



## Bachelor thesis

# Optimization of a manufacturing method for membrane electrode assemblies for PEM water electrolysis

### Field of Science

- Batteries
- Fuel Cells and Electrolysers
- Electrocatalysis

### Focus

- Experimental
- Electrochemical characterisation
- Material analysis
- Development of setups
- Simulation
- Literature research

### Studies

- Electrical Engineering
- Mechanical Engineering
- Chemical Engineering
- Physics
- Chemistry
- Industrial Engineering

### Starting Date

October

### Contact person

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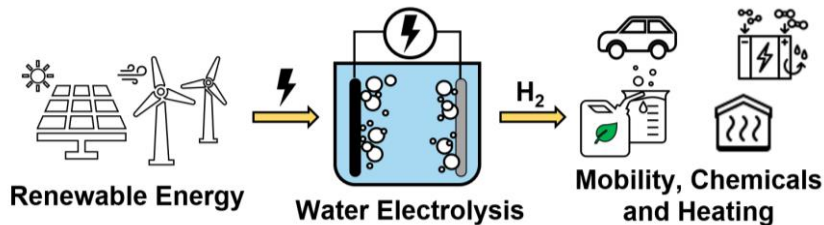
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### Become part of the energy transition!

Progressive climate change requires a rapid switch to renewable energy sources. With the help of water electrolysis, excess renewable energy can be stored in the form of hydrogen. The green hydrogen produced in this way can be used in a wide range of applications.

Precious metal catalysts are used to split water. In the application, the catalysts are coated onto a membrane and pressed together with electrodes to form a membrane electrode assembly (MEA). The quality and performance of the MEA are strongly dependent on the type of coating and the pressure and temperature of the pressing process. As part of a student project, the coating process, pressure and temperature are therefore to be varied during production and their influence subsequently investigated under real operating conditions.



### Tasks:

- Literature research on the production of membrane electrode assemblies in PEM electrolyzers
- Testing, revising and evaluating a manufacturing process suitable for laboratory use, including coating, pressing and assembly
- Electrochemical characterization of the manufactured membrane electrode assemblies

### About IAM-ET:

We offer excellent supervision, flexible working hours and the opportunity to work in an interdisciplinary team on a cutting-edge topic. The IAM-ET offers a constantly growing team with expertise in the field of battery, fuel cell and electrocatalysis research at Campus South. Independent work and the motivation to work on current research topics are required. For further information, please contact Mareike Sonder. If you are interested, please send a current CV and a transcript of records to:

Mareike Sonder ([mareike.sonder@kit.edu](mailto:mareike.sonder@kit.edu)).