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SIMULATION AND COST ESTIMATION OF THE OPERATIONAL PHASE OF THE MOBILE MACHINE LIFE CYCLE

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One of the most important aspects of simulation and cost estimation of the operational phase of the mobile machine life cycle is the economic trade-off between the capital cost of replacing a piece of equipment and the ownership costs of operating and maintaining the mobile machine and construction equipment (MM&CE) in question [1]. Life Cycle Cost Analysis (LCCA) is an economic evaluation technique that determines the total cost of owning and operating a facility over a period of time. Life Cycle Cost Analysis for equipment is comprised of life cycle cost, decision procedures regarding equipment, replacement analysis, and replacement models [1]. For this research, the physical life of equipment will be regarded as its service life. This stage greatly depends on the repair and maintenance of the machine over its lifespan [1]. The analysis of expenses on the repair and maintenance of MM&CE shows that they are 6...10 times higher than the cost of a new machine, as the complexity of manufacturing MM&CE is just 4...5 % of the total complexity of maintenance including all kinds of repairs during the period of their performance. Thus, the operational performance is reduced (up to 3 times), and the cost of a machine hour increases by 40…70 % at the stage of operation of the machine life cycle [2]. Accounting and analysis of these indicators will allow carrying out technical and economic simulation and estimate the cost of operating of MM&CE. The practical significance of the research lies in the fact that the developed model improves the accuracy of the results, the planned operating time and profits, when planning and managing the use of MM&CE. Moreover, it makes it possible to carry out technical and economic assessment and to calculate the profit from using MM&CE and total costs.

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