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Optimizing the distribution of labor in car service

AIP Conference Proceedings **2557**, 080001 (2022); <https://doi.org/10.1063/5.0105329>Ivan Georgiev^{a)}, Dimitar Grozev^{b)}, Mihail Milchev^{c)}, and Ivan Beloev^{d)}[View Affiliations](#)[View Contributors](#)

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ABSTRACT

To achieve high productivity in a car service shop it is necessary to ensure high labour efficiency of workers. Achieving this requires high motivation for work and a healthy work environment. The object of the current study is an even distribution of labor among workers. The article proposes a mathematical model of the distribution of work performed by workers. Each worker must have a weekly workload of 40.92 hours, which is the arithmetic mean hourly workload per employee, and this often not feasible. The model indicates the limitations related to the specifics of the task. The difference in the weekly workload of the employee who worked the longest and the one who worked the shortest was 0.1 h (6 min). This confirms that this plan is optimal or very close to it. The purpose of optimization is the to achieve the lowest value of the difference between the maximum and minimum time of employees' work. The model is a partially integer linear problem. This type of task takes an exceptional amount of time and computing power. This requires the use of heuristics, genetic, stochastic, etc. algorithms in order to solve the problem faster to solve the task faster. To study the model, a specialized car service for a certain brand of cars, operating in the city of Ruse has been chosen. The results of the study are presented here.

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