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OPTIMIZATION OF URBAN SELECTIVE WASTE COLLECTION ACTIVITY: GALATI CITY CASE STUDY

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Abstract

The Waste Management activity (WM) is an urban action becoming more and more important in the municipal economy. In many cities, this activity is linked to significant revenues from the selective waste collection services. Because the current economic situation requires an increasing efficiency and profitability in order to succeed in cutting the operational costs, and as an important part of revenue comes from this selective waste collection activity, the effectiveness must be improved. In the specific case of Galati (250 000 inhabitants) which is presented in this article, the WM activity has been redesigned. The main aspect is given by the successful implementation of the selective collecting waste management system in order to succeed in reaching the current economic commands. In this article we present results obtained after 122 days of monitoring. Our approach has certain elements of novelty. Based on the data records we studied the possibility of obtaining a mathematical model which would be able to describe the time evolution of the amount of waste deposited in the collecting points. The simplest mathematical model was investigated, basing on the fact that a neural network approaching was not possible. For this purpose, we applied a set of three different methods of identifying the mathematical model which corresponds to the most accurate assessments. In the final part, is presented the related algorithm and the results obtainable by using this approach. The used procedure is based on a dynamical optimization process considering a specific Dijgistra algorithm. In this way, it could be build dynamical maps by eliminating a series of points whose contribution are not important for that moment. Finally, are presented specific results based on this dynamical optimization process.

Key words: numerical approach, planning and implementation waste management, route optimization

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