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Some Aspects of Improving the Quality of the Performance of the Automated Control System of Polishing Machine-Tool

Automation of production processes is one of the major directions of scientific and technical progress. Its importance is not only in facilitating human labour but also providing work of production with such indexes of the productivity as reliability, economy.

All above mentioned could be impossible while using hand labour. It is commonly known that a modern technical equipment is constantly being improved and is developing intensively at rather high rates.

However, machine parks used for treatment and making production goods are getting out-date from moral and technical side of view. In connection with the production necessity of increasing the productivity and accuracy of treatment of details it is necessary to improve main technical features of machine-tools which are still in great demand.

It is necessary to conduct the analysis of existing methods of optimization of control systems of polishing machine-tools and choose the most suitable method to meet requirements of improving the quality of machine-tool performance.

The aim of this research is to determine such parameters of a system which will be able to provide the best dynamic properties.

Research will be conducted with the use of packages of Mathcad and Matlab and analog model of the system which would provide the set indexes of quality. Methods of synthesis with the help of logarithmic frequency descriptions where design devices will be working in the regime of phase advance and phase lagging are about to be used. Also the research of the system will be carried out by using root locus.

The method of research carried out by using frequency-response characteristic is featured by substantial simplicity, sufficient accuracy of obtained results and provides the opportunity to use electronic data processing machines.

The technique of making research of automated systems by using root locus is more time consuming task but it greatly improves the main characteristics of automated system performance ratings.

The results of this research show that root lotus proved to be more convenient in comparison with other similar technical devices used for performing the same task as algorithm management.