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SIMULATION OF ELECTROMAGNETIC-ACOUSTIC CONVERSION PROCESS UNDER TORSION WAVES EXCITATION. Part 2

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Abstract

Mathematical modeling of the electromagnetic-acoustic transducer (EMAT) for excitation of nondispersive torsional waves in tubular electrically conductive ferromagnetic hollow rods of small diameter is performed taking into account all the factors that determine the design of the EMAT. The solutions of the differential equation for the values of the electromagnetic fields formed by the high-frequency coil of the device in the gap between the transducer and the tubular ferromagnetic product are found. The results of the research can be used to simulate and design exciting EMATs for measuring, monitoring, and diagnostics in the energy, nuclear, chemical and other industries for ultrasonic test of ferromagnetic tubular products. References 6, figures 4.

Key words: ultrasonic test, nondispersive torsional waves, mathematical simulation, electromagnetic-acoustic transducer, tubular product, wave characteristic of the transducer.

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