



MECHANICAL ENGINEERING | EDITORIAL

Women into Engineering: An interview with Simone Weber

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Additional information is available at the end of the article

Figure 1. Simone Weber.



1. What made you decide to be an engineer?

I have always loved finding solutions to all sorts of problems and I always knew that I wanted to work in a technical area. Yet, a lesson learnt during my apprenticeship, qualifying to become a Technical Draughtsperson in a small bus company, triggered my decision to becoming an engineer. I quickly realised how important it is not to come up with just “a” solution. A theoretical solution might result in a design that would never work in reality. The skill of combining practice and theory is the reason why I wanted to become an engineer, learning about the tools available to solve problems.

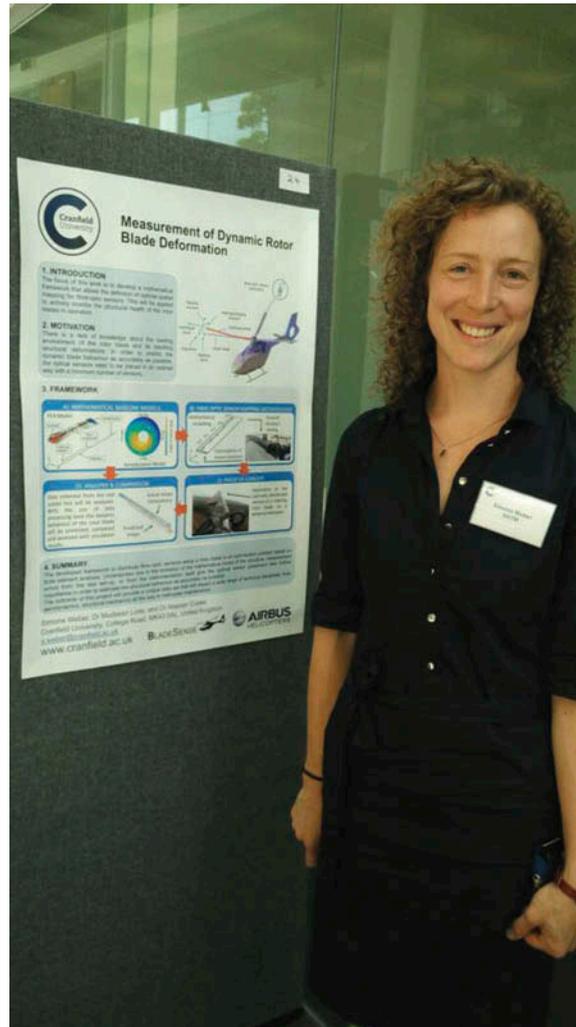
2. Growing up was there anything in particular that piqued your interest in engineering, or is it something that you have always been around?

My grandfather has been a lifelong inspiration to me. He always encouraged me to find simple solutions to any sort of complex problems, and I loved the creativity involved and the part of building and implementing it into reality. Still nowadays, he amazes me with the sort of solutions he comes up with!

3. Could you tell us about what you do at Airbus Helicopters UK and what your PhD covers?

My work at Airbus Helicopters UK (AH UK) and my PhD are strongly interlinked. The BladeSense project aims to mount fibre optic sensors along the length of a blade to determine its “health” and identify early on whether there are any changes to how it behaves. We have four project partners involved: Airbus Helicopters UK (lead partner), Cranfield University, BHR Group and Helitune. As Technology Integration Manager, I am responsible for combining the technical aspects of all parties. While the project partners are developing the health monitoring unit as well as the robust fibre optic instrumentation system, my PhD focuses on developing a mathematical framework that allows the definition of optimal spatial mapping for the fibre-optic sensors. In addition, my work involves the development of the structural rotor blade model of the test blade, as well as developing a coupled aeroelastic helicopter model. Conducting experimental testing, both on a rotor blade in the lab as well as on a full size helicopter, will demonstrate the feasibility of the concept.

Figure 2. Simone about to give a project overview.



In the long term it is intended to apply the developed technology to a helicopter in flight. This will be the first time ever that this type of data has been collected. The outcome of this project will provide a unique data set that will impact a wide range of technical disciplines, from aerodynamics to helicopter maintenance. For example, with the knowledge of the recorded data it might be possible to improve the conventional rotor blade design to reduce its weight or performance.

4. What do you enjoy most about working on the project BLADESENSE?

I am very lucky to work on a project with a scope as big as BladeSense. It covers all aspects ranging from structural model development, to aerodynamics, optimisation, all the way to experimental testing. I absolutely love the combination of theory and practice and to be able to work with such a great team on this project. Also, leading the project from a technological perspective gives me a great insight as to what each project partner is developing. This enables me to learn even more!

5. Who or what inspires you?

Many people in my daily environment inspire me with their actions, dreams, aspirations or achievements, may it be from a private or work related nature. I am very thankful for that because otherwise I do not think I would be where I am today.

