The Membrane Electrode Assembly (MEA) is the heart of a PEM fuel cell. The MEA is a composite component consisting of a thin catalyst-coated membrane (CCM), a porous gas diffusion layer (GDL) and a support frame.

Due to its function, the CCM undergoes considerable dimensional changes under changing atmosphere (temperature and humidity). Insufficient climate control can lead to numerous component defects during production. In this thesis, the occurring load cases are to be simulated by means of an FEM in order to define intervention limits in production. Based on this, an optimized machine concept should be derived and implemented in an existing plant.

The final thesis is part of a public funded project and enables an exchange with industrial partners and other KIT institutes.

**DESCRIPTION**

**TASKS**

- FE modelling and simulation of the dimensional change of the CCM in a MEA composite in different production steps
- Definition of a local and global atmospheric corridor in an existing plant

**FURTHER INFORMATION**

- Start: from 01.10.2020 onwards
- Duration: 3-6 Months
- Field of study: Mechanical Engineering or Material Science

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