

Master Thesis - “Mechanical Assessment of Future Aircraft Engines and its Impact on Component Loads” (30 credits/20 weeks – 1 student)

Project Background

GKN Aerospace Engine Systems is a world leader in providing structural components for aircraft engines, and have components installed in more than 90% of all new commercial aircraft engines. This means that GKN Aerospace Engine Systems cooperates with all the large original equipment manufacturers, OEMs, i.e. General Electrics, Pratt & Whitney, Rolls Royce and Safran. GKN Aerospace Engine Systems is invested in predicting market trends to assure that it stays competitive and can grow in the future. Thus, an outlook of what is believed to be the next generation of aircraft engines, called Notional Engine, has been put forward within the company, as seen in Figure 1.

An aircraft engine is designed to withstand a large number of load cases that will or might occur during its life time, e.g. hard landings, thrust reversing and fan blade out etcetera. These loads influence the design of the structural components and the requirements are typically set by the OEMs in an iterative process with GKN. Thus increasing the understanding of how changes in engine design impacts component load requirements is key in product development. As such, GKN Aerospace Engine Systems sees it as an opportunity to make use of the Notional Engine presented above by assessing how the engine trends translates to trends for component load requirements. The aim is to gain further understanding of how the components loads are influenced by future developments in aircraft engine designs and to advance the capability to design the overall aircraft engine load carrying paths.



Figure 1 - Notional Type Design for Future Aircraft Engines

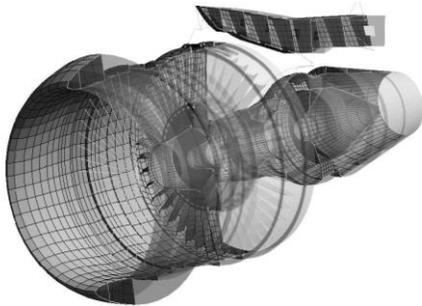


Figure 2 - Mechanical Engine Model developed for the EU project VITAL

Assignment Description

GKN Aerospace Engine Systems is looking for a M.Sc. thesis student who is committed to help initiate this work at GKN. Mechanical models of whole engines have previously been worked on for a couple of specific engines within the organization, see Figure 2, but not for the Notional Type Design outlook for future aircraft engines. The aim of the Master thesis is to initiate a generic platform to run dynamic simulations of the whole engine loads and to translate this to components loads. For this thesis work the aim is to analyze one of the aforementioned load cases to show proof of concept.

Qualifications

Student in their final year of the M.Sc. studies in the field Mechanical or Aerospace engineering. Preferably with previous experience in Computational Solid Mechanics, specifically knowledge in dynamic simulation softwares such as Nastran or LS-Dyna is a merit. Furthermore, basic competence within programming is a requirement. Good if the student has an entrepreneurial forward looking spirit and can take own initiatives.

Apply by

Send your resume and cover letter to Oskar Thulin, Ph.D., at the GKN Aerospace RnT organization, oskar.thulin@gknaerospace.com

Last date for application: 2018-12-01. Interviews will be held continuously and the position could be filled prior to the last application date.

