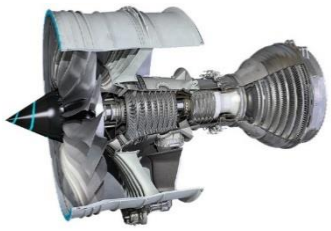
GKN AEROSPACE



Master's Thesis - "Load Path Visualization in Engine Structures" (30 credits/20 weeks – 2 students)

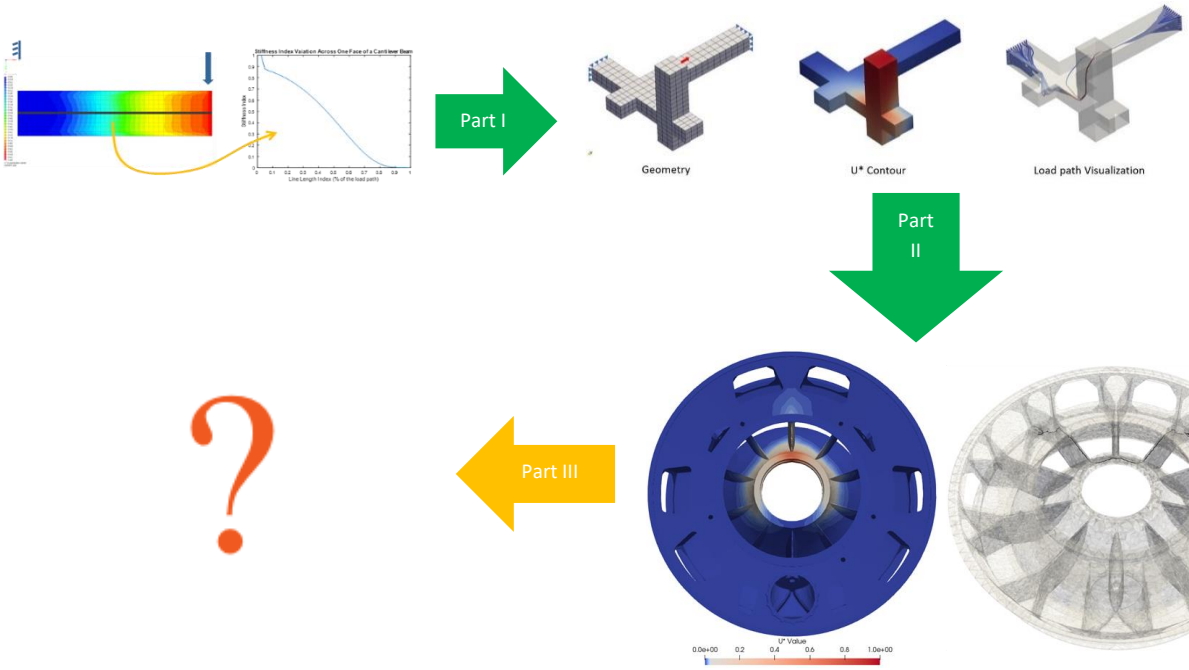
Project Background

Information about transmission of loads from the point of application to the point of support is critical for engine-structures design. For structures that follow an incremental development cycle, such information helps to understand the functioning of existing structures (architecture) and compare and benchmark them with other similar structures. Design improvements such as reduced weight for the same stiffness and strength performance are also a benefit. The visualization of load paths as streamlines is possible by the calculation and plotting of an index called U* or stiffness index. Two previous thesis at GKN has established software routines to calculate the index U* and visualize the load paths as streamlines. Even though the routines can visualize load paths, further work can be done. The current method handles only point loads while the loads in general are distributed in nature. Real life engine structures are affected by changes in thermal conditions over a flight cycle and load paths should reflect the effect of thermal loading. Additionally, the current method can be quite time consuming when it comes to preparing a visualization (plotting of streamlines) and improvements in the visualization of load path is necessary.

For this thesis, two students are sought who work together on solving the current limitations of the load path plotting procedure; one focusing on visualization (post processing and plotting of streamlines) while the other on expanding the routine to handle loads (handling distributed loading).

Assignment Description

- Literature survey, understanding the existing load path plotting scheme at GKN
- Generating load paths for engine-structures under distributed loads
- Improve the current visualization routine
- Investigate improvements to decrees solution time with current hardware at GKN



Qualifications

2 candidates, those who are in the final year of applied mechanics program or equivalent. Knowledge and familiarity with the finite element method, in particular of the usage of ANSYS APDL is recommended.

Apply by

Send your resume and study transcript that shows the courses taken to Visakha Raja, visakha.raja@gknaerospace.com

Last date for application: 2022-11-08.