

Structures

Shaun H. - Senior Airframe Architect – Wing

"The Direct Entry Graduate programme provides the Structures Centre of Competence and the Centre of Excellence for Wing with an extremely valuable and capable engineering resource. We look for highly qualified graduates who are highly motivated and enthusiastic. The DEG programme has provided us with engineers who are willing to challenge the status quo and are prepared to drive engineering forward. It has produced some excellent engineers who have a good overview of how our business operates thanks to the business placement structure. These engineers are essential to ensuring our continued excellence in wing design."

Entry requirements

Suitable degrees include an accredited MEng or equivalent in:

Aeronautical Engineering, Aerospace Engineering, Design, Mechanical Engineering or Materials.

Alternatively, we accept applications from candidates with a degree in Maths and/or Physics with a relevant MSc or equivalent.

Additional Requirements

Ideally candidates should have a wider interest in the aerospace industry and profession (including charterships) and demonstrable experience of Aerospace-based projects during Further Education. They should also demonstrate application of engineering skills though internships is also desirable.

About Structures

The Structures function forms the largest part of the Engineering Organisation in the UK. It is there to support the development of class-leading, high-performance and cost-effective aircraft structures. In the case of Airbus in the UK, these are the wings for all Airbus aircraft.

The structures department is responsible for the development of the skills, knowledge, tools, methods and processes that are used by the Wing Centre of Excellence (CoE) in the design of Airbus wings. It strives to achieve the highest safety standards in accordance with all relevant environmental legislation.

As a DEG in Structures, you pursue a programme of placements designed to give you a superior understanding of all the major areas that fall within Structures. Placements are also encouraged outside of Structures, so our DEGs can understand the relationships and dependencies between the Structures department and areas, such as, Systems Engineering and Flight Physics. Placements in manufacturing, as well as external placements with customers or suppliers, are considered mandatory.

Structures Engineering comprises the following key disciplines: Design Capability, Research and Technology, Structures Analysis, Materials and Processes, Stress Engineering and Structures Test. All these domains actively support all major aircraft projects: A380, Single-Aisle family, Long-Range family, A350 XWB and A400M besides current development of aircraft.

Design Capability (airframe structures and systems installation)

Analysis and evaluation of relevant technology and know-how, including the development of best practice approach and appropriate design principles, standards and rules, the development of certification strategies, challenging the relevant stress and design teams and assessing the capabilities of external companies.

Structures Analysis

This provides the structures stress teams with calculation methods and the associated computer processes and tool sets. It covers fatigue and damage tolerance, finite element analysis, static strength and advanced numerical simulation.

Materials and Processes

This covers six areas of technical expertise - Metallic Technology, Composite Technology, Surface Technology, Mechanic Technology, Testing Technology and Standardisation. As a group they are responsible for materials and process development and qualification, as well as the preparation of supporting technical documentation. They also work closely with manufacturing on process development.

Specific Design Work Integration Specific Design Work Integration ensures that all other engineering functions are properly integrated with, and connected to the detail design work activities that are carried out in the Wing Centre of Excellence. Its team of "architects" is responsible for the definition of the overall architecture of the product and the engineering processes to be applied in the detail design. The team also ensures that the inputs from Aerodynamics, Loads, and Systems Design are properly integrated with the structural design.

Structures Test

Testing is critical to ensure that the various components, sub-components, details, elements and basic materials perform the required tasks and are safe. The Structures Test area has technical authority for all structures related tests and manages all UK-based tests.

Research and Technology This area covers the introduction and testing of new structural concepts that may be used on future aircraft. The research engineer is tasked with identifying ways to improve the performance of the wing and make it easier to build and maintain. The research and technology team looks at ways to improve the structure of the wing on existing aircraft and to update the methods used in analysing or designing the wing. At the same time, they take account of new technologies and ensure that the wing structure is safe and efficient to fly for many decades into the future.



**Case Study – James D.
Stress Engineer
BEng in Aeronautical Engineering, University of Limerick, Ireland
(2007)**

"The DEG programme has given me ample opportunity to improve my technical knowledge and soft skills while completing a wide range of tasks in a number of engineering disciplines.

My placements were with Landing Gear Structures, A350XWB Rib Design and Future Projects, Stress and In-Service Repair Stress. These placements have allowed me to

improve my technical knowledge, especially in the areas of stress and design. During these placements I was supplied with training to allow me to use tools such as Catia V5, Nastran/Patran and ISAMI.

I spent three months working in a manufacturing engineering role (A350XWB Fuselage Structural Assembly) in Hamburg. This allowed me to work in another country on a different area of the aircraft. I also had the opportunity to work with the Liaison Engineering Dept of one of our customers and was based in Montreal during the depths of winter.

I will shortly be returning to Future Projects where I will begin my permanent role. I really enjoyed working in this team over the summer of 2008 and am delighted to be joining them."