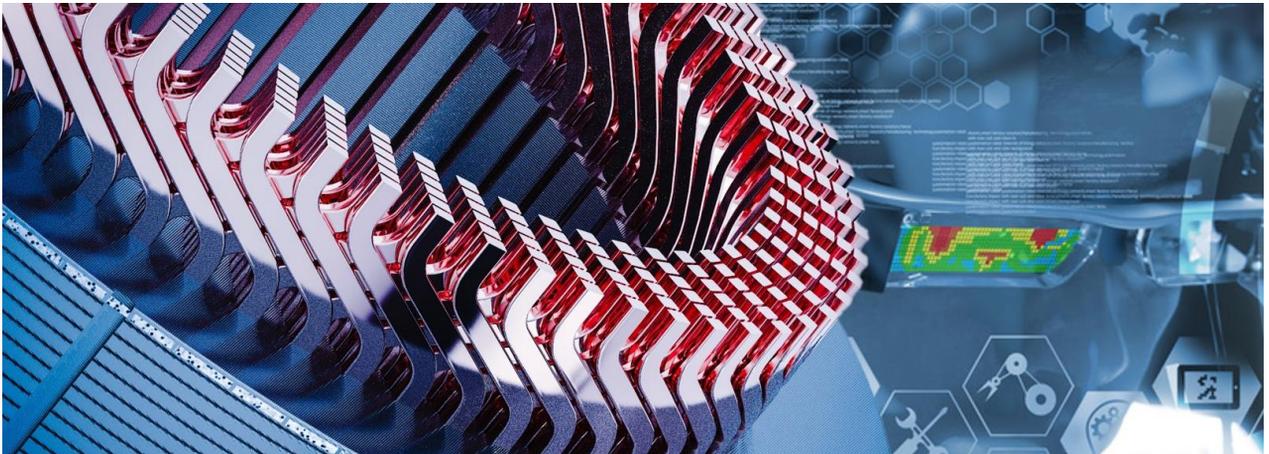


## Master thesis / Bachelor thesis

*Identification of product and process innovations (e.g. AI, Data Analytics, litz wire technology etc.) in electric motor production of the future*



Source: PEM of RWTH

### Initial situation:

Electrification of the powertrain is the automotive solution towards decarbonized mobility and thus an essential factor for achieving climate targets.

In the field of electric traction machines, hairpin stator technology has become established. This uses rigid, rectangular copper conductors instead of bendable round wires. This technology is associated with higher efficiencies on the product side and replaces highly stochastic winding processes on the process side with deterministic, easily automated manufacturing and assembly processes.

While hairpin technology is still in the ramp-up phase, the next wave of optimization is already on the way. For example, rising voltage levels in the direction of 800 V at overall vehicle level are creating a field of tension between technology push and market pull.

This tension must be broken up by early scouting of future-relevant technologies.

### Your task:

Your task is to analyze technologies with regard to product and process innovations and evaluate them with regard to their impact on production technology. On the production side, this includes in particular the use of data-based methods and their contribution to increasing production efficiency. On the product side, the focus is on innovations in individual motor topologies and new winding technologies such as litz wire.

Specifically, this includes the following subtasks:

- Research and preparation on the current state of the art in the field of electric motor production.
- Developing a systematic procedure for evaluating product and process innovations in terms of their impact on production technology
- Carrying out the analysis and preparation of the results

### Your prerequisites:

- Studies in the field of mechanical engineering (or comparable)
- Ability to structure and develop content independently
- Commitment and willingness to learn

### We offer:

- Professional and intensive support
- Flexibility in the formulation of topics
- Insights into future technologies of electric drive production
- Independent execution with meetings via MS Teams

### Interested?

Please send a current transcript of grades as well as your resume and references to the e-mail address below.

### Your contact person at PEM:

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