

## **Abstract**

In this master thesis damages in electrically driven powertrains were examined in view of effects on running costs, efficiency and product quality. For the purpose of investigating parameters of different experiments, various simulated damages were carried out on a powertrain test bench. The main interesting parameters, characterizing an electrical machine, are current and voltage on the input and torque and speed on the output side. These parameters were analyzed regarding the effects of damages in the drive train. To compare the processed values of torque, speed, voltage and current, the results were displayed in tabular form. Concerning the damages additional possibilities for the diagnosis were discovered during the tests. Additionally it can be said that at least in every experiment a pattern was found, useful either for fault diagnosis or a measurable effect on running costs and product quality.

This work should only be the first step for the investigation of different faults and interferences in electrically driven powertrains. In future a systematic mistake analysis path should originate as it is introduced in this work. Therefore the knowledge accumulated in this thesis builds up the base for a damage- effect- catalogue of different faults in powertrains. Considering the results, it can be said, that a proper analysis of current and voltage in the examined failure simulations could have many advantages. Further research could either, detect a saving-potential and lead to an increase of product quality for the machine operator, or it could improve and refine the diagnosis of machine defects.