

### Project

Renewable energy powered membrane technologies have been developed for hybrid ultra- and nanofiltration as well as electrodialysis for brackish water desalination. Non-continuous operation is a focus of both laboratory and fieldwork. Concentrate management remains a key challenge for the implementation of such technologies. This position will focus on this challenge with an emphasis on Tunisia which suffers from water-scarcity with availability of brackish water.

SEED+, a project funded by the Federal Ministry of Education and Research (BMBF), aims to address this issue through the implementation of membrane technologies for brackish water desalination as this can make marginal water available for drinking and irrigation in Tunisia with a broader view for MENA region as well as Sub-Saharan Africa.

As part of the project, a demonstration of the photovoltaic-powered electrodialysis (PV-ED) system is planned for fieldwork in Tunisia. A mobile unit is already set up in IAMT for this purpose. The project is developed with the following objectives;

- ◆ Design a novel membrane distillation system in cooperation with industry partner(s) and develop strategies for concentrate management using hybrid processes;
- ◆ Carry out laboratory and field experiments with photovoltaic-powered membrane systems, investigating the performance (water quality, water productivity, and energy) during intermittent operations;
- ◆ Organize field trials, including the planned fieldwork in Tunisia, to evaluate the treatment needs, demonstrate the membrane technology to stakeholders, and explore technology transfer options.



**The Process Engineer or PhD candidate** will work on the project objectives in close interactions with international collaborators from both academia and industry, internal collaborators at KIT, and more importantly with local communities during the field trials. System design and installation, logistics of fieldwork organization, workshops organization, preparation of publications, as well as reporting to the funding agencies are the key responsibilities.

### Qualifications

- ◆ Master in Chemical, Process, Environmental Engineering, or equivalent.
- ◆ A strong interest in water treatment processes and experience with membrane processes (nanofiltration, reverse osmosis, electrodialysis, membrane distillation)
- ◆ Experience in defining the specifications of components needed for the design of water treatment processes and operation of pilot systems.
- ◆ Knowledge of water chemistry and water analysis.
- ◆ Excellent English language proficiency (basic German language skills are welcome).
- ◆ Willingness to travel to Africa for project meetings and fieldwork.
- ◆ Administrative project management and reporting.
- ◆ Valid driving license.

### KIT

KIT is one of the biggest research institutions worldwide and has access to state-of-the-art research facilities resulting from the merger of the National Research Centre of the Helmholtz Association and the former Technical University of Karlsruhe. This project is hosted by the Institute for Advanced Membrane Technology (IAMT): <https://www.iamt.kit.edu>.

### Position

TVL E13, 50% for 3 years

### Contact

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### Applications

Please send applications with CV, motivation letter, academic transcripts, degree certificates, and contact details for three references. A research proposal will be requested for PhD candidates; relevant information can be found on the IAMT website (publications, proposal, etc).

### Start Date

1 Jan 2025 (negotiable)