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Impact of Cobot parameters on the worker productivity: Optimization challenge

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ABSTRACT

In the era of Industry 4.0 and the introduction of new technologies, collaborative workplaces represent the potential to increase the efficiency of manufacturing systems. The presented research focuses on studying the impact of changing the speed and acceleration of a Cobot to the number of finished products at a collaborative workstation, the average assembly time, and the utilization of the Cobot and worker. In a laboratory experiment, it was demonstrated that changing the parameters of the Cobot significantly affects the optimization parameters of the collaborative workstation productivity. The results indicate an increase in production capacity with an increase in the speed and acceleration of the Cobot, while at the same time highlighting the importance of uniform utilization and occupancy of the Cobot and worker. The findings are particularly interesting from the influence of the Cobot's audio and video effects on worker, when reducing the average assembly time while increasing the Cobot's capabilities. The results and findings presented open up important new areas of research in the field of social, time and financial justification of collaborative workplaces.

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