1.1.25. OPTIMIZATION OF A DESIGN AND PARAMETERS GEOMETRICALLY SIMILAR MAGNETO-INDUCTIVE TRANSDUCERS WITH THE EXTERNAL FERROMAGNETIC COVER WITH USE OF A METHOD OF FINAL ELEMENTS

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Basic parameters defining absolute sensitivity and an error of measurement magneto-inductive coating thickness gauges on which basis criteria of optimization of a design of geometrically similar transducers with the external ferromagnetic cover with a range of measurement from 1 micron to 70 mm are developed are considered.

Geometrical models and algorithm of calculation of scalar potentials by a method of final elements with the subsequent definition of magnetic potentials in points of internal volume of the transducer are developed. Streams of dispersion for various parities of geometrical characteristics of transducers are calculated. Also are defined their optimum values on which basis it is developed a number of magneto-inductive transducers. Also methods of transformation with use digital – analogue transformation of impulses of currents of excitation of the difficult form and the subsequent analogue – digital processing of the primary measuring information are developed, allowing essentially to lower influence of stirring factors.

The basic characteristics of the optimize transducers, structure of secondary transformers, algorithms of their functioning, and also developed magneto-inductive coating thickness gauges are resulted.