

Abstract

The master's dissertation contains 82 pages, 27 figures, 27 tables, 18 sources according to the list of references.

Keywords: eddy current testing, heat exchange tubes, nuclear power plants, amplitude and phase processing methods.

The dissertation deals with the issues of control of heat exchangers of steam generators in nuclear power plants. The internal diameter of the heat exchanger tubes is only 16 mm, which necessitates the miniaturization of the sensor and access to the testing object only from inside of tube. The functional scheme and algorithm of work according to system requirements are proposed. The novelty of the work is combining the amplitude and phase methods of signal processing from the eddy current sensor in order to increase the probability of detecting defect signals.

Also, the project proposed a sensor for control \rightarrow presented a harvesting drawing. Appropriate simulations have been carried out to confirm the relevance of the proposed processing method, in particular to improve the accuracy of the method using phase processing, which suggests the use of R-statistics.

The object of the study is the process of eddy current control of heat exchangers of a steam generator of the nuclear power plants.

The subject of the study is the methods and means of two-parameter eddy current control of steel thin-walled heat exchangers of nuclear power plants steam generator.

The purpose of the study is to develop a project for the automated system of eddy current control of heat exchangers nuclear power plants gas. The provision of testing helps to achieve maximum safety and increase the duration of trouble-free operation of the nuclear power plants.

The scientific novelty is the proposed method of combining the amplitude and phase method of processing in order to increase the probability of detecting defect signals.