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## COMPLEX FOR ELECTRIC POWER EQUIPMENTS MAGNETIC FIELDS MONITORING

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### Abstract

*Using characteristics of magnetic fields as diagnostic parameters is due to their direct interconnection with energy conversion processes, structural and functional features of electric power equipment, current state and modes of its operation. The cumulative effects on the diagnostic parameter lead to changes in its value, and their diversity causes differences in the nature of these changes. Analysis of the nature of these changes is used to describe diagnostic signs associated with the exposure of faults, which provides greater efficiency in detecting early signs of deviations from the normal state and greater selectivity in case of multiple faults. At the same time, monitoring of external magnetic fields of electric power equipment in various areas of their occurrence — temporal, spatial and frequency — is implemented without the objects destructing, changing the technological process or modes of their operation. The aim of the work is to develop principles of construction and operation, methods for implementing a set of tools for studying electric power equipment through continuous or periodic monitoring of magnetic fields and the use of monitoring results in technical diagnostics systems. Summary: 1. A multi-level functional specification of a system has been developed, which is implemented by its hardware and software components; 2. The choice of primary measuring transducers is*

substantiated with factoring in the features of monitoring external and internal magnetic fields of observing objects; 3. Methods and means for software and hardware implementation of the zero-bias compensation function caused by the non-equipotentiality of the Hall transducers and the drift of the amplifier-converter circuit are proposed; 4. The division of computing resources between programmable computing (microcontroller) devices and digital logic devices with programmable structure (CPLD) has been grounded. 5. Experimental studies of the developed system confirmed the implementation of the given functional specification. The system provides registration of induction of external and internal magnetic fields, data collection and its visualization for identification of diagnostic characteristics of electrical rotating machines. References 26, figures 5.

**Key words:** magnetic measurements, monitoring, data acquisition, electric power equipment.

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