1.3.16. AUTOMATED ULTRASONIC SYSTEMS DEVELOPMENT TECHNOLOGY FOR THE WELDED JOINTS AND MAIN METAL INSPECTION

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In this report is contemplated quick development automated ultrasonic systems technology on the open program-hardware base AUGUR to the different purposes. Presented technology directs on solving basic inspection tasks during object construction and operation. It provides making the optimum systems with required level of automation data acquisition, its processing and forming the inspection results conclusions (making decision).

Technology bases on many years' experience of making automated ultrasonic inspection systems. Main program-hardware base elements were created. They are: data registration program hardware-independent kernel, presentation and processing ultrasonic data program, wide engineering solution base for scanning devices. Also electronic modules were developed (from switched one channel blocks to many channel phased arrays systems). This technology supports many different countries standards about inspection methods. Own methodical decisions are used during austenitic welded joints and thickly walling objects inspection. Automation degree increases with using the automatic tracing programs and eliminating appearing during inspection artifact influence (coupling conditions abnormalities, pressing device backlash, object geometry changing during the inspection and etc.).

In the report each element characteristics of the program-hardware base AUGUR are considered. Several examples of development technology realization are cited. Special attention in the report is spared on the automatic detection and flaws geometry identification method. In the authors opinion this method become all more actual. Especially while using the defect images recovering coherent methods with continuous focusing, wave's type's transformation and inspection object geometry influence accounting. Such methods are realized by using phased arrays and provide the most exact flaws images reception.

This report described interaction procedure using this technology between ultrasonic system customer and its developer. It is essential to the customer to define several basic parameters of new system construction (destination characteristics), to establish requirements of detected flaws and to choose possible additional component system set.