GKN AEROSPACE

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Thesis proposal	1 (1)

> Thesis title Design for AM - A robust design process for jet engine component design	> Business area Product Development, Mechanical Engineering
> Period of time and amount of credits 30 credits/20weeks	> Number of students 2
> Location Trollhättan	> Contact person Sören Knuts
> Language English	> Start date Jan 2024
> Supervisor Sören Knuts, Petter Andersson	> Department Engineering/Global Technology Center
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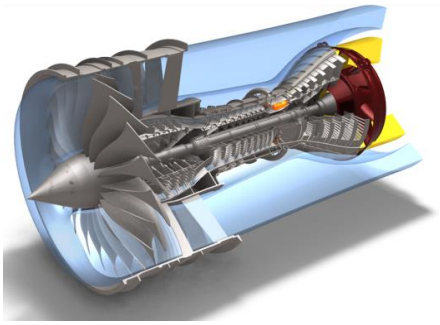
About us

GKN Aerospace is the aerospace operation of GKN plc, serving a global customer base and operating in North America and Europe. With sales of £3,85 billion in 2019, the business is focused around three major product areas – civil airframes, engines and defense, plus a number of specialist products - electro-thermal ice protection, fuel and flotation systems, and bullet resistant glass. The business has significant participation on most major civil and military programs. GKN Aerospace is a major supplier of integrated composite structures, offers one of the most comprehensive capabilities in high performance metallic processing and is the world leading supplier of cockpit transparencies and passenger cabin windows.

Background of thesis project

Within the aerospace industry, Additive Manufacturing (AM) is still considered to be a fairly new and novel technology compared to more traditional manufacturing methods such as casting and forging. The technology is seen as an alternative to be less dependent on current set of suppliers, (e.g. Major Casting or Forging suppliers) as well as providing increased and new functionality with the possibility for integrating complex geometries in one design.

So far there are very few examples of AM solutions for jet engine components in production today. Hence there is a need to work with the design process for AM components and to identify key areas in the process for improving the robustness and efficiency into production.



Assignment description

- Activities:
  - Interview study:
    - Describe the current design process for AM. Challenges and opportunities. Lessons Learned.
  - Literature study:
    - Does it exist good examples in literature on Design Process for AM that addresses current challenges?
  - Prescriptive study:
    - Identify success factors and criteria
    - How can GKN show and verify a robust AM design concept?
    - Propose improvements
  - Exemplify and validate a solution:
    - Investigate potential tools and methods that can be used.

Research Questions

- RQ1: What are the current industrial challenges in the design process for AM?
- RQ2: How can GKN improve their current process?

Qualifications

A background in Mechanical Engineering or Engineering Physics with interest in Product Development. Some experience in design work is favorable.

Apply by

November 15th, 2023