D-JET – THE FUTURE OF EXECUTIVE TRAVELLING

Internship at Diamond Aircraft Industries in London (Ontario), Canada

Going abroad is always a trip into the unknown. For us, this trip brought us to Canada. Since neither of us had ever been there, we did not know what to expect. But despite all worries and concerns, it turned out to be one of the best experiences we have had. We got to be part of a project that might have a great future in General Aviation, the D-Jet of Diamond Aircraft.

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DIAMOND AIRCRAFT
Diamond Aircraft Industries started out in Austria as a producer of the single-engine piston aircraft “Katana”. Over the years the company broadened the range of aircraft that they produce to larger single engine and also twin engine aircraft, such as the DA40, DA42 and most recently the DA52. With these aircraft, the company represents the most diversified product range of any piston aircraft manufacturer on the General Aviation market. All of the aircraft built by Diamond are full composite designs and are known for their innovation in avionics, modern airframe and engine designs. Currently, Diamond Aircraft is the third largest General Aviation (GA) manufacturer world-wide with production sites in Austria, Canada and China. The latest development of the company is the D-Jet, a so-called Entry Level Jet (ELJ). This aircraft is tying into a new generation of GA aircraft that allows private owners to enjoy the pleasures of executive travel while remaining in the comfort of what they are used to from General Aviation.

OUR JOB AND EXPERIENCES AT DIAMOND AIRCRAFT
With all the necessary paperwork done and our bags packed, we left the Netherlands at the end of April to head for Canada. After a couple of days in Toronto, we arrived in London (Ontario) and moved into our residence at the Fanshawe College. Right after our arrival we got a full introduction into the company including a tour around the entire facility. For us as engineering students this was very impressive since we got to see the complete production of the different aircraft from the mould of even the smallest part to the finished aircraft. As we later discovered, proved to be very useful to be able to simply walk on to the workshop floor and see how things happen in real life, and not just look at a model on a computer screen.

Marlies’ task
As I am specializing in Aerodynamics, I am part of the Flight Sciences group of the D-Jet. Within this function I got assigned to several different tasks. My first task was to update the drag database for the type design of D-Jet. Currently, the company is performing test flights with a prototype equipped with various measurement instruments. Using the measurements from these instruments and the drag database, it is possible to predict the performance of the final production aircraft. Although it sounds like a very simple task, it included a considerable amount of work since there were various improvements in the design between the last prototype and the final design.

Besides this task I was also asked to perform a CFD analysis on a number of sections of the aircraft. Since the project has been running for a couple of years, some exterior parts of the aircraft underwent a change of design. It is my task to investigate the flow behaviour of these parts and compare them to existing results to optimize the final design of the aircraft. This task gives me the opportunity to get ‘real-life’ experience with CFD software and to apply all the knowledge I gained during my study.

Markus’ task
Being a student of the track ‘Structures
and Materials", I was assigned to the Structures team. My task is the redesign of the flap system and the adjoining structures. Due to the size of the aircraft and the small amount of people working on the project, I was on my own straight away to come up with a working design that will later be put on the aircraft entering production. Over the first couple of days I managed to get myself familiar with the design techniques that are used within the company. Once I understood how everything worked I got started on the design of the flap systems. Since then, and most likely for the rest of my internship I am using what I learnt to come up with the most optimal design in terms of weight, costs and aerodynamics. Once the main elements of my design are completed, they are analysed by a stress engineer to verify that they fulfil all the requirements set by the regulations. If all goes well, the work I am doing right now will soon be flying around the world.

LIFE OUTSIDE THE INTERNSHIP
London itself is quite a big city, with a population of more than 350,000 inhabitants and sometimes called "Forest City", because of the forest the city is embraced by. Throughout the academic year London is very lively since there are a lot of students attending the local universities and colleges. However, during the summer most of the students are gone, which leaves the city almost deserted. Nevertheless we made the best of our time here.

Being in North America, we decided that we should use this opportunity and make a couple of short city trips in Canada and to the US. So far we have visited Toronto, New York and Montreal. Each of the trips was a special experience in itself. The most impressive trip was to New York. It is simply fascinating to see the life in this city and the interesting spots it has to offer, such as Ground Zero, the Empire State Building, its Art Galleries and of course for Marlies: the Apple store on 5th Avenue. Most recently we also got the chance to experience the biggest holiday in Canada, called "Canada Day". This day is the Canadian equivalent to Koninginnedag where everybody just celebrates and has a good time.

Beside the weekend trips, we also manage to keep ourselves entertained in London. Whether it was soccer games with a couple of our colleagues from work or simply going for some drinks with friends: it never gets boring. And if we get the chance to, it is always nice to simply use the time to finally relax and catch up on the missing hours of sleep or have Skype conversations with some night revellers in the Netherlands.

LOOKING BACK
Looking back on the past two months, we came to the conclusion that it was a good decision to choose for an internship at Diamond Aircraft. The fact that the company is not as big as Airbus or many other companies in the aerospace industry gave us the chance to get more involved with the project than we expected. Furthermore, coming to Canada gave us the chance to experience a style of life very different to what we are used to. For anybody who wants to go out of Europe and be part of a great company in the aerospace industry Diamond Aircraft offers a great opportunity to do so.

Feel free to contact us if you have any questions about doing your internship at Diamond Aircraft or for any other questions or comments! 🌟

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References
Diamond Aircraft Industries: http://www.diamondaircraft.com