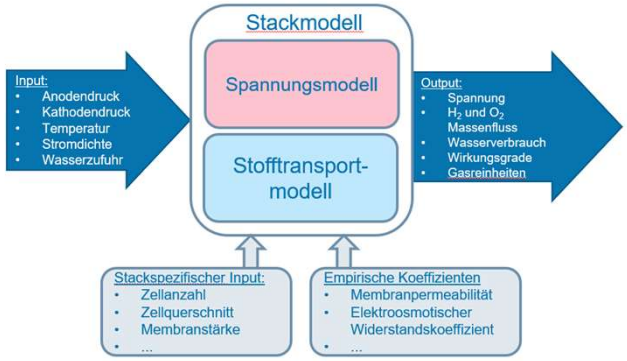
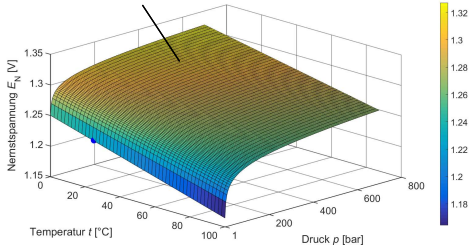
1

Development of an Alkaline Electrolyzer Simulation Model in MATLAB Simulink



Nernst Voltage



Source: HyCentA

Description

Hydrogen plays a key role in the transition of a carbon based energy system towards a system based on renewable energy sources. However, the high costs and low availability of the necessary catalyst materials currently stand in the way of the large-scale production of green hydrogen. In the promising technology of the alkaline electrolyzers, however, these precious catalyst metals can be replaced by inexpensive transition metals. To make this technology ready for the market, simulation models are needed that can represent the electrochemical and mass transport processes as accurately as possible. In this thesis an already existing simulation model of HyCentA Research GmbH for polymer electrolyte membranes (PEM) will be adapted to alkaline electrolysis in MATLAB Simulink. Basic knowledge in MATLAB and electrochemistry is desired.

Content

- Literature research and familiarizing with the PEMEL simulation model (1 month)
- Adaption of PEMEL simulation model to alkaline electrolysis (3 months)
- Parameterization based on experimental data (1 month)
- Creation of written master thesis in english or german (1 month)

Start	08/2020
Duration	ca. 6 months
Compensation	2600 €
Contact	DI Dr. techn. Bianca Grabner +43 (316) 873-9525, grabner@hycenta.at DI Dr. techn. Alexander Trattner +43 (316) 873-9502, trattner@hycenta.at