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PRACA DOKTORSKA

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METODA HARMONOGRAMOWANIA PRODUKCJI MAŁOSERYJNEJ Z UWZGLĘDNIENIEM ZMIENNYCH WARUNKÓW REALIZACJI OPERACJI TECHNOLOGICZNYCH

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SUMMARY

The main purpose of the thesis was an assessment of the influence of taking into account variable technological conditions of operations realization in the production scheduling method on the efficiency and cost of the production process realizing according to the delivered schedule. By the variable conditions, it is understood that the selection of production resources (defined as employees and tools) is allocated to individual operations. As part of the thesis, the new production scheduling method was proposed, which in comparison to existing solutions is taking into consideration a wider range of selection employees and tools for technological operations realization. Realizing the assumed objective of the dissertation, the own research was carried out in the environment of the model of a virtual enterprise. The research results made it possible to achieve the main objective of the dissertation and verify the hypothesis.

The theoretical part reviewed the current state of knowledge on information systems used in manufacturing companies. Special attention was paid to the APS systems. There was also a review of the current methods of information collection and processing in manufacturing companies, an analysis of existing solutions to production scheduling problems, and identified of fields allowing for more effective optimization of production time and cost. The theoretical part also discusses the influence of technological conditions on selected technological operations and the concept of a virtual enterprise.

The initial part of the thesis presents the methodology of preliminary research based on surveys, and the main research sets out the characteristics of the analyzed production companies, the virtual enterprise model with the applied data structure, and the applied optimization algorithm with the constraints and criteria.

In the next part of the thesis, the results of the preliminary research were discussed, which allowed for the conclusion that, in a large part of production companies, there is a relationship between production resources allocated to the individual operation about the time, cost, and accuracy of this operation.

The results of the main research, based on sample production processes, showed the higher efficiency of the new scheduling method compared to the classical approach,

in particular for unit and small series production. The summary of the dissertation includes a discussion of the research carried out and the results obtained, as well as the conclusions.