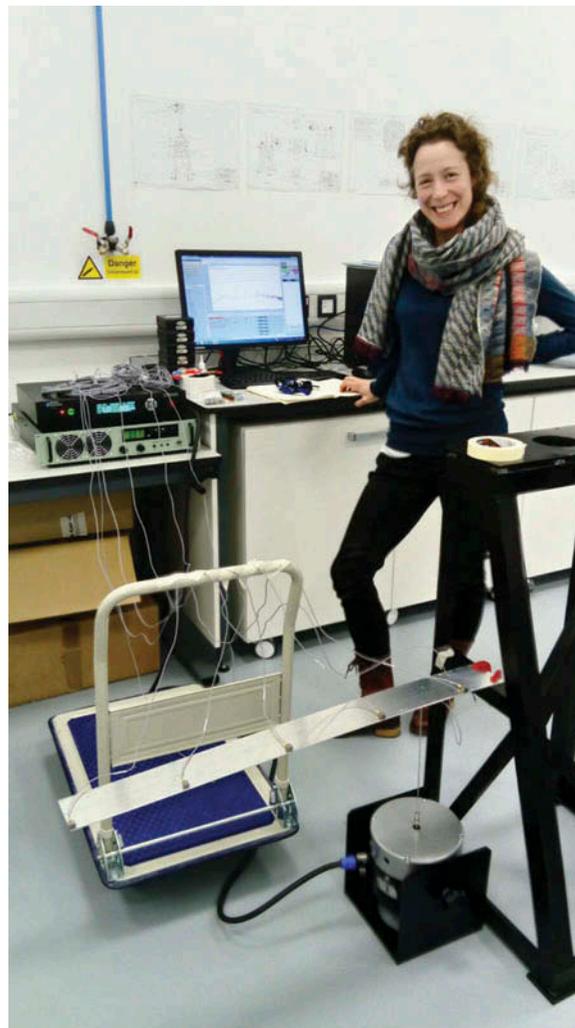
6. In 2017 you were named as one of the Women's Engineering Society's Top 50 Women in Engineering Under 35. Congratulations! What did it mean to you to be listed alongside some of the most successful women in the industry at this stage in your career?

I was very honoured to be recognised and selected as one of the Top 50 Women in Engineering. Nevertheless, at that stage I felt it was not quite deserved as I had not demonstrated a successful outcome of the project nor had I completed my PhD. There are so many young engineers (male and female) who should receive an award for what they have achieved.

7. You're already one of the top young women in engineering and only in the third year of your PhD. What's next?

Finish my PhD! After that I will take on my next challenge. The most wonderful part of my work is that with being an engineer, learning how to work as a scientist, and understanding how research projects are managed, I am able to look at the bigger picture in order to make a change in society someday.

Figure 3. In the lab setting up a small test case.



8. Your PhD at Cranfield University is sponsored by Airbus Helicopters UK. Is this a widely available opportunity?

No, my PhD is the first to ever be done with AH UK. Apart from being very persistent trying to convince AH UK to fund my PhD, the timing was perfect. Many factors, such as the interest from the company to implement research into their organisation, the available funding opportunity with the Aerospace Technology Institute, and interest from Cranfield University led to this unique opportunity to pursue a PhD.

9. When working in industry or throughout your degree, have you noticed a gender imbalance? How has it affected you?

Yes, I have had to overcome quite a few gender barriers during my career. While doing my apprenticeship I had to learn quickly not to take comments or criticism personally. I always had the feeling that I needed to prove myself to be accepted as an engineer. Now looking back, I know that some of these gender barriers have not been necessarily created by others, but by my own psychological state of mind. Being part of a minority I felt I was different which resulted in me working harder and pushing myself to my limits. Yet, this continuous pressure allowed me to grow as person.

However, being a woman in the engineering sector can also bring benefits. Any minority group stands out and is therefore spotted much quicker within an organisation, which is advantageous for networking. This consequently helped me to complete my tasks in a more efficient way and I am sure this would not have been the case if I were male.

11. What do you think is the reason for these barriers existing?

From the outside, it might seem there is a barrier existing because of gender imbalance, yet once immersed one realises that these barriers disappear. I believe women often create their own barriers which are mainly based on lack of confidence. Yet, I believe that is a learning path every one of us needs to follow by themselves. It is notable however, that all the females I know who work in the engineering sector are incredibly strong women.

12. Why do you think engineering is often perceived as a “male” occupation or area of interest?

I strongly believe that this stems from our society creating these stereotypical perceptions. This ranges from school books featuring a male engineer or female nurse up to the media making use of stereotypes in order to attract the desired customers for their products. It comes back to a society where boys grow up and are directed towards engineering but girls get dolls put in front of them.

13. The conversation around women in STEM subjects, engineering in particular, has been ongoing for some time. What more, in addition to existing initiatives, needs to be done in order to address the balance of women and men in engineering?

Our entire society needs to change in the way we think and act. A lot is done already in terms of recognising female engineers and scientists and creating opportunities to talk about their work. Yet, if society really wants to strive for gender balance in engineering, equal opportunities need to be created for both genders - free of any preconceptions and with open mindedness. It is vital to realise the significance of “what” has been achieved independent of the gender. Otherwise positive discrimination can lead to tension and unfair competition between both genders.

14. How can information about how to get into engineering be made more available to young women?

It is very important to present young people with a broad variety of job possibilities. Many events are already organised by schools to show girls the technology and engineering opportunities in companies and universities. Yet, it could be valuable to organise small work shops specifically aimed at young females to increase their confidence in maths, physics, science and craftsmanship. In this way they might feel less intimidated by the boys. This is particularly important for girls from a very early age as we are characterised and imprinted in our childhood.

Additionally, showing girls examples of great female engineers or scientists, such as Marie Curie or Rosalind Franklin could give them motivation and inspiration.

15. What if “conventional” gender roles were filled by non-conventional people to change people’s perceptions?

This would definitely help change the way society thinks.

16. Finally, do you have any advice for other young women starting out in engineering?

Be passionate about what you do. I strongly think that this is the key driver to any success and it will keep you going no matter what happens. Always believe in yourself and never get put off by other people’s comments or actions. Take every single opportunity to learn and keep on smiling and have fun because that is the key to great ideas!

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