

JOB POSTING

Recruiting organisation:

University of Stuttgart, Germany

Subproject title:

New sealing technologies for three different redox flow batteries

Starting date:

1st April 2018 (or earlier if preferred)

Background information:

Marie Skłodowska-Curie European Training Networks (ETNs) are joint research and training projects funded by the European Union. Funding is provided for postgraduate researchers from both inside and outside Europe to carry out individual project work in a European country other than their own.

The training network “FlowCamp” is made up of 11 partners, coordinated by Fraunhofer ICT in Germany. The network will recruit a total of 15 postgraduates for project work lasting for 36 months.

Renewable energy sources like wind turbines require large-scale, stationary energy storage systems to balance out fluctuations in energy generation. FlowCamp will advance the development of one of the most promising storage systems: redox-flow batteries (RFBs). The recruited fellows will develop materials (membranes, electrodes, electrolytes, catalysts, sealing materials) and macrohomogeneous models for three next-generation RFBs (hydrogen-bromine, organic and zinc-air systems). They will then upscale the new systems to prototype level and validate them using the cutting-edge battery testing facilities available for the prestigious

German-funded RedoxWind project at Fraunhofer ICT. The new RFB technologies can be combined in energy storage systems tailored to a wide variety of application scenarios, with lower cost, longer service life and higher efficiency than conventional (e.g. Li-ion) storage devices.

Job description:

The advertised subproject will be carried out by one postgraduate (“early-stage researcher”) at the University of Stuttgart over a period of 36 months.

The objectives of the proposed subproject are: 1) application of commercially available materials with new formulation and blends that will withstand the temperatures and corrosive nature of the chemicals used in acidic hydrogen bromine and organic redox flow batteries as well as the very alkaline conditions of the zinc slurry air RFBs, 2) variation of different crosslinking agents or radiation crosslinking exposures, 3) full characterisation of sealing solution according to physical and chemical stresses, 3) design of optimum sealing geometry, 4) estimation of life time of gaskets in medium-term exposure with the measurement of the time dependent compression set.

The expected result is an advanced blend of sealing material with defined cross-linking conditions which maintains its elastomeric properties for more than 10 years within the given frame of temperature and chemical stress.

This subproject is fully funded by the Marie Skłodowska-Curie European Training Network “FlowCamp” (H2020-MSCA-ITN-2017). The recruited researcher will have the opportunity to work as part of an international, interdisciplinary team of 15 postgraduates, based at universities and industrial firms throughout Europe. She/he will gain a unique skill-set comprising electrochemistry, material science and cell design/

engineering, as well as an overview of different RFB technologies and their implementation at prototype level. She/he is expected to finish the project with a PhD thesis and to disseminate the results through patents (if applicable), publications in peer-reviewed journals and presentations at international conferences.

Requirements:

Qualifications / experience:

- Early-stage researcher: a researcher without a PhD, who is in the first four years (full-time equivalent research experience) of her/his research career, measured from the date when she/he obtained the degree which would formally entitle her/him to embark on a doctorate.
- Master degree in mechanical engineering, some experience in machine design and practical testing of machine components, favorable in sealing technology
- Some experience with FE-simulations
- Some basic skills in German language, good skills in English.

Mobility:

The applicant must not have resided or carried out her/his main activity (work, studies etc.) in Germany for more than 12 months in the past three years.

How to apply:

Please send your CV by post or e-mail to the following address, quoting the reference „FlowCamp-UOS-ESR1“:

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