

Master Thesis - “Sustainability assessment of Additive Manufacturing Components in aero-engines” (30 credits/20 weeks – 1 student)

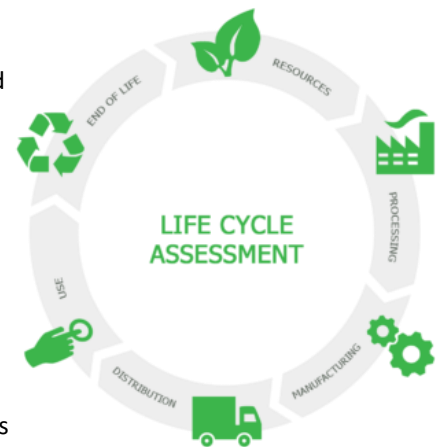
Project Background

Sustainability is a growing concern for the aerospace industry today, and the emphasis has been on lowering fuel consumption in order to soften climate change. In the last few years the growth of Additive Manufacturing (AM) has been exponential in the aerospace industry. One of the reasons for this is the hope that AM will reduce material waste, but there is also sustainability challenges with the different AM technologies. Therefore, a thorough assessment of sustainability impacts of the technology (Laser powder-bed in particular) is needed. GKN Aerospace has just recently invested in life-cycle assessment software Gabi, but is missing some relevant data needed to make calculations on certain products. How the software will be used in the company development process is also not decided.

Assignment Description

The thesis work will focus on:

- Literature review of sustainability aspects of metal powder, aerospace alloys and additive manufacturing processes
- Life-cycle assessment of additive manufacturing components compared to traditional manufacturing methods
- Building an internal database for company specific data related to LCA
- Setting up a structure and a way of working with LCA during design and development of aero-engine components
- Exploration of opportunities to minimize environmental footprint
- Exploration of social impact of additive manufacturing
- Exploration of business opportunities for low environmental impact AM products



The thesis work will be supported by appropriate material, product and process engineers.

Qualifications

- Master in mechanical engineering, material engineering, industrial engineering or similar
- Interest in sustainability and material science
- Previous experience of life cycle assessment is recommended
- Basic knowledge of Additive Manufacturing recommended
- The student(s) should be capable of taking initiatives on their own
- GKN would prefer if the student(s) can perform most of the work on site at the Global Technology Centre organization in Trollhättan, Sweden

Apply by

Send your resume and cover letter to Johanna Nylander, johanna.nylander@gknaerospace.com and Pauline Leonard, pauline.leonard@gknaerospace.com

Last date for application: 2020-11-15. Interviews will be held continuously and the position could be filled prior to the last application date.