Summer placement report 2014

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Company: CNG Services

I found it really difficult as a second year chemical engineer to get a summer placement. I applied to so many companies throughout the year only to be shot down as most of them only take third years or had nothing to offer me. However, my persistence paid off towards the end and I found a small company, CNG Services, who was willing to give me some paid work experience. Seeing as it was my second year I wanted to make the most of being flexible with my time as I knew the big internships would come next year. In light of this is decided to split my summer into two different placements to get a range of experience and applied onto the educational development projects with Phil Robbins.

CNG Services

CNG Services are involved in the processing and export of bio-methane and natural gas. During my placement I was positioned to take on responsibility within projects which focused on capturing flared gas or stranded gas, processing this gas and injecting it into the grid or compressing the natural gas into CNG tankers.

Just a few of my main highlights were:

- Finding a supplier (MTR inc.) that specialised in purifying nitrogen rich gas streams using membrane units and securing their cooperation in planning to install the first ever membrane separation unit designed to separate natural gas from nitrogen within the UK.
- Travelling to the Czech Republic to learn from a similar company (MND Oil and Gas) how they processed their gas streams and compressed this gas into CNG trailers. Taking what I learned, I could then adapt these processes to the unique needs of my projects and suggest adaptations to further their development.
- Holding meetings at the annual Anaerobic Digestion and Biogas Association (ADBA) event in the NEC with Parker and discussing various possibilities for hydrocarbon and water dewpoint control of gas streams of varying composition, flow rate and pressure.
- Producing a conceptual design study, feasibility study and summary reports for the client, iGas, on the two projects I was working on.
• Being interviewed at the first ever natural gas vehicles event (NGV day) by EU Skills on the importance of attracting young people into the engineering industry and the future of the UK energy mix.

On reflection working for a small company was actually a bonus as I was entrusted with some important work and this gave me some great experience.

I learned that in the future I would love to get involved in the natural gas industry as I believe that this is where the energy industry is booming. Also I learned that I do not like having a solely office based job. I know now that in the future I would like a much more active, hands on role within a company.

**University of Birmingham project development intern**

The department conducted a number of educational development projects over the summer of 2014. The project that I was entrusted with in developing was the creation of an online fermentation web-lab simulation. The ultimate aim of this project was to design a lab carrying out a batch/fed batch fermentation of E-Coli which is controlled and monitored remotely using an online interface. It was my responsibility to develop the simulation of the batch fermentation on MATLAB. My simulation was developed in MATLAB’s graphical user interface design environment. The environment effectively allowed the user to change variables such as temperature, agitation, pH and dissolved oxygen tension and see the effects of doing so on the biomass, substrate and dissolved oxygen concentration with time.

Key skills gained:

• Developing aesthetically pleasing GUIs in MATLAB
• Solving coupled ordinary differential equations in MATLAB and manipulating the data obtained
• Simplifying hugely complex problems to very basic mathematical models and building on them by increasing the number of variables to represent the true physical situation
• Understanding of complex bio-chemical engineering mathematical models

On reflection this placement was great for developing my confidence in MATLAB which is something that I know I will be using a lot in my educational career. I also discovered a lot about myself because I had to work by myself on the project so it gave me the chance to discover my strengths and weaknesses as a person owning a project.

This placement helped me decide that I wouldn’t mind going into a technical role in the future and would feel comfortable with computer simulations and modelling. I do know, however that I would hate to sit behind a computer my whole life!