

Master Thesis - “Optimization of bend test set up to quantify effect of surface roughness on fatigue properties” (30 credits/20 weeks – 1-2 students)

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

GKN has a strong focus on additive manufacturing and one of the key characteristics of AM products is the inherent roughness of non-machined surfaces. The roughness affect the fatigue properties and the effect of the surface condition can be characterized using bend testing. The purpose of this master thesis work is to define a window of test set-up and specimen dimesions that allows testing of a large surface while keeping the measurement uncertainty at a sufficiently low level. Since the use of additively manufactured material is expected to grow significantly at GKN Aerospace it is crucial to use the best available test method.

Assignment Description

The aim of the project is to propose limits for a test setup for four-point bend fatigue testing that maximize the tested surface area and minimize the measurement error.

- Content.
 - Literature survey
 - FEM study of stress distribution
 - Estimation of measurement errors
 - Experimental verification of selected window for test set-up and specimen dimension.
- Project milestones
 - Experimental verification
 - Project report
 - Project presentation at GKN Aerospace

Qualifications

- Master’s in mechanical engineering with focus on solid mechanics.
- Interst in fatigue and material mechanics.

Apply by

Send your resume and cover letter to Tobias Mattsson, tobias.mattsson@gknaerospace.com,
Tel 070-0873593.

Last date for application: 2024-12-20

The recruitment process is ongoing, so do not wait to send in your application

