Master Thesis - Microstructural evaluation after Heat Treatment of Nickel-Based Superalloys (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

For the aerospace industry, the goal is to become more sustainable. There are different approaches to achieve this. At GKN Aerospace, One approach we are working on is improving manufacturing processes and materials to reduce environmental impact by developing lighter products, minimizing material waste, and using fewer resources. These efforts help enhance overall sustainability.

One approach is to use more net shape plate material instead of forging that have to be machined. The challenge with replacing superalloy forging is achieving similar material properties. One key property is grain size. Fabrication using thick plate material is an alternative forging, however it have a risk of grain growth. The aim of this thesis is to understand how the heat treatment effect the grain growth on a specially manufactured plate material which is expected to impart enhanced properties.

Assignment Description

This thesis aims to understand the heat treatment effect on Haynes 282 superalloy plate manufactured through a different process. Grain growth through MIPAR analysis , as well as hardness measurements will be the key to understand the impact of manufacturing process on subsequent heat treatment steps and material properties .

Description of the assignment content.

- Literature review
- Microstructure evaluation
- Image analysis and Hardness measurement
- Document the work in a report
- Present the work

Qualifications

- Final year master's student in Mechanical, materials Engineering or similar

Apply by

Send your resume and cover letter to Jesper Evervall (Jesper.Evervall@gknaerospace.com), and Ceena Joseph (Ceena.Joseph@gknaerospace.com).

Last date for application 2025-12-19.