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## ABSTRACTS

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### **ELECTROMOBILITY IN THE SLOVAK REPUBLIC: A GREEN APPROACH** (pages 29-33)

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**Keywords:** electromobility, charging, charging infrastructure, network analysis

**Abstract:** Nowadays, influenced by technology and new technologies in the automotive industry is increasingly experiencing the production of electric or hybrid cars. With the development of the automotive industry, the number of electromobility operated is increasing. Electricity in the world is steadily growing. Several countries in the world are evolving forward in electromobility, dealing with alternative drive policies and applying it to transport strategies. The Slovak Republic does not develop sufficiently in electromobility as it lags behind the surrounding countries. Electromobility in operation do not eliminate CO and CO<sub>2</sub>, which means they are more environmentally friendly.

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### **RAW MATERIALS INVENTORY MODEL APPLIED BY REGIONAL ENTERPRISES OF THE INDUSTRIAL CLUSTER** (pages 35-41)

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**Keywords:** regional industrial cluster, raw materials inventory, inventory control, mathematical model

**Abstract:** For the effective functioning of the industrial enterprises and optimization of the production capacities it is necessary to predict the optimum inventory level of a production line on the basis of logistical approaches and studying the demand for products. Studies were conducted using the example of one industrial enterprise from the Udmurt Republic and there was proposed the inventory control model with the help of exponential smoothing and confidence interval.

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## USE OF GENETIC ALGORITHM IN LAYOUT DESIGN

(pages 43-48)

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**Keywords:** layout design, genetic algorithm, material flow, metaheuristics

**Abstract:** Within the design of production layout, the planners are often confronted with complex, sometimes conflicting demands and a number of restrictive conditions, which encourages their efforts to develop new, progressive approaches to the development of production layouts. The purpose of the innovative approaches in this field is to provide users with better, elaborated designs in less time, while they are able to implement various restrictive conditions and company priorities to the design. One of the ways is a use of metaheuristic algorithms by space solution optimisations of manufacturing and logistics systems. These methods have higher quality results compared to classical heuristic methods. Genetic algorithms belong to this group. Main goal of this article is to describe the Genetic Algorithm Layout Planner (GALP) that was developed by authors, and its experimental verification and comparison with results of the classical heuristic.

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## TRANSPORTATION OF EURO PALLETS SOLVED AS A SPLIT DELIVERY VEHICLE ROUTING PROBLEM

(pages 49-53)

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**Keywords:** split delivery vehicle routing problem, Euro pallet, vehicle routing problem, heuristics, CPLEX

**Abstract:** The article is aimed at the logistic problem of the company transporting Euro pallets to its customers. The main focus is on finding more effective routes for pallets distribution in terms of the total distance. The real instance can be solved as the vehicle routing problem. In many cases, splitting of the customer demand into several routes, can significantly improve the solution. The real problem consists in the pallets distribution from the depot to twelve customers. For solution, model in MPL for Windows is formulated and solved in CPLEX. Because of NP-hardness of the problem, it is necessary to propose heuristic algorithms for getting the effective feasible solution instead of unreachable optimum solution.

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## METHOD FOR OPTIMIZING MAINTENANCE LOCATION WITHIN THE INDUSTRIAL PLANT

(pages 55-62)

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**Keywords:** maintenance, logistics, optimization, logistic delay

**Abstract:** Nowadays, more and more emphasis is placed on the overall maintenance concept and strategy, not only in all industrial sectors, but increasingly, maintenance management is becoming part of a long-term strategy for both businesses and other institutions. One of the priority objectives of all types of maintenance is the return on investment that has been put into maintenance and, of course, the smooth operation of machines and equipment without failures that negatively affect the entire product manufacturing process. Obviously, a company with a poorly developed maintenance structure, will only be very hardly competitive in today's market, compared to a company with the same or similar manufacturing program, which, due to a more sophisticated maintenance system, often has lower maintenance costs. Less attention is paid to maintenance in industrial enterprises. In the article, it describes and characterizes this basic reliability feature and proposes a method for optimizing the maintenance location within an industrial enterprise. The proposed method is universal and can be used to support maintenance assurance management in both industrial and non-industrial sectors.

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