When I started studying Aerospace Engineering in Delft in 2009, I participated in the OWEE, the welcoming week of the University. I remember biking down the campus one day during the OWEE, hearing the deafening sound of a petrol engine. It was the first time I saw a Formula Student car and the day I decided to try joining the team in the future. I did so in my second year and found it fascinating that a team of students can design and build amazing cars in less than a year’s time. This is why after spending one year with the team; I decided to do my Minor at the same place, which meant spending half a year full time with the DUT Racing Team.

Following my increasing interest in cars I chose to do the master track “Design and Production of Composite Materials”, which would give me the opportunity to work in the aerospace industry as well as the automotive industry due to the ever growing demand in lightweight structures. I decided to do the mandatory internship at one of Europe’s car manufacturers to get a better insight into whether this field of work is right for me. My focus was here on the smaller companies because I thought that getting an overview of the entire business would not be easy at a mega-company like Volkswagen. One of my applications went to the quality department of Bentley Motors and even though the offered position was not directly relevant to composite materials, it would get me into contact with most of the business.

The available internship was in the quality department and more specifically the field quality team, which deals with manufacturing, logistics, engineering, aftersales and the customer. My application was successful and a week after the telephone interview I got the great news that I got the job. This process might sound quick and easy, but believe me it was not. All in all, four months passed between sending the application and getting the Ok.

BUILD A FAST CAR, A GOOD CAR, THE BEST IN ITS CLASS

Before continuing with my experience, I will try to give you a short impression of what Bentley Motors is like. Bentley Motors Limited is a luxury car manufacturer located in the heart of England in Crewe, Cheshire. It was founded by W.O. Bentley in 1909 in London with the goal to “Build a fast car, a good car, the best of its class” and even today this famous quotation still holds true as Bentley strives to become the world’s leading luxury car manufacturer. All Bentleys are designed, styled, tested and built by a total workforce of about 4,000 employees on the main site in Crewe, which only covers an area of about 500x500 m. Currently, there are four different models in production: A coupe, the Continental GT, a convertible, the Continental GTC, a sedan, the Flying Spur and Bentley’s Flagship the limousine Mulsanne. Soon, Bentley will introduce their fifth model, with which it will enter the popular SUV market. A number of facts and figures about the cars can be found in Table 1.

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Bentleys are amongst the most sought after luxury cars of the world. They are known for their performance on the road, the luxury in the cabin, their reliability and the artisanship involved in making every single one of them. It was an honor to be part of the Quality Department of a company with such a rich history in British car manufacturing as part of my six-month internship.

TEXT Felix Minde, MSc Student Aerospace Engineering
would be a good start to get to know the business and spend a lot of time with the products in the assembly hall. Our task was to pick up problems detected at the end of line checks, feed them back to the responsible zones on the assembly line and solve the problem at its root. The task turned out to be the perfect introduction to Bentley. I got to know the four different models, the steps involved in assembling a car, the colleagues on the assembly line and I was involved with the Quality department as well if it came to quality-related issues. It was amazing to see how a car slowly came to life all the way from the bare chassis to the engine being fired up for the first time. Virtually the entire process, except for placing the rubber bead on the windscreen, is done in the absence of robots. There is still a lot of craftsmanship and experience involved in the production process, especially in the wood and leather pieces. I also learned to appreciate the uniqueness of a Bentley. It is close to impossible to spot two Bentleys which are the same, except if a customer ordered two Bentleys at a time for example to have one at each of his houses - but then still the colours might be different to match the colour of each house. A GT alone can be ordered in 55 million variations.

FIELD QUALITY TEAM EXTERIOR & INTERIOR

After four weeks, I moved to the Field Quality Team Exterior & Interior, where I stayed for the remaining five months. Examples of a Bentley’s Interior can be found in Figure 1 and Figure 2. As the name suggests, the Field Quality Team is responsible for improving the field quality of Bentleys. Information about issues with the cars is gathered from a variety of sources such as dealers, workshops, customer feedback, mileage cars and the factory. All problems are then prioritized based on faults per 1000 vehicles, cost, severity and risk. The top issues are handed to field quality engineers of the responsible field and the investigation for a root cause hypothesis is started. These investigations can involve further data analysis, part testing, laboratory trials and part measurements etc. Once the root cause hypothesis is established we can pin down the part and part owner. The problem is then handed over to the engineer who ‘owns’ the part, the part supplier or manufacturing, where the root cause will be confirmed or defined in more detail and a solution developed and eventually implemented. The Field Quality Team takes a managing role while the problem is with the problem owner and ensures that the issue is fixed within a certain time frame. The main task for all investigations is to have a temporary fix in place quickly such that the customer is protected. This temporary fix will later be replaced by the permanent solution.

Within this framework, I was given a few field issues to investigate, find the root cause and eventually hand them over to the problem owner. I really enjoyed this work because as expected I got to deal with all kinds of different departments within Bentley and improved my problem solving skills. Apart from the investigations, I was also given a few projects in Excel. As such, I worked on improving the system of ranking incoming field problems and updated a corporate learning database that is available to the entire business. The most rewarding task was however to create two search tools for the team to check a large number of cars for their vehicle specifications or log files from the ECUs. My codes reduced the amount of time to check 100 Bentleys from more than an hour to just 25 seconds.

DRIVE EVENTS AND FREE TIME

In general, I noticed that the hierarchy at Bentley is more relaxed compared to other companies. For example, all levels up to the head of the department are seated in the same office and are always available for a quick chat. Highlights of the internship were certainly the Drive Events when I got to be driven in a Bentley. Unfortunately, driving the product was not possible because Bentley requires a special in-house driving license for it. During the drive events though, I had the honour of experiencing a Bentley like a customer, driving through England. Every single time it brought a smile to my face to see how effortlessly they accelerate and move through corners while offering such a luxurious feel, which is exactly Bentley’s identity: Driving Luxury Performance.

There are always around 40-50 interns at Bentley, most of them from Germany, such that there was always something to do during the weekends. For shopping, sightseeing and nights out we went to destinations close by, such as the twin cities Liverpool and Manchester that are just a 30 min train ride away. A couple of times, we also went for weekend trips to destinations such as London, Glasgow, Edinburgh or Dublin. One big advantage to facilitate these trips was the fact that working hours at Bentley are only from 8-12 on Fridays in contrast with full working days otherwise.

Overall I had a great time in Crewe and really enjoyed the working climate, work and products at Bentley. I highly recommend everyone looking for an internship at a true British car manufacturer to have a good look at Bentley’s website for open positions.

References