About us

GKN Aerospace is the aerospace operation of GKN plc, serving a global customer base and operating in North America and Europe. With sales of £1.5 billion in 2011, the business is focused around three major product areas - aerostructures, engine products and transparencies, plus a number of specialist products - electro-thermal ice protection, fuel and flotation systems, and bullet resistant glass. The business has significant participation on most major civil and military programmes. GKN Aerospace is a major supplier of integrated composite structures, offers one of the most comprehensive capabilities in high performance metallics processing and is the world leading supplier of cockpit transparencies and passenger cabin windows.

Project background

GKN is currently exploring the capabilities of composite materials in aero engines to reduce weight. High temperatures composites opens up new possibilities, such as the frame structure connecting the two compressor stages. This will require load-carrying joints in a complex structure, posing great challenges in design and manufacturing. A key to optimized design is numerical simulations to predict structural performance. In this project, L-profile specimens will be manufactured and tested in tension and compression. The results will be compared to analysis results to find suitable modeling techniques and failure criteria.

Assignment description

- Literature review on numerical modeling of composite structures and failure criteria.
- FE-modeling and simulation of the profile from a stiffness and strength perspective. Different modeling techniques and failure criteria will be compared.
- Correlation with experimental results from destructive testing.

Qualifications

- Master student with solid mechanics background
- Interest in composite mechanics
- Previous experience of FE analysis (e.g. in Ansys) is recommended

The scope of the project can be adopted for one or two students. Apply by sending CV and personal letter to niklas.olofsson@gknaerospace.com.

The project will be in collaboration with Chalmers, contact person Martin Fagerström, martin.fagerstrom@chalmers.se.