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## **THE USE OF COMPUTER MONITORING IN TECHNOLOGICAL SAFETY CONTROL AND MANAGEMENT SYSTEMS**

With the development of modern technologies and the increase in the intensity of technological processes in various industries, there is an increasing need to ensure process safety. Process safety monitoring and control systems play a key role in ensuring the efficient and safe operation of various production processes. They not only monitor the operation of equipment, but also control environmental parameters, ensuring the safety of employees and the preservation of production resources. However, with the increasing complexity of technological systems and processes, there is a need for more accurate, efficient, and reliable process control. In this context, computer monitoring is becoming an important tool that allows, through continuous monitoring of processes, to quickly track and analyze various process parameters, identifying potential threats and taking measures to eliminate them to prevent emergencies before serious problems occur, which in turn allows to increase the efficiency of safety systems [1].

The use of computer monitoring in process safety control and management systems opens up new opportunities for businesses. This technology doesn't just monitor equipment performance - it analyzes data, providing operators and engineers with valuable information for decision-making. Thanks to computer monitoring, it is possible not only to prevent potential accidents but also to optimize the operation of systems, which ultimately leads to increased productivity and reduced costs.

The purpose of this paper is to study the possibilities of using computer monitoring in technological safety control and management systems.

The task of using computer monitoring in technological safety control and management systems is to create a reliable and efficient system capable of timely detection of potential threats, anomalies and emergencies. This includes continuous monitoring of equipment, environment, and process parameters, as well as the development of algorithms for rapid response to identified problems. The use of computer monitoring in process safety control and management systems is an important step in improving industrial safety and production efficiency.

First of all, computer monitoring systems allow quickly detect any anomalies and deviations in the operation of equipment or production processes. This means that even the smallest deviations from the norm can be detected and eliminated before they lead to serious emergencies. As a result, operators and engineers can take the necessary measures to prevent potential problems, which ensures a safer and more reliable system."[1]

Further, computer monitoring helps to optimize production processes. Real-time data analysis helps to identify bottlenecks in the operation of equipment and improve the efficiency of mechanisms. For example, the system can point out inefficient use of resources or suggest which processes can be optimized to increase productivity. This leads to improved production performance and reduced time and financial costs.

One of the important advantages is the ability to predict possible failures and accidents. Computer monitoring systems use machine learning and data analysis algorithms to build models of system behavior. This allows to predict the likelihood of problems and take the necessary measures to prevent them. For example, the system can automatically switch to a

backup mode of operation or suggest scheduled maintenance to avoid unforeseen disruptions to the production process [2].

By responding quickly to changes in operating parameters, computer monitoring systems ensure the safety of personnel and equipment. This includes the automatic shutdown of dangerous equipment or an alarm system that warns employees of a possible threat. Such efficiency helps to minimize risks to the health and safety of personnel and protects equipment from damage. In addition, computer monitoring helps to improve the reliability of the system as a whole. Constant control and instant response to any anomalies reduce the likelihood of human error and reduce the risk of emergencies. This creates conditions for more stable and uninterrupted operation of production processes.

In general, the use of computer monitoring in process safety control and management systems demonstrates significant benefits for industry. The efficiency, effectiveness, and reliability of such systems make them an integral part of modern production processes, ensuring stable operation and minimizing risks [3].

The study revealed a number of advantages of using computer monitoring in technological safety control systems in mine workings. Firstly, such systems allow to promptly obtain information about the current state of workings, vibration level, temperature and other parameters that affect the safety and efficiency of work. This helps to identify potential threats and prevent emergencies in a timely manner. Another important result of the study is the optimization of production processes through computer monitoring. Data analysis allows us to identify the most efficient methods of work, reduce costs and increase productivity. In addition, the use of computer monitoring makes it possible to create and implement emergency forecasting systems, which significantly increases the level of safety of employees and equipment.

Conclusions: The use of computer monitoring in process safety control and management systems is an integral part of modern industrial processes. This allows not only to increase the level of safety and reliability of systems, but also to optimize production processes. The main results of research in this area show that computer monitoring is an effective tool for preventing accidents and improving the operation of technological systems.

### References

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