

occurs in the process of transition of intermediate actions from status of the current goal to the status of the means of achieving a subsequent goal.

It is assumed that the integration of the educational component, built on the proposed eco-humanistic model of self-development, into the Metaverse will not only provide the expected developmental effect, but also significantly enhance it due to opportunities hitherto inaccessible in the framework of traditional training and e-learning.

Immediate possibilities of Metaverse enhance involvement in the developmental process not only at the cognitive, but also at the sense and emotional levels. Due to virtual possibilities, the set of developmental events expands almost unlimitedly, the scope of which can be limited only by fantasy. Access to development-supporting resources is also virtually unlimited. The creation of a powerful structured database of the capacities and content of the developmental environments of the Metaverse ecosystem and the proposed techniques for identifying the individual competence profile and the complexity of the individual sense-cognitive structure of the user will allow for a conscious choice of an environment that best suits user's senses, goals and needs.

The range of prospects for the Metaverse as a developmental environment is breath taking, but whether the prospects turn into reality depends on what the founding fathers' strategic goal is and how this goal is realized. We would like to hope that development as the existential sense of human life, will be taken into account.

INCREASING THE ENERGY EFFICIENCY OF CRANES BY IMPROVING CONTROL SYSTEMS

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Abstract

The thesis is devoted to the development of the innovative strategy for energy efficiency increasing. The goal of the research work is searching and testing control systems for hoisting cranes. It is a very important theme in Ukraine and even all over the world. Natural resources are limited, so humanity must realize how to use them more effectively. In order to ensure maximum effect the practical experience should be combined with the theoretical research.

Keywords: hoisting cranes, energy efficiency, energy-saving frequency converters, gear motors, control equipment.

Introduction. We are going to create a modern crane control system using the latest technical achievements. This crane will be able to work even without a crane operator. Special attention is given to electric motors, driving systems, control equipment, frequency converters and special automatic programs.

Energy efficiency increasing requires a comprehensive approach. It should start with the design of the mechanical and electrical parts of the crane, in particular:

- metal structures of the crane must be calculated with the condition of weight reduction;
- usage of gear motors with minimization of the gaps in mechanical transmissions to improve the quality of movement;
- usage of energy-saving frequency converters.

Conclusion. The results of these researches will help our industry to improve the energy efficiency of cranes. They will have a significant economic effect and reduce environmental protection costs.

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