

Topic:

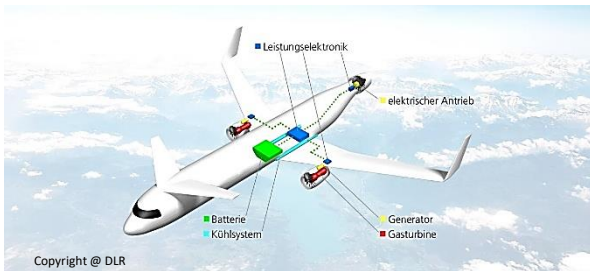
Design of a Variable Intake Configuration for Heat Exchanger in Hybrid-Electric Propulsion Aircraft



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Project description

To achieve climate neutrality, the European Green Deal sets out the need to reduce transport emissions by 90% by 2050, compared to 1990-levels. Hybrid Electric Propulsion (HEP) architectures are one of the most promising solutions to make aviation greener and carbon neutral. The HEP concepts use highly efficient electric motors to generate thrust using sustainable aviation fuels in fuel cells and gas turbines. However, there are many remaining challenges to be solved before the implementation of this technology and bring it into service.



One of the challenges in the practical implementation of HEP in aircrafts is the lack of efficient thermal management systems, which are an indispensable part of HEP for safe operations. Heat exchangers play a great role in thermal management system dissipating the heat produced by the HEP components. This project aims at designing a variable intake geometry for efficient operation of heat exchanger during different flight phases. According to the airflow demand by the heat exchanger, the variable intake is to be designed and positioned while providing sufficient airflow for cooling purposes and minimizing the overall drag and boundary layer separation over the engine nacelle or pod. As part of the mechanical design, system functionality in connection to other components inside the engine pod is to be considered. The project includes a comprehensive literature review, the preliminary mechanical design of the variable intake for heat exchanger, and performing system integration and safety analysis according to the aviation regulations.

How your profile should look like

- Having a Mechanical or aerospace engineering background or comparable
- Experience in CAD modeling and assembly, e.g. SolidWorks, NX
- Experience in external flow CFD analysis is an advantage
- Good English proficiency
- Ability to work in team and also independently

What you can expect

- Getting support from institutes working on the HEP-related topics
- Getting support to prepare and present the research results at the Turbo Expo 2024 conference in London
- Working closely with an international team

Interested? Please send your cover letter, CV and transcript to xie@b-tu.de

For more info, you are welcome to contact Tianxiao Xie, T: 0355 69 4519.