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ONLINE SATURATION DETECTION OF HIGH-VOLTAGE CURRENT TRANSFORMERS OF ELECTRIC SUBSTATION THREE-PHASE PRIMARY MEASURING CHANNELS IN POWER SYSTEMS TRANSIENTS

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Abstract

The saturation index, its threshold value and characteristics of known current transformer (CT) saturation detection methods are determined. A description of the mathematical model (MM) of the three-phase primary measuring channel (PMC) of current, which consists of a model of the group of CT, each of which is represented by a MM based on the Jiles-Atherton theory of ferromagnetic hysteresis for digital analysis and signals processing is depicted. Using the developed MM of the three-phase PMC and the software environment, a number of known methods of saturation detection have been implemented, and their main features, characteristics, advantages and disadvantages have been established. The noise-immune and precise method of online CT saturation detection, which are the part of the three-phase PMC under the fault condition of power system has been developed. Characteristics of the method are confirmed experimentally. References 31, figures 5, table 1.

Key words: fault current, current transformer, saturation, discrete Fourier transform, method.

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