ABSTRACT

Title：Fabrication and Characterization of Wire-Wound Current Sensor

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Researcher：Sheng-Fang Hong Advisor：Jen-Tzong Jeng

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Fluxgate is a magnetic sensor which is very sensitive to external magnetic field.This paper demonstrates a ring wire-wound fluxgate with double magnetic cores that can detect the current magnitude by sensing its field.The Metglas2714A magnetic core was stuck to a PMMA ring with the copper wire excitation coil and pick-up coil wound around it.This fluxgate current sensor is able to detect the changes of magnetic flux between saturation and unsaturation of the magnetic core.

In this paper, we measure the responses of fluxgate current sensors at various excitation frequencies (1 kHz to 50 kHz) and varying excitation current amplitudes.Beyond that, we also measure the responses of fluxgate enclosed by a ferrite tube to verify its capability of serving as a magnetic shielding for the current sensor.