

## Summary

of the PhD dissertation of Dariusz Macierzynski entitled "*Innovative transducer with a magnetically modified amorphous core for measuring currents in mining power networks*"

The doctoral dissertation is devoted to the generally important and current issues of increasing the accuracy of effective measurements of both RMS current values and fidelity of mapping its instantaneous waveforms in mining power networks with significant distortions in the waveforms of electrical quantities caused by supplying nonlinear receivers. In particular, it concerns the possibility of practical obtaining a current transducer with stable metrological parameters in a wide range of changes in both the frequency (10Hz-1000Hz) and the value of the measured current (from about 1A to 1000A), especially under the conditions of slow-moving mine transport. This not only enables reliable operation of protection automation systems, it also allows for proper diagnostics of working converter motor power supply systems. Therefore, the main purpose of the work was to obtain a suitable current transducer using a new generation of magnetic materials formed in the ultra-fast cooling process to obtain the desired properties. Therefore, the dissertation carried out comparative tests of metrological properties of current transformers and current converters used in particular in measuring systems with small electrical signals and high levels of electromagnetic field disturbances. A structure was developed and guidelines were formulated for the technology of a new innovative transducer with an amorphous core, conducting its tests in both laboratory and operational conditions in steady and transient states. Models of an innovative transducer were made, which have been successfully used in modern solutions of devices operating in low and medium mining power networks (1kV, 3,3kV and 6kV).

  
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