

Miriam Goldstein

PCB Design Engineer



How did you get to where you are now?

After completing my A-Levels, I had originally planned and was offered a place to go to university to study Radiography. However, I had realised that I preferred to learn in a more hands-on environment. After discussing this with several people, I came across the idea of doing an apprenticeship which would give me the chance to get some experience in a work place, gain qualifications and earn money while doing it.

I started applying for apprenticeships in engineering. I chose to go into engineering because I have always been intrigued by the way that technology works and how products go from just an idea to being a real tangible product.

I started an Advanced Apprenticeship to become a Test Technician and I went to college one day a week to complete an Edexcel BTEC Level 3 Diploma in Electrical/Electronic Engineering (QCF). I also completed an EAL Level 3 NVQ Extended Diploma in Engineering Technical Support in my work place. I was working as an Apprentice Test Technician, which gave me a chance to do some hands-on electronic engineering.

I spent most of my time programming, testing and repairing CCTV cameras. I worked in this role for two years and

completed my Level 3 BTEC. One of my favourite units in my BTEC involved working on engineering drawings, I also found that I wanted to be more involved in the engineering side of my company which is why I applied for a position in the Drawing Office. I have been working in the Drawing Office as a PCB (Printed Circuit Board) Design Engineer for a year now and I am currently doing a Level 4 Edexcel BTEC HNC Diploma in Electrical and Electronic Engineering (QCF).

A day in the life of a PCB Design Engineer

One of the favourite things about my job is that it can differ massively from day to day. The variety of my work means that I work on different types of software including Cadstar and AutoCAD. On Cadstar I am able to draw up component symbols and footprints and use these to create library parts that are then used on schematics. These schematics are then converted into a PCB file. I may spend the day working on the layout and routing of a PCB, wiring diagrams or creating a Bill of Materials and Drawing Pack for a PCB.

It is my job to draw up the PCB board outline and then layout the components that are called up. After the layout is completed, I work on the tracking of the boards. Within my

job I am able to work on old and new projects, which means that I can be involved in the manufacture of brand new products and the improvement of older products. I am often able to follow a job through from start to finish, which I find really satisfying.

The variation in my job means that I am able to work with people from many different departments within my company. I enjoy having this opportunity because the people I work with have expertise in many different areas and it means that I am able to learn something new every day.

What challenges do you face on a day-to-day basis?

On a day-to-day basis I can face several different challenges, these could include working to tight timescales, changes in requirements and communication with other departments. For example working to a strict timescale can be difficult because of the density of the components on the PCB, which means that it can take

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longer to do the layout and because the components are so compact, routing can be a challenge. In another situation, I might be half way through a job and the customer may have found something that they want to change which could potentially affect the work that I had already been done. Another of the challenges that I face is ensuring that the products that I am working on are designed with manufacturing in mind.

When designing and drawing up a product on the computer I am able to do almost anything because I am able to use tools such as scaling and stretching, but when a product is being manufactured there may be restrictions that affect the functionality of the product. When in the design phase, I try to predict any restrictions or challenges that may occur during production and try to find the best solution.

What would your advice be to someone who aspires to be like you?

I would say that it is important to seek a job in a field that you are passionate about. I find that when I am interested and passionate about what I am working on I feel the work I do is to a higher standard.

I would advise anyone to try to go into every project with a positive outlook, if you start a project wanting to do well, it will be noticed by those around you and you are more likely to do a good job and enjoy the work. I also think that

it is important to figure out what would be the best working environment for you, I knew that working on the Shop Floor wasn't the type of environment or challenge that I was looking for and that working in the Drawing office is much more satisfying for me.

What is the biggest difference you noticed between work and university in terms of engineering?

I have not been to university, however I can compare my experience at college with my experience at work in terms of engineering. The biggest difference is that at college I learned about engineering in a much broader way. I found that the curriculum covered in college explored a large variety of electrical engineering and its uses.

In comparison, my time working in engineering has covered a narrower scope and in much more detail. This has also offered me a hands-on experience in the production and manufacturing of electronics. Despite the differences between college and work, both have given me the opportunity to learn from people with expertise and experience in different engineering departments.

Real life example of engineering applied to your work.

I work on the design of Printed Circuit Boards and these are now

in operation in trains up and down the country and help to make it safer for passengers and staff traveling by rail. My company also create products for the Emergency Services and the Ministry of Defence.

I find it satisfying knowing that the work I do makes a positive difference in peoples lives and I get a great buzz when I see our products in operation.

How do you approach these problems?

If I have a problem I think it is important to take on one issue at a time, be clear what the desired outcome is and work towards it in the most efficient way.

I believe that it is really beneficial to discuss these issues with my colleagues as they may have already found a solution or something they say may trigger a different way for me to approach the issue.

I find this exchange of ideas, knowledge and experience stimulating and educational. I enjoy a challenge and feel good about finding a solution. This is why I find working in engineering so rewarding and would highly recommend this to other young women.



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