

1.3.1. DEVELOPMENT PROSPECTS OF ACOUSTIC TESTING METHODS

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Paper discloses the most prospective acoustic methods of testing and diagnostics. In the nearest years, electromagnetic acoustic methods based on the Lorentz effects and magnetostriction will be further developed. It is expected to define the optimal application fields for each of these methods, while special attention will be paid to ways of sensitivity and noise-immunity improvement. Results of instruments application in gas industry are presented.

Contact laser ultrasonic testing is a very prospective method of diagnostics starting from space and ending by medicine. Due to short pulse (several ms), there is no practically dead zone, while possibility to excite oscillations with frequency of 30 MHz and more makes it possible to study structure of materials and to test articles of small thickness. Using this method, it is possible to detect confidently defects with size of 0.1 mm and more. Method has found wide application in aerospace field.

Phased arrays will be further developed. They are applied especially efficiently in automated testing means. Special attention should be paid to flexible phased arrays and ones with dry contact.

Paper discusses wave guide testing methods, their disadvantages and possible ways of improvement. Types of excited oscillations should be examined in more details in the context of method sensitivity improvement.

Possible ways to increase information content of acoustic emission, as well as methods to improve accuracy by the stressed-strained state are discussed.