Master Thesis - “Coupled 2D axisymmetric thermo-mechanical analysis” (30 credits/20 weeks – 1 student)

About us

GKN Aerospace is the world’s leading multi-technology tier 1 aerospace supplier. With 33 manufacturing locations in 12 countries, we serve over 90% of the world’s aircraft and engine manufacturers. We design and manufacture innovative smart aerospace systems and components. Our technologies are used in aircraft ranging from the most used civil aircraft to the world’s advanced 5th generation fighter aircraft and the Ariane orbital rockets used by ESA.

Project Background

Thermal FE analysis is used to predict metal temperatures in engine components. The results are essential for engine design and for assessing the service life of engine components during operation. In this Master thesis the scope is limited to analysis of a single engine cavity ventilated by a secondary flow.

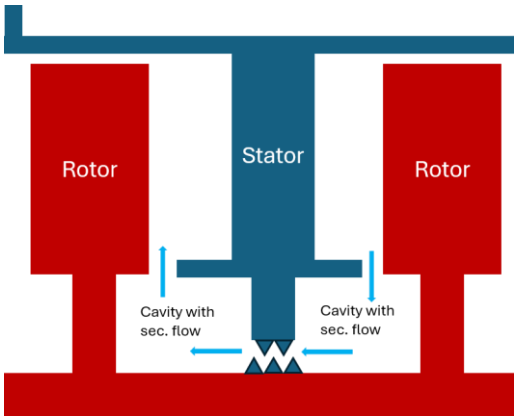


Figure 1. Sketch of rotor and stator with cavity.

Assignment Description

The work in this thesis will focus on setting up a coupled 2D axisymmetric thermo-mechanical analysis. The following tasks are foreseen:

- Literature study on methodologies for 2D coupled thermo-mechanical analysis in aero engines.
- Choose a simple approach/method for the master thesis.
- Build a thermo-mechanical model using ANSYS workbench. The 2D axisymmetric geometry should be as public as possible.

- Set up thermal boundary conditions as a function of performance data and deformation of gaps in the model (result from the solid mechanical analysis).
- Make an analysis plan and execute. Evaluate results.
- Write a report and present results.

The proposed activities provide an excellent opportunity to interact with different disciplines within the company.

Qualifications

Student in the final year of their M.Sc. studies in the field of Mechanical or Aerospace Engineering with an interest in Analysis, Solid and Fluid Mechanics. Previous experience of FE analysis (e.g. in Ansys) is an advantage.

Apply by

Send your resume and cover letter to:

Linus Marstorp, linus.marstorp@gknaerospace.com

Last date for application: 2026-12-14. Interviews will be held continuously and the position could be filled up prior to the last application date.