

Summary

Keywords

Ultrasonic flaw detector, bluetooth detector, smartphone, wireless data transmission, non-destructive testing, ultrasound, wireless networks.

Actuality of theme

Today, wireless data technologies have become an integral part of our lives. They are widely used by consumers of both conventional and professional equipment. The exception was not non-destructive control.

If we look at existing non-destructive devices and systems that use wireless data transmission, we will see that in the vast majority of them, such technologies are used as ancillary and not used to transmit raw data about the object of control.

In this work, wireless technologies are used not only to transmit reports on the state of the object of control, but they also help to "communicate" the sensor with the primary converter and the unit of reception and processing of information. In this work, this unit is a smartphone.

The smartphone as a complex device today has high computing capabilities, a complete set of the most widespread technologies of wireless connection, as well as a flexible software shell. It is these advantages of this type of devices that allow them to be used in non-destructive testing tasks.

The essence of this work lies in the development of a flaw detector with a wireless channel for transmitting data about the state of the object of control to a smartphone. Where this data will be processed and displayed on the main display to determine the presence of defects in the controlled entity.

The purpose and objectives of the study

The purpose of the study is to create the possibility of using wireless data technologies with modern methods of processing and presenting information in non-destructive control tasks.

Analysis of the use of smartphones in non-destructive testing as a means of rapid processing and structuring of the results obtained.

Object of study

The object of study is the process of ultrasonic non-destructive testing.

Subject of study

The subject of the study is methods and means of transmitting and receiving a signal from a sensor using wireless communication channels and further reconstruction of the signal by a smartphone.

Scientific novelty

- Defectoscope developed using modern methods of receiving and transmitting data using wireless technologies;
- An ARM-based chipset system was used as the receiving and processing unit;
- Simultaneous processing of control object status data on two or more devices.