Industrial Visit Report: Airbus, Filton
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On Thursday 4th December 2014 we travelled Airbus’ facility in Filton, one of the two Airbus facilities in the United Kingdom. The site currently employs approximately 4,000 people¹, though this is likely to increase as Airbus began building a new aerospace business park at the site in March 2012². Our visit was split in to three different tours; we saw the Structure Test Centre, the A380 Landing Gear Test Facility and the Fuel Systems Centre.

The Structure Test Centre tests everything from coupons to large scale components³. The tests performed are static, fracture or fatigue tests, and stresses applied range from 10kN to 20 MN⁴. Different methods are used to obtain different data from each test³. To discover fatigue properties, tests are repeated to create a S-N curve. Cameras are used to record the tests and review them. Cracks are occasionally put in to a component in order to see how many cycles it can undergo before failing once already damaged. Photoelastic coatings can be used to reveal surface strains. These are just a few of the methods used at Airbus. For full size aircraft component tests, whole buildings are erected, and the process takes years to plan and perform. When components eventually fail, they are broken down in to smaller pieces to be tested again, thereby making the most of the materials used⁵.

At the A380 Landing Gear Test Facility we were able to see the actual landing gear and briefly discuss its structure and safety features. Although the landing gear only represents a small part of the aircraft in weight and size (approximately 22 tonnes of a 200 tonne aircraft⁶), malfunctions within it can lead to serious accidents and so the safety measures are crucial. Grooves on the tyres of the landing gear are not for friction or water displacement, but are wear indicators⁷. The brakes have pins inside them that move in and out as the brakes are used, shortening of the pins indicated wear⁸. The tyres have a fusible plug that melts when the tyres overheat, this allows controlled deflation⁹. The brakes themselves have their temperature recorded by a thermocouple, and a fan is installed within them to cool them down if necessary⁸. Unfortunately, despite the work going in to the design of the A380, and the promise of the ‘quietest and most spacious’ cabin in the sky⁸, it is unclear how long this particular testing facility will be in use as recent reports claim that the model may be discontinued⁶.

The Fuel Systems Centre consists of an office along with a very large outdoor testing area. Tests carried out here have to be carried out in open air because of the increased risk of a fire or explosion when testing fuel⁷.

We finished our visit with a brief talk led by a couple of employees. We discussed Airbus’ future, and the consequences of the lengthy production time of an aircraft with respect to Airbus’ customers and their fleets.

¹ http://www.bristolpost.co.uk/Airbus-opens-new-engineering-UK-HQ-Bristol/story-20267239-detail/story.html , 14/12/14
² http://www.airbus.com/no_cache/company/worldwide-presence/airbus-in-uk/ , 14/12/14
³ Structure Test Centre employee, Airbus Industrial Visit, 04/12/14
⁴ A380 Landing Gear Test Facility employee, Airbus Industrial Visit, 04/12/14
⁵ http://www.airbus.com/aircraftfamilies/passengeraircraft/a380family/ , 14/12/14
⁷ Fuel System Centre employee, Airbus Industrial Visit, 04/12/14