**BBC Bitesize Schools Tour 2023**

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**CAREERS STORY QUESTIONNAIRE**

1. Where did you grow up? Where do you live now?

I grew up in a village in North Yorkshire near to York. I now live in Newtown.

1. What is your job title?

Graduate Engineer.

1. What organisation do you work for and what do they do?

I work for Control Techniques who you may have heard of. We design and manufacture variable speed drives. Drives are machines that make motors spin in different ways. You will probably have used a control tequniques drive without realising it, they are in most lifts in the UK spinning the motor that pulls the lift up and down, they are inside roller coasters- like nemesis and they are used in conveyor belts. When a drive is used with a motor the system uses much less energy meaning its more efficient.

1. Did you always know what you wanted to do when you were at school?

I wasn’t always certain what I wanted to do and my career thought process bounced around for a while. At first I wanted to be an architect, then a doctor, then a teacher and finally I though I wanted to work in language. All I knew is that through my career I wanted to make a difference to climate change whether that was through education, designing sustainable housing or through international relations. However, when I started my GCSEs and through my A-levels I realised that I really enjoyed maths and sciences and I especially enjoyed making things which was the real driver behind my choice to do engineering. At that time I lived in the shadow of three power stations which was a constant reminder of the damage the energy industry is doing to the planet so I chose electronics and electrical engineering so I could get the skills to become part of that industry and hopefully change it for the better.

1. What were your first steps into this industry?

I think I’m still making my first steps into the power electronics industry because this is my first job. Ive worked for my company for 4 years during my degree doing summer job placements and have worked for them full time for a year.

1. What do you love about your job? What’s exciting about it?

I love when I finally hold a finished printed circuit board (PCB) which you can see me holding in one of the images. A PCB holds all the electronic components that manipulate the electricity to make the machine work. A PCB can be the culmination of years of design work and its great to see your hard work reflected in a working product that you know will be used to do something useful. Some other fun things are when I get to go and see the drives being built at the factory where there are loads of cool machines like the one that places all the components at lighting speed and the giant ovens that melt the solder that joins all the wires together. I also really enjoy prototyping circuits which is where you get to make up a circuit that you think will do a certain job, you simulate on the computer, build it on a test board and then check it does everything you want it to, which it never does first time but that only makes it more satisfying when it finally works.

1. Do you think any GCSE subjects or after-school activities helped you with your current role?

The best thing I did at GCSE was taking triple sciences. This meant I could pick which science I wanted to do at A-levels (Physics) and I had a good base to get me started with maths A level. An after school activity that I did just after my GCSEs was the Gold Crest Award which you can enter for free in Wales (the rest of the UK has to pay £20). The aim is to run a science design project with your friends and with the help of a mentor which could be a teacher or a volunteer from the STEM subject that you want to do your project in. My friends and I designed an android app that was supposed to help blind people navigate cities by calling out the names of shops as they walked by and pointing out potential hazards using the google maps api. It was a fun project and in the end we got to go to the science fair where everyone shows what they did which was very inspiring.

1. Did you have any barriers or setbacks in your journey?

I have not experienced any barriers where people have really tried to stop me from being an engineer but it was hard at school to be one of two girls in my physics and further maths classes. The real problem came from my peers when I was doing my A-Levels and the number of women in my classes really dropped off and to a lesser extent at university where there where only 5 girls in the year of 100 students. I had some comments when I would ask for help saying that I got more help because Im a woman or jokes that women in engineering aren’t as good as men. Mainly I think the problem came from immature men in an environment that they perceived to be entirely male but hopefully that gender imbalance will improve in coming years… maybe with some of you?

However, saying all that, I was always surrounded and supported by great adults both at school and university who helped me to carry on with engineering and took any concerns I raised seriousl. I found some of my best friends through engineering, both men and women and thoroughly enjoyed my time at university.

1. What personal/personality traits do you think help you with your job?

Someone who enjoys making whether that’s following recipe, woodworking or knitting all of these things require carefully following a set of instruction, being logical, getting creative and problem solving when things don’t go your way which is a key part of engineering. Someone who wonders how things work. If you’ve looked at your phone and though “how on earth did they make that?” then electronics engineering could be for you. Basically, someone who is curious and doesn’t just take things at face value

Someone who is a good communicator, you don’t have all the chat but someone who can clearly express their ideas to others. It’s all well and good designing the best product every but if you want explain how and why it works no-one can trust it to use it.

1. What piece of advice would you have given yourself if you were back at school?

I would say, keep going with sciences and try to chill out a bit because it will all work out in the end.

1. Who inspires you in your work?

The person who inspires me most in my work is actually my supervisor Ed. He was on the same scholarship scheme at university as me- the E3 scheme that sponsors you through university and gives you a job at the end, went throught the same career steps as me so far and is now a senior engineer all before 30. Hes in charge of a lot of stuff and knows loads about engineering, and it keeps me certain of my career path so I can achieve the same as him. A famous person who inspires me at work is Limor Fried or “Lady Ada”, one of the mot influential people in the tech industry. She is an electronics engineer who runs the company AdaFruit. They sell hobbyist electronics that let anyone get into electronics at home. She also encourages open-source development which means showing everyone how your hardware and software works, which is the way developers should work because this allows everyone to improve the code to provide the best solution possible. She openly clashed with Microsoft on this issue and didn’t back down until she won.

1. What kind of jobs might be available for the students in the audience if they were thinking about going into your Industry?

In engineering in general there are hundreds of different roles and disciplines of engineering. Some cool engineering disciplines are electronics and electrical engineering of course where we work with electricity e.g. making phones or electric cars, mechanical engineering which is anything that moves or has force acting on it e.g. designing engines and protective casings, chemical engineering which is designing new materials and chemical processes e.g. creating fuel or producting medicine or civil engineering which is designing infrastructure like houses, bridges and roads. In reality all products have lots of different kinds of engineers working on them.

At a company like mine you could be an engineer like me who does the electrical design work on a product, a project manager who keeps track of all the work different members of the team are doing, a technician which is someone who does the more practical testing of a product, a manufacturing engineer who makes sure the drive can be physically constructed, a mechanical engineer who designs the plastic casings and the thermal performance or a software developer who writes software for electronics products.

***Thank you!***