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INCREASING OF ENERGY EFFICIENCY OF COAL MINING USING DATA ANALYSIS METHODS

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Purpose. Analysis of the influence of geological and mining technical factors on the drift stability to determine the reliable and effective support of workings during the service period.

Methodology. Investigation of the features of the excavation work during the coal seam mining. Conducting computational experiments to determine the stress-strain state of a rock mass and the construction of a support system.

Findings. Analysis of the impact of mining and geological and mining factors on the stability of underground workings throughout the life of the mine. The stress-strain state, pressure influence and conditions of workings support depending on mining and technological parameters are investigated. The artificial neural network was constructed and trained for regression analysis. Regression analysis using the construction and training of an artificial neural network on the basis of the data obtained to determine the degree of influence of each specific parameter on the stability of working. Experiment results are established the zones of high pressure in the sides of the workings (especially the left side) had the greatest influence on the workings stability. The influence of the reference pressure zone on the left side of the working is up to 82% of the total. The trained neural network can be successfully used in the future when designing excavations in this

area. They contain the researches, which were conducted within the project GP – 497, financed by Ministry of Education and Science of Ukraine.

Key words: artificial neural networks, underground mining, workings support

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