

Abstract

This master's thesis consists of 90 pages, 40 illustrations, 23 tables and 17 literary references.

In the master's thesis the possibility of building an ultrasonic system for controlling the threaded connection of drill pipes was conducted. A system was proposed that includes a set of transducers used as a phased array antenna.

Possible schemes of sounding in the system are investigated. The proposed mode of operation of the system is to determine the presence of cracks. The study found that the most effective is the echo method, which requires initial setup. The modern element base is analyzed, which satisfies the set requirements of the system by means of a phased lattice

The purpose of the work is to create an automated system for detecting defects in drill pipes, which is based on the use of a group of ultrasonic primary transducers.

Analysis of the modes of doing phased array, the detection of side effects of phased array in the implementation of control, and the development of methods of their oppression.

The object of study is the process of automated ultrasonic flaw detection of drill pipes.

The subject of research - methods and means of increasing the sensitivity and speed of automated ultrasonic flaw detection of drill pipes.

Key words: ultrasonic system, phased array, automatic system, ultrasound, radiation pattern.