

Intelligent Risk Management Systems in Energy: Impact on the Environment

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Abstract

In modern conditions of the functioning of the energy industry, effective risk management is becoming increasingly important, in particular those that have a direct or indirect impact on the environment. Given the increasing complexity of energy systems, increased environmental load, climate change and global challenges in the field of sustainable development, there is a need to use new, technologically advanced approaches to risk management. One of such tools is intelligent risk management systems (IRMS), which combine the capabilities of artificial intelligence, big data analysis, IoT solutions and predictive analytics.

The purpose of the study is to study the potential of implementing ISURS in the energy sector to reduce the risks of man-made environmental impact, increase the reliability of energy systems and create the prerequisites for environmentally safe management of the industry. The study analyzed the technological architecture of such systems, outlined the principles of their functioning and identified key efficiency factors. Particular attention was paid to the relationship between technological solutions and environmental results, in particular, reducing emissions of harmful substances, optimizing resource use and preventing emergencies.

As a result of the study, it was found that the implementation of ISURS allows for early detection of environmentally dangerous events, automated response to critical situations, as well as making strategically sound management decisions taking into account environmental risks. It was also found that such systems can significantly increase the efficiency of interaction between technical, managerial and educational components of energy enterprises.

The conclusions substantiate the need to train a new generation of specialists capable of working at the intersection of engineering, management and digital technologies. It is proposed to integrate the topic of intelligent risk management in the energy sector into the educational process, which will contribute to the formation of an environmentally conscious and professionally trained community. Thus, IRIS not only change approaches to risk management, but also become a factor of environmental responsibility and sustainable development of the energy sector as a whole.

Keywords

Intelligent systems, risk management, energy, ecology, artificial intelligence, digital technologies, education.