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| <input type="checkbox"/> Bachelor's thesis | <input checked="" type="checkbox"/> theoretical |
| <input type="checkbox"/> Plant design exercise | <input checked="" type="checkbox"/> experimental |
| <input checked="" type="checkbox"/> Master's thesis | <input type="checkbox"/> constructive |

Design of Experiment for test parameter optimisation for Polymer Electrolyte Membrane Fuel Cells

Design of experiments (DOE) is a systematic, efficient method to study complex relationships between multiple input and output variables [1, 2].

The aim of this thesis is to **analyze** the influencing parameters for the operation of Polymer Electrolyte Membrane Fuel Cells (PEMFCs) according to a DOE approach and define the optimal setpoints.

The student's tasks include:

- Define input and output variables for DOE
- Use DOE to optimise PEMFC operation and activation procedures

In the Fuel Cell & Hydrogen Working Group at CEET, you can become part of a team of experienced researchers, PhD students with expertise in materials preparation, electrochemistry and cell characterization, as well as other motivated master students. The research group has access to a fully equipped laboratory with the necessary infrastructure for the planned experimental work.

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- [1] Tanco, M., Viles, E., & Pozueta, L. (2009). Comparing Different Approaches for Design of Experiments (DoE). *Lecture Notes in Electrical Engineering*, 39 LNEE, 611–621. https://doi.org/10.1007/978-90-481-2311-7_52
- [2] Yu, W. L., Wu, S. J., & Shiah, S. W. (2008). Parametric analysis of the proton exchange membrane fuel cell performance using design of experiments. *International Journal of Hydrogen Energy*, 33(9), 2311–2322. <https://doi.org/10.1016/J.IJHYDENE.2008.02.040>