STUDY, MANUFACTURE AND TESTING OF THE SENSOR FOR DETECTION OF SMALL MAGNETIC FIELD

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ABSTRACT
This paper presents a sensor type for the detection of small magnetic field which has been designed, manufactured and tested at the Hanoi University of Science, Vietnam National University.

The principle of sensor function is based on the Fluxgate effect of magnetic flux. The main operating unit comprises of the differential transformer built from the permalloy material. The operating frequency is 1kHz. The output voltage is set to zero at the beginning. When the magnetic field varies, the magnetic flux changes in material which induces the corresponding varying output signal, especially the second order component.

Some measurement results using this kind of sensor are discussed in the paper. The sensor magnetic field sensitivity can achieve the order of nT.

The sensor is applicable in many circumstances: metal sensing, mine inspection, magnetic flow detection etc.