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Mathematical Model of Intellectual Decision-Making Support for the Selection of the Enterprise's Optimal Production Plan Under Conditions of Energy Restrictions

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- First Online: 28 February 2025
- pp 367–377
- Cite this chapter

Data-Centric Business and Applications

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Part of the book series: Lecture Notes on Data Engineering and Communications Technologies ((LNDECT,volume 240))

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Abstract

The article examines the process of building a mathematical model of intelligent decision support for determining the level of an enterprise's energy consumption while producing different quantities of products. To solve this problem, it is proposed to use a mathematical model based on the theory of neural networks, namely, a two-layer perceptron. The approximation of the nonlinear energy

consumption function is carried out by the Scaled Conjugate Gradient method. As a result of training, a prognostic mathematical model was obtained that allows the determination of the level of the enterprise's energy consumption depending on the input factors. In particular, it permits forecasting the level of the enterprise's energy consumption due to a production plan, hours of planned power outages, and periods of using alternative sources.

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About this chapter

Cite this chapter

Yepifanova, I., Dzhedzhula, V. (2025). Mathematical Model of Intellectual Decision-Making Support for the Selection of the Enterprise's Optimal Production Plan Under Conditions of Energy Restrictions. In: Semenov, A., Yepifanova, I., Kajanová, J. (eds) Data-Centric Business and Applications. Lecture Notes on Data Engineering and Communications Technologies, vol 240. Springer, Cham. https://doi.org/10.1007/978-3-031-81557-7_21

Download citation

- .RIS
- .ENW
- .BIB

- DOIhttps://doi.org/10.1007/978-3-031-81557-7_21
- Published28 February 2025

- Publisher NameSpringer, Cham
- Print ISBN978-3-031-81556-0
- Online ISBN978-3-031-81557-7
- eBook PackagesIntelligent Technologies and RoboticsIntelligent Technologies and Robotics (R0)