

Flight Physics



Behrooz Barzegar – Head of Flight Physics Integration

"In Flight Physics, our disciplines of Aerodynamics, Loads, Aeroelastics and Mass Properties have key roles to play in the definition of an aircraft concept and design. We are part of a trans-nationally organised Centre of Competence in Airbus that allows delivery of this exciting role.

The challenge that currently faces us is that our conventional aircraft configuration is reaching its optimum performance efficiency. Since we are committed to ACARE 2020 Vision for the environment, we need to find an aircraft concept that is a "game changer". This particular challenge is now driving our innovation and focuses our skills and competencies development. A continuous inflow and recruitment of intellect into our organisation is a key part of this strategy.

We need the DEG community in order to consolidate this strategy and to retain the Airbus position as the most exciting and innovative aircraft manufacturer in the world."

Entry requirements

Suitable degrees include an accredited MEng or equivalent in:

Aeronautical Engineering, Aerospace Engineering, Aerodynamics, Mechanical Engineering or Engineering with Maths/Physics.

Additional Requirements

It is desirable for applicants to demonstrate related experience for this role, which could include:

- An internship in a related industry
- A project or internship covering wing component (flaps, slats, etc) design
- A project in flight dynamics
- For Aero - 4th year studies in Aerodynamics

About Flight Physics

Flight Physics encompasses the non-specific design activities that deliver the data used for the detailed design of aircraft components and systems. Within Flight Physics in Airbus UK there are three main areas: aerodynamics, loads and aeroelastics and mass properties.

Aerodynamics

Aerodynamics has responsibility for ensuring the aircraft design meets the aerodynamic flight performance requirements. Primary activities include design of the wing shape, assisting in the development of the aircraft configuration and generation of aerodynamic data for use by other disciplines.

Loads & Aeroelastics

The loads team determines the aircraft loads that result from the most extreme conditions an aircraft might encounter during its lifetime. These loads are used to set the minimum level of strength required for the structure. Loads work involves developing, validating and applying mathematical models that represent the response of the aircraft. The team also ensures any new aircraft design will be free from oscillatory or divergent aeroelastic behaviour.

Mass Properties

Mass Properties is responsible for tracking and predicting the weight of the aircraft as the design evolves. The overall aim is to ensure the optimum mass is achieved for each component based on a compromise between design limitations, manufacturing capabilities, cost and time. To achieve this aim, Engineers develop, validate and deploy mass prediction tools that are used to forecast component weight and thus overall aircraft weight.



Case Study – Christopher Shiels
Flight Physics Engineer
MEng in Mechanical Engineering with Aeronautics, Durham
University (2007)

“The DEG programme was a fantastic way of furthering my experience after university. The placement opportunities available allowed me to work in a number of different roles, giving a great insight into how the business and industry operates.

Based in Flight Physics, I initially helped with the A350XWB development before moving onto research projects within the Structures discipline. Working on the A380 FAL in Toulouse brought home the complexity and scale of the products Airbus produces. It was immensely satisfying to see the aircraft fly out after all our hard work. I also got an opportunity to analyse the in-service performance of an A320 fleet in San Francisco, whilst working with the management team of one of our customers.

Alongside core Airbus work, as part of my 15 percent development time, I Chaired the ‘Flying Start Challenge’ project, taking responsibility for engaging graduates from other major aerospace companies to work with local schools. The project finale involved 200 pupils competing with model gliders at the Fleet Air Arm Museum in Yeovil.

I have just finished working with the Aerodynamic Integration department and am currently studying the Dynamic Landing performance of the A350XWB. It is a pleasure working with professionals who lead the field in Aerospace.”