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DLR – DAAD Fellowships

Fellowship No. 615

Research Area : Energy

Research Topic: **Transient Simulation, Control System Design and Process Model for Up & Down-Stream Integration Concept of Alkaline Electrolyzer**

DLR Institute: Institute of Engineering Thermodynamics, DLR Stuttgart

Position: Postdoctoral Fellow

Openings: 1

Job Specification:

The urgency of reducing carbon dioxide emissions to combat climate change has never been more pressing. To address this global challenge, the key lies in harnessing renewable energy sources, particularly through the innovative integration of renewables in energy, mobility systems, and industry, with a focus on Power-to-X solutions using green hydrogen. Germany, driven by its ambitious energy transition goals, is at the forefront of this mission to establish itself as a global leader in hydrogen technologies. We are seeking a highly qualified Postdoctoral Fellow to contribute to our mission of advancing the performance and integration of alkaline water electrolyzers as a pivotal element in the production of green hydrogen. The incumbent will play a crucial role in optimizing processing conditions under various operational modes, conducting process and transient simulations, and designing control strategies for alkaline electrolyzers. The ultimate goal is to develop a robust and efficient process for hydrogen production, with a focus on downstream applications in chemical plants.

Process Model Development: Develop a comprehensive understanding of how the alkaline electrolyzer integrates into existing chemical plant

processes. Create detailed process models to evaluate the performance of the integrated system.

Simulation and Optimization: Utilize process models to simulate and optimize key parameters such as temperature, pressure, and flow rates, aiming to maximize efficiency and productivity in the integrated system.

Transient Simulations: Develop transient simulations to predict the behavior of the alkaline electrolyzer under various operating conditions and disturbances, contributing to the production of green hydrogen for chemical plants.

Control System Design: Design advanced control algorithms and strategies for regulating critical variables like current, voltage, and temperature. Ensure stable operation and rapid response to system changes.

Collaboration: Collaborate closely with experimentalists to validate models and optimize both the process and control system. This may involve conducting experiments in laboratory-scale systems or pilot plants and analyzing data for model validation.

Join us in shaping the future of green hydrogen production and make a significant impact on global efforts to combat climate change. Your expertise and dedication will play a pivotal role in our journey to establish Germany as a leader in hydrogen technologies. Interested candidates are invited to submit their application, including a cover letter, CV, letter of references and other documents as per DLR-DAAD guideline.

Required Qualification:

Doctorate degree from an accredited university in electrical engineering, automation technology, mechatronics, information technology, physics, electrochemical engineering, or related fields. Previous experience in the development, simulations, and testing of electrochemical devices is essential. Proficiency in transient simulations and process model design for the downstream integration concept of electrolyzers is highly required. Experience with operating process engineering systems is crucial.

Advantageous Skills:

Knowledge or experience with alkaline water electrolyzers is a significant advantage. A proven track record of scientific publications in relevant fields.

English competence: See requirements on www.daad.de/dlr

Fluent spoken and written

Earliest Start Date: As soon as possible

Application Deadline: Until position filled

Further Information: <http://www.dlr.de>
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