

## Master Thesis - “Study of method for determining flange leakage and design of test set up” (30 credits/20 weeks – 1 or 2 students)

### About us

GKN Aerospace is the world’s leading multi-technology tier 1 aerospace supplier. With 55 manufacturing locations in 15 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

Building design knowledge and prediction methods for bolted flanges is a necessary strategic step in order to allow for taking design responsibility for complete modules and internal interfaces. One important feature to be determined for flanges is the flange leakage. Limiting the flange leakage is important for engine efficiency and to avoid overheating of exterior parts.

### Assignment Description

This master thesis is focused on modeling of the flange gap and predicting flange leakage. It will target both understanding of analytic models and FE simulations of bolted flanges. The outcome will be used to design a test set up that can be used to validate design guidelines on flange leakage. The master thesis will consist off, but is not limited to the following tasks:

- Literature review of current flange leakage theory
- Identify elements to determine the factor affecting leakage (pretension, spacing, media temperature, gap, roughness direction of grooves, etc.) and review the proposed leakage model
- Quantify leakage for the design window / applicable geometries and generalize the model
- Propose a test set up to verify model

### Qualifications

Student(s) in the final year of their M.Sc. studies in the field Mechanical or Aerospace engineering with an interest in solid mechanics and testing.

### Apply by

Send resume and cover letter to Lennart Ekvall [lennart.ekvall@gknaerospace.com](mailto:lennart.ekvall@gknaerospace.com) Or Per Widström [per.widstrom@gknaerospace.com](mailto:per.widstrom@gknaerospace.com)

Last date for application: 2022-12-31. Interviews will be held continuously and the position could be filled prior to the last application date.

