



PhD-Researcher Position (m/f/d) within the SE<sup>2</sup>A Research Cluster

**Multidisciplinary analysis and design of components for the thermal management of future aircraft configurations**

Temporary Position (up to 3 years), up to Salary Level EG 13 TV-L, 100%

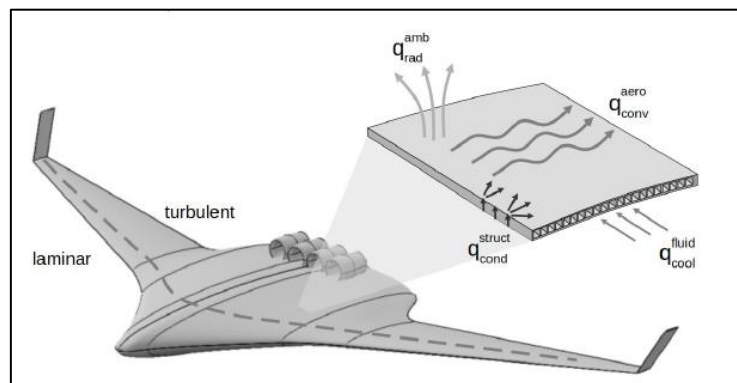
**Background:**

The Cluster of Excellence SE<sup>2</sup>A - *Sustainable and Energy-Efficient Aviation* is a DFG-funded interdisciplinary research center investigating technologies for a sustainable and eco-friendly air transport system. Scientists from aerospace, electrical, energy and chemical engineering as well as economics and social science are working on the reduction of drag, emissions and noise, life-cycle concepts for airframes, improvements in air traffic management and new technologies for energy storage and conversion. Technische Universität Braunschweig, the German Aerospace Center (DLR), Leibniz University Hannover (LUH), the Braunschweig University of Art (HBK) and the National Metrology Institute of Germany (PTB) have joined forces in this extraordinary scientific undertaking. The overall project is structured into the three core research areas “Assessment of the Air Transport System”, “Flight Physics and Vehicle Systems” and “Energy Storage & Conversion”.

([www.tu-braunschweig.de/en/se2a](http://www.tu-braunschweig.de/en/se2a))

**The Project:**

The project breaks new technological ground by exploring the previously unknown design sensitivities resulting from the coupling of the waste heat transport from the fuel cells to the aerodynamic surface via a cooling fluid and the heat conduction through the surface structure up to the heat transfer to the aerodynamic flow around the aircraft surface. In addition to the precise numerical modelling of the individual disciplines involved and their couplings, a multidisciplinary thermal-mechanical design of the corresponding skin panels will be developed here. In a team with other scientists, a collaborative multidisciplinary analysis and optimisation environment is to be created that will make it possible to explore and characterise such as yet unexplored multidisciplinary design spaces and to optimise design solutions by means of algorithms.



**Employment:**

The position is located at the Institute of Aircraft Design and Lightweight Structures (IFL) (<https://www.tu-braunschweig.de/en/ifl>) in Braunschweig. The entry date is as soon as possible, and the duration is initially limited to 3 years with the possibility of extension up to a maximum of 6 years. The position is part-time suitable, but should be occupied 100%. For all doctoral researchers of the cluster, an active participation in SE<sup>2</sup>A's own qualification programme is mandatory, the time effort for this training measure entails 10% of the working time. The payment is made according to task assignment and fulfilment of personal requirements up to salary group EG 13 TV-L. International applicants may have to successfully complete a visa process before hiring can take place. Applications from international scientist are welcome. The Cluster SE<sup>2</sup>A aims to increase the share of women in academic positions. Applications from female candidates are very welcome. Where candidates have equal qualifications, preference will be given to female applicants. Candidates with handicaps will be preferred if equally qualified. Please enclose a proof.

**Task:**

- Exploration of the thermal-mechanical design space for aircraft panels for cooling fuel cells of future aircraft configurations
- Thermal-mechanical modelling, analysis and optimization of such aircraft panels using FE methods including thermal flow-structure interactions
- Co-development of a collaborative analysis and design environment
- Publishing research results in scientific journals and at international conferences
- Support the institute's teaching activities (supervision of lectures and student theses)
- Support research project acquisition and administrative tasks of the institute

**Who we are looking for:**

- You have very good basic knowledge in the areas of thermal and mechanical modelling
- You have very good basic knowledge of numerical, discretizing methods such as FEM or FVM
- You have experience in using numerical simulation tools and good programming skills
- You have a university degree in engineering with above-average grades
- You are a team player and independent, solution-oriented and structured
- You are proficient in the English language for work in an international research environment
- You are proficient in the German language to support the teaching activities of the institute.

**Application Process:**

Applications should be sent by e-mail to [m.haupt@tu-braunschweig.de](mailto:m.haupt@tu-braunschweig.de) or in printed form to

Technische Universität Braunschweig  
Institut für Flugzeugbau und Leichtbau  
Dr.-Ing. Matthias Haupt  
Hermann-Blenk-Straße 35, D 38108 Braunschweig

until **15.06.2023** and must contain the following documents:

- Motivation Letter
- Curriculum Vitae including complete address, phone number, email address, educational background, language skills, and work experience
- Copies of bachelor and master diploma and transcript of grades in original language and in English or German translation
- Additional Documents must be provided on request

All documents should be in PDF format, preferably in a single file. Personal data and documents relating to the application process will be stored electronically.

Please note that application costs cannot be refunded. For the purpose of carrying out the application process, personal data will be stored.

For more information, please call Dr.-Ing. Matthias Haupt on +49 (0) 531 391-9917.