that we call 'engineering capital' - a parent or close relative who works as an engineer, which has meant that the number of women in engineering has remained at less than 10% for decades (the lowest in Europe). But then came the ENGINEERING SKILLS SHORTAGE that we hear a lot about these days, where according to Engineering UK we will need to double the number of graduates and technicians over the next 10 years to keep up with the predicted growth in the sector. This has focused the mind somewhat and it has become obvious that we are not going to do this unless we appeal to more than half of the population (i.e. the male half), and start to encourage more girls to consider engineering. But the skills gap is not the only reason we need more women. Evidence is growing in engineering as well as other sectors that shows the benefits of diverse teams of workers: productivity increases, profit increases, the working environment improves, and staff feel happier at work and are more likely to stay. And with the use of automation and advanced processes, engineering is not the heavy, physically demanding industry that it used to be, so there is no good reason for not encouraging women into the industry these days.

So with all of these positive reasons to attract more women to engineering, why is it so difficult to convince girls that engineering is a suitable career for them, and why do we find that when we do convince them they often don't stay?

The reasons why girls don't choose engineering are numerous, but not complicated. One reason is that girls, their teachers and their parents don't know enough about what engineers really do - or when they think they do they equate engineering with a dirty job, or one which involves fixing car engines or boilers. In addition we have the problem of unconscious bias that we have across many careers which stereotypes different sexes to different careers. It is a problem that affects boys taking English A level as much as it does for girls taking physics. We also have the issue of good physics and maths teachers being thin on the ground and teaching in a way that doesn't appeal to girls. We know

traditionally that girls like to learn more about the context of a problem and not the problem in isolation from the context. We use the example of the lightbulb, where if you ask a girl to wire up a circuit to get a light bulb to come on then she is more likely to do it if she knows that the light is a signal to a deaf person that somebody is ringing the doorbell, whereas the boy isn't as concerned with the context or the reason. Another issue is that we don't do enough to stress the importance of creativity in engineering, and the need for the diverse range of skills that girls often bring with them such as communication, organisation and innovation.

But we're not failing completely and we do encourage some girls to see the benefits of a career in engineering, and thankfully we are finding more and more girls entering the industry, so the next problem is how to look after them and get them to stay.

Being in a minority in any situation can often be difficult, and whilst it might be easy to see your female colleagues as 'one of the lads', unless the organisational culture is one of inclusiveness it is often the case that this culture will not attract and retain women employees. Unconscious biases need addressing, and a supportive environment where women feel valued and able to be themselves at work and not subject to continual 'harmless banter' is essential, and this is equally true for any other minority group.

If your organisation is struggling to attract women to apply for your opportunities, it is worth thinking about where you advertise and the type of language you use in your job adverts. We have a lot of evidence that points to the fact that women see themselves as 'who they are' and not 'what they do', so your job adverts need to reflect this if you truly want a diverse workforce, and it might be that different ads for attracting different genders are required.

Maternity leave is an inevitability with many women employees too, but this needs to be seen as an opportunity and not a threat. And more and more often in the future we will see men taking paternity breaks too, so we need systems in place that support and progress these employees whilst away from the workplace, and reintegrate them to a meaningful career afterwards, not penalising them. Lots of good practices exist around career breaks, and if you have ever calculated the cost of losing a valued employee because of a maternity break, then you will know that it is well worth the small investment in supporting that employee back to a valued role in the organisation after their break.

And don't forget that 23 June is National Women in Engineering Day, so this is an ideal opportunity to look at your own practices for attracting, developing and retaining your female engineers – or working with schools to encourage your future workforce. www.nwed.org.uk

Eur Ing Dawn Bonfield CEng, FICE, FIMMM, FWES

President

Women's Engineering Society (WES)

Michael Faraday House

Six Hills Way, Stevenage

Herts, SG1 2AY

Tel: 01438 765506 (office answerphone)

01438 211403 (Dawn)

07881 905520 (mobile)

office@wes.org.uk

www.wes.org.uk

Twitter: @WES1919

National Women in Engineering Day, 23 June 2015

[Register for the WES e-newsletter here.](#)