

Innovative magnetic systems and testing methods

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The industry-oriented research institution INNOVENT (based in Jena) has been working on the field of magnetic sensors and systems since two decades. Thus, inspection tools for magnetic components and materials have been developed for many industrial and academic applications.

For far-field measurements, a special magnetic tracking device was created to measure the magnetic moment and the misalignment of the magnetization axis of dipole magnets. The system is ready for in-line control of the magnetic parameters. Therefore, fully automatic quality control of permanent magnets can be realized.

Customized magnetic mapping devices were developed based on different sensors (Hall, XMR, Fluxgate) to measure the stray field of magnetic components 3-dimensionally. Especially rotor mapping systems for different rotor sizes enable the quality control of these magnet assemblies.

Also near field magnetic investigations with magneto-optical (MO) sensor systems were carried out. For example, electrical steel sheets were investigated to correlate the magnetic domain structure of the material with the structural properties. The presentation will show the potential of MO imaging for quality control and development of magnetic materials and components.

On the subject of field generating systems, INNOVENT is an expert to provide customized coils and electro magnets. Often, tailor-made coil systems with special requirements are needed for the calibration of magnetic sensors or physical experiments. We will present some examples of our coil developments.



Figure 1: 3D Helmholtz coil developed for magnetic sensor calibration