

ANALYSIS OF THE "MAN-MACHINE-ENVIRONMENT" SYSTEM'S SAFETY IN COTTON GINNING PRODUCTION

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Abstract

The article presents the results of the analysis of the "human-machine-environment," safety system, and defines the direction of future work on quantitative assessment of injury risk in the cotton ginning industry.

Introduction

The article presents the results of analyses of the secure "Human-machine-environment" system and matched further work on quantitative assessment of injuries at cotton processing plants.

The article presents the results of the "human-machine-environment" system safety analysis and outlines the directions for further work on the quantitative assessment of the injury hazard of cotton ginning production.

The tasks set for the cotton ginning industry in the context of a market economy to improve cotton primary processing technologies require simultaneous solutions to social problems. This includes an important condition for the analysis of occupational safety is the timeliness and completeness of the initial information, a significant portion of which is received after an accident or disaster. Based on this information, they develop protective measures and means, make a conclusion about the direction of capital investments, further research, etc. Obtaining information about equipment failures before an accident is of great importance. Information for security analysis can be obtained by various methods - photography, stereo filming, timekeeping, recording according to standard form, etc. The widespread implementation of the systematic method of analyzing the causes of accidents at cotton ginning enterprises will allow for a more complete study of the conditions for the emergence, formation, and manifestation of hazardous production factors, reveal the hidden causes of injuries, and more fully study the properties and characteristics of the main components of typical production systems, their role and significance in the causes of accidents with labor methods, but also structural and technological shortcomings that reduce the reliability of this system. To increase it, it is necessary to solve the problem of automating the control of transient aerodynamic processes in the pre-sowing period of time in the pneumatic transport system of raw cotton. These can be the scraper shaft rotation speed control relay connected to the sound signal; the automatic damper A-222 on the fan connected to the pressure sensors, etc.

Information for analyzing the human-machine-environment (HMS) system safety in the cotton ginning industry is quite diverse and can be classified as follows:



- information on the consequences of the state of occupational safety in production (industrial injuries, occupational diseases, and poisoning);

- information on the state of occupational safety in production and on preventive measures (emergency situations, equipment characteristics, the state of the production environment, conducting inspections of equipment readiness) Quantitative methods of safety analysis are not yet sufficiently well-developed for practical application and, as a rule, are highly effective only when determining the comparative hazards of the TMS system. This is due to the need to obtain accurate assessments of the condition of the CSF system, which is not always possible. However, quantitative methods allow for assessing the safety of the TMS system based on the characteristics of its components, allow for the application of sequential approximations, and yield sufficiently good results under conditions of uncertainty, especially when using methods from modern mathematical disciplines (information theory, operation research).

Currently, significant attention is being paid to assessing the injury hazard of equipment and production processes. A connection between the danger and the reliability of equipment has been recognized.

A new branch of security science, "security theory," is emerging, which largely utilizes the theoretical foundations, methodology, and mathematical apparatus of reliability theory.

The results of studying domestic and foreign literature sources on the relationship between labor safety and the reliability of technical means, including production equipment, transport, various types of structures and devices, are presented. The importance of the problem of ensuring equipment safety based on increasing its reliability in various sectors of human production activity has been illustrated with numerous examples, and possible ways to solve it have been considered in detail [4].

The influence of machine and equipment reliability on their operational safety is described. The relationship between the safety and reliability properties of machines and equipment has been thoroughly examined, possible states of the human-machine-environment system from a safety perspective have been analyzed, and a method for evaluating human-operator errors has been proposed.

From the point of view of the application of the mathematical apparatus and the methodology of reliability theory, a monograph is of significant interest, in which mathematical

Conclusions:

The main directions of further work on the quantitative assessment of the injury hazard of cotton ginning production are:

- creation of automated databases and information systems containing relevant information on traumatic equipment failures;
- development of methods for processing this information for the purpose of forecasting and identifying the most dangerous failures;
- development of various mathematical models of failures and injury hazards of production equipment;
- development of a quantitative assessment of the importance of various components of the human-machine system in terms of injury hazard;



- development of formal procedures for constructing false probabilistic models of equipment injury hazard;
- development of software for computer technologies, including the above methods and models.

References

1. S.T. Tukhtabayev, //Equipment and safety of primary cotton processing technology//, Manual, "ZEBO PRINT," Tashkent, 2023.
2. S.T. Tukhtabayev, N.B. Mukimov //Technical means of s.
3. A.S.Khamidov, F.A.Abidova. //Civil Protection in Emergency Situations//. "ALMALIQ KITOB BIZNESS," Tashkent, 2023.
4. Perelet R.A., Sergeev G.S. Technological Risk and Ensuring Production Safety. - M: Knowledge, 1998.
5. A.N. Bogomolov, A.I. Korzon, G.P. Mazirin. Reliability of production equipment and occupational safety. M.: VNIOT, 1990.
6. Dillon B., Singh C. Engineering Methods for Ensuring System Reliability. M: Mir, 1994.

