

Abstract

Steering systems with electrical assistance are being developed at thyssenkrupp Components Technology Hungary Kft, Budapest. Most of the time the position of the steering wheel is detected by a rotor position sensor which is operating on magnetic principals and a torque sensor which is on the steering column. However the ambient magnetic field around the sensor unit might disturb the useful magnetic field, detected by the sensor. Magnetic shielding might provide an effective protection against this phenomenon. An obvious solution for this problem is to insert a shielding metal plate.

The magnetization properties of these plates that were ordered from different suppliers are often not sufficiently stated or in some cases unreliable. Therefore in this thesis I am going to investigate the measurement arrangements that can examine the B-H hysteresis curve of these materials. If the magnetization curve is accurately measured then the measured data can be used in simulation environments too.

In the first part of my thesis I introduce the magnetic materials and their properties. The most important of these are the magnetic hysteresis, the first magnetization curve and the relative permeability. I introduce already existing systems capable of measuring these properties. After selecting the most suitable method for this project, I am going to present it in detail. I specify our measurement system, which I carried into execution in this semester. I made measurements on a material with known properties and compared the measured results with the values in the material's datasheet. After summarizing the measurement results, I present a calibration procedure. I describe several error phenomena that can be investigated by measurements in different environments.