

Abstract

Actuality of theme

The technological process in the industry is inextricably linked to its automation of technological processes. Automation is effectively used at the present stage of human development to achieve growth in resource efficiency, improve environmental quality and reliability of products. Due to the rapid development of microprocessor technology and personal electronic computers, the functionality of which enables the use of the most advanced methods within the modern complex control systems. Microprocessor devices and electronic computers interconnected by computer and control networks using common databases allow the introduction of computer technology in the non-traditional field of activity of the enterprise, which is manifested in the integration of production processes and management. The basis of automation systems were the functionality of microprocessor control systems, in the creation of which factors such as the use of principles of integration, distributed control, software systems play a crucial role. When automating production, the object is not a separate technological process or unit, but a technological complex with complex interconnections between its subsystems.

The master's thesis consists of 105 pages, 65 illustrations, 59 formulas and 31 tables. Selected material was listed in 20 sources of links.

In this dissertation, the methods of ultrasonic and eddy current non-destructive testing for the control of brake discs were analyzed, their advantages and disadvantages were determined, and the choice of the method used was made and justified.

The graphic part consists of 3 drawings. An electrical schematic diagram of the device has been created, which is supported by the calculations of the acoustic path, the electroacoustic path and the calculations of the circuit elements. Modeling carried out, which includes: 3D model of the control system, analysis of brake disks with the help of Comsol.

The marketing component of a startup project is analyzed to determine the feasibility of this implementation and possible market directions for its implementation.

Purpose and objectives of the study:

The purpose of the study is to develop a universal automated brake disc control system.

- Perform simulation of the robotic system
- Develop a comprehensive control system
- Investigate the influence of factors on the brake disc heating

Object of study :

The process of automated non-destructive testing of brake disks by ultrasonic and eddy current sensor with a robotic brake disc control system.

Subject of study :

Methods and means of automated control of brake discs using a robotic brake control system.

Scientific novelty:

The system of control of brake disks is offered. Its geometrical characteristics are calculated, elements of the electrical scheme are selected.

- Simulation. SolidWorks system model created. The principle of its work is described.

The general requirements for robotic control systems are formulated