PhD-Researcher Position (m/f/d) within the SE²A Research Cluster

Overall Aircraft Energy System Simulation and Design Methodology for the combined consideration of electric, thermal and thrust generating sub-systems

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

Background:

The Cluster of Excellence *SE²A - 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).

Employment:

The position is located at the Institute for Electrical Power Systems at Leibniz University Hannover (https://www.ifes.uni-hannover.de/en/ees). The entry date is as soon as possible and the duration is limited until December, 31 2025. The position is part-time suitable, but should be occupied 100%. Active participation in SE²A's own doctoral program complementary to the programs of the institutions is an integral part of this position. The payment is made according to task assignment and fulfillment 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 SE²A 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:

Focus of the position is on the design of future aircraft propulsion and energy systems. Such concepts gain in importance for the transformation of propulsion systems utilising conventional fuels towards regenerative energies. The design of such systems is a challenging task. On the one hand the operation strategy/energy management has to be considered in many cases from the beginning on for decision

making and component sizing. On the other hand, and in contrast to stationary systems, space and weight limitations have to be taken into account, which requires typically an iterative or concurrent design of the energy system and aircraft. In addition to the thrust generating and electrical sub-systems, special focus is also given to the consideration of all sub-systems and its components being responsible for the thermal management, the air supply and other material feeds.

Who we are looking for:

- M.Sc. degree in Energy Engineering or Mechanical Engineering with specialisation on energy and process engineering
- an overall grade of “Excellent” or “very good” is expected
- Experience in the following areas: (1) Modelling of energy conversion systems, with special focus on aircraft energy systems (2) Selection and dimensioning of electric energy storage systems, (3) Design of fuel cell energy systems
- Excellent programming skills: Python, MATLAB
- Very good command of English in speaking and writing

Application Process:

Applications should be sent to Prof. Richard Hanke-Rauschenbach either by e-mail (rhr@ifes.uni-hannover.de) or by mail (Gottfried Wilhelm Leibniz Universität Hannover, IfES-EES (14313300), Appelstr. 9a, 30167 Hannover) until December 19, 2022 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 contact Prof. Richard Hanke-Rauschenbach (rhr@ifes.uni-hannover.de).