Dokumenttyp/Document type		Sida/Page
Master thesis proposal		**1 (1)**
> Titelförslag/Thesis title	> Ämnesområde/Business area	
Digital twins for increased precision in advanced manufacturing processes	**Product Development, Mechanical Engineering**	
> Tidsperiod och högskolepoäng/Period of time and amount of credits	> Antal studenter/Number of students	
30 credits/20weeks	**2**	
> Geografisk placering/Location	> Kontaktperson/Contact person	
Trollhättan	**Hugo Hultman/Sören Knuts**	
> Språk/Language	> Startdatum/Start date	
English	**Jan/Feb 2022**	
> Handledare/Supervisor	> Avdelning/Department	
Hugo Hultman/Sören Knuts	**Engineering/Global Technology Center**	
> Skicka ansökan till/Send application to	> Sista ansökningsdag/Last application date	
hugo.hultman@gknaerospace.com	**December 15th 2021**	

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 defence, 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 programmes. 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

The aerospace industry is constantly striving towards lower fuel consumption and a smaller carbon footprint. This increases the requirements on the components that go into the aircraft that need to be lighter while maintaining strength and reliability for safe flights. One way of achieving this is through fabrication, a method where large structural components are manufactured by joining several smaller parts together through welding. The fabrication approach can lead to increased geometrical variation in the final product, since small variations on the individual part level tends to propagate and affect the entire assembly. To increase the manufacturing precision during fabrication, a digital twin has been proposed as a solution. The digital twin acts by collecting data on individual components and predicting how they will behave in the final assembly. If a problem is detected, the digital twin can make adjustments to the manufacturing process and customize it based on data from the parts that are entering the assembly line. A research project has been initiated to investigate how a digital twin should be designed and implemented.
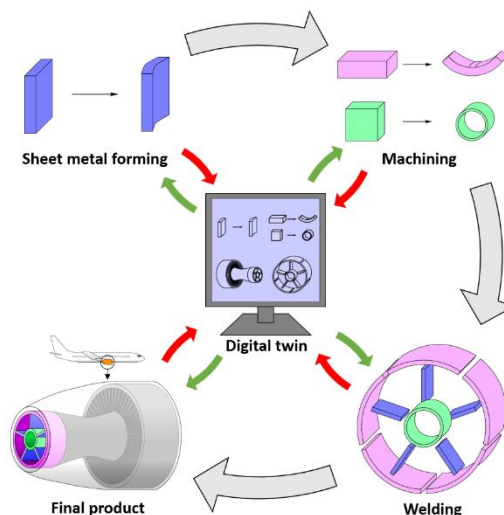
Assignment description

You will be provided with analysis tools and measurement data from a lab environment manufacturing process, and then work with the following problem formulations:

- How should the characteristics of a part be identified, and how can these characteristics be used to decide on key characteristics using the available measurement data?
- How can we collect measurement data from our current manufacturing processes? What are the possibilities and challenges from a geometrical assurance perspective?
- Describe a method how the Geometrical data can be transformed to GKN measurement system.

Qualifications

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

Apply by

Send your CV and cover letter to Hugo Hultman, +46 520 291452. Hugo.Hultman@gknaerospace.com

Last date for application: 2021-12-15. Interviews will be held continuously and the position could be filled prior to the last application date.