

Measurement of the radial deviation on superconducting magnets

At the Institute for Solids and Materials Research (IWF) Dresden a motor with magnetic bearings has been developed using high temperature superconductors which can be employed for feed pumps for liquid nitrogen. The most important application of superconducting permanent magnets is the superconducting magnetic bearing. For the measurement of the radial deviation of these magnetic bearings, U1 eddy current sensors with special temperature compensation for -196 °C and 20 °C are used in the evacuated and cooled ambient.

Measurement system requirements

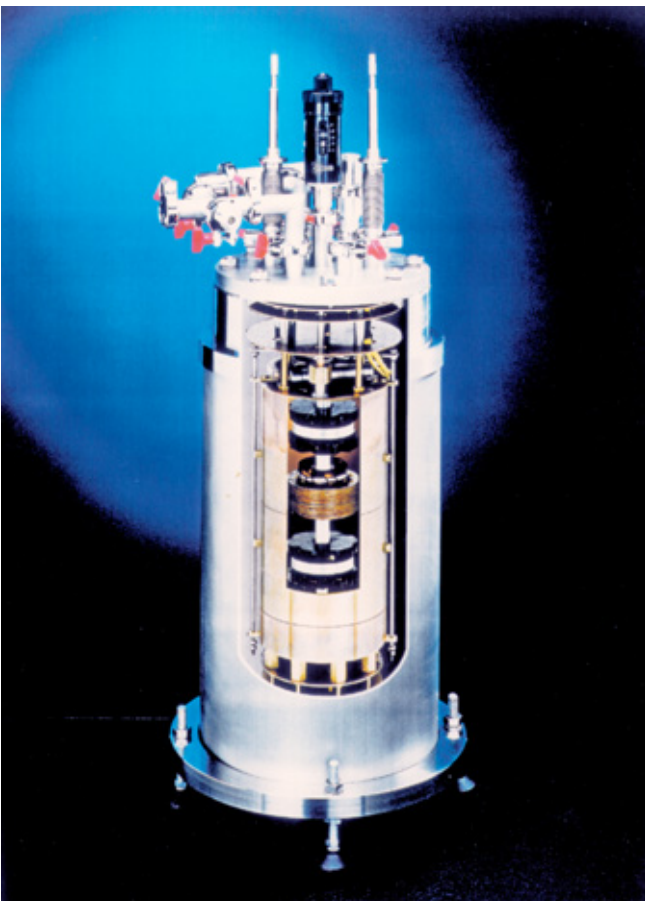
- Measuring range: 1 mm
- Accuracy: $2\text{ }\mu\text{m}$
- Resolution: $2\text{ }\mu\text{m}$
- Bandwidth: 100 Hz

Reasons for the system selection

The special temperature compensation enables measurement at the lowest temperature and also at room temperature.

Ambient conditions

- Temperature: $-196\text{ °C} \dots +20\text{ °C}$
- Medium: Nitrogen or air
- Interference fields: Strong permanent magnet



Application

Structure of the measurement system

U1.03

BC 010-U1.03-C3-TCS

DL 504

OS 510

RS 584

DD 500

