

1.3.77. THEORETICAL AND EXPERIMENTAL ULTRASONIC INVESTIGATION OF GENERAL CORROSION AND EROSION IN CONSTRUCTION

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In this work a model of propagation of longitudinal ultrasonic waves in the system: transducer-contact layer-material-reflected surface is presented. Theoretical modelling is realised for a case of weak and hard development of general uniform corrosion/erosion, which is presented into a model with usage of periodical unevenness reflected surfaces with different characteristics. As parameters of the modelled reflected by the unevenness information signal the following are used: time of flight, amplitude and spectrum.

Ultrasonic experimental investigations are done with comparative patterns with periodical surface unevenness. The influence of contact layer is used, as well as back scattering signal from unevenness reflected surface of real patterns with different level of general uniform corrosion. The processing of the back scattering signal includes the traditional information characteristics and the evaluation of the secondary information characteristics through wavelet analysis.

The experiments are completed with ultrasonic thickness with longitudinal and transverse waves, as well as with ultrasonic phased array.

The experimental dependence of information back scattering signals from the geometrical characteristics of unevenness has been received.