

ABSTRACT

Relevance of the topic:

In the context of modern technical requirements and the high competitiveness of industrial enterprises, non-destructive testing plays an important role in ensuring the quality and reliability of products. This is especially true in remanufacturing, where defect management and compliance are crucial factors. One of the key aspects of remanufacturing is the inspection of piston pins, which operate under high stress and high temperatures.

Automated non-destructive testing systems, in particular eddy current systems, are proving to be the most promising in remanufacturing processes. They can accurately and reliably detect even the smallest defects in piston pins, providing high speed and accuracy of measurements. Automation of this process will significantly increase the productivity and quality of the restoration work, reducing the likelihood of accidents and increasing the durability of products.

This technology is key to maintaining production stability and the competitiveness of enterprises in today's global marketplace.

Objective of the study:

The study aims to develop a design of an automated eddy current system for controlling piston pins during restorative repair.

The object of study includes the process of automated control of piston pins during a refurbishment.

The subject of the study is an automated eddy current system for controlling piston pins used in the process of restorative repair.

The research methods include the theoretical foundations of eddy current control methods, principles of electronics and microprocessor technology, information and measurement technologies, and methods of computer modeling experiments.

The practical significance of the results:

1. The design of the eddy current system for controlling piston pins was developed taking into account their restorative repair.
2. Software in the MatLab environment was developed that allows processing

information signals of eddy current transducers and determining their information characteristics - envelope and phase - in automatic mode. The software can be used in other VSCs as a separate program module.