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Improvement of logistics in manufacturing system by the use of simulation modelling: A real industrial case study

Straka, M.[a,*], **Khouri, S.**[b], **Lenort, R.**[c], **Besta, P.**[d]

[a]Institute of Logistics and Transport, Technical university of Kosice, Kosice, Slovak Republic
[b]Institute of Earth Resources, Technical university of Kosice, Kosice, Slovak Republic
[c]Department of Logistics, Quality and Automotive Technology, ŠKODA AUTO University, Mlada Boleslav, Czech Republic
[d]Department of Economics and Management in Metallurgy, VŠB – Technical University of Ostrava, Ostrava, Czech Republic

ABSTRACT

The current practice and the requirements of industrial enterprises in all industrial areas require a detailed display of manufacturing systems course of events. In this paper, we studied the effects and impacts of computer simulation to improve the actual industrial production. We also verified whether the proposed simulation model and its intervention in the logistics of concrete production in a concrete manufacturing enterprise will correspond to reality. The EXTENDSIM simulation software was used. The simulation results utilization in practice has increased the actual production several times. The simulation results indicated that it is necessary to double the intensity of company supply, i.e. a frequency of entry set to 0.15 days for each timber type. This adjustment increased the performance of unutilized devices and the whole manufacturing system several times, up to 54,475 produced building timber elements, which represents an increase of production by about 199.6 % while maintaining company flexibility.

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**Corresponding author:*
martin.straka@tuke.sk
(Straka, M.)

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Izboljšanje logistike v proizvodnem sistemu z uporabo simulacijskega modeliranja: Študija na resničnem industrijskem primeru

Straka, M.[a,*], **Khouri, S.**[b], **Lenort, R.**[c], **Besta, P.**[d]

[a]Institute of Logistics and Transport, Technical university of Kosice, Kosice, Slovak Republic
[b]Institute of Earth Resources, Technical university of Kosice, Kosice, Slovak Republic
[c]Department of Logistics, Quality and Automotive Technology, ŠKODA AUTO University, Mlada Boleslav, Czech Republic
[d]Department of Economics and Management in Metallurgy, VŠB – Technical University of Ostrava, Ostrava, Czech Republic

POVZETEK

Trenutna praksa in zahteve podjetij v vseh industrijskih panogah zahtevajo podroben prikaz poteka dogodkov v proizvodnih sistemih. V tem prispevku smo proučevali učinke in vplive računalniške simulacije na izboljšanje dejanske industrijske proizvodnje. Preverili smo tudi ali bo predlagani simulacijski model in njegovo poseganje v logistiko proizvodnje betona v podjetju za proizvodnjo betona ustrezalo resničnosti. Uporabljena je bila simulacijska programska oprema EXTENDSIM. Uporaba rezultatov simulacije v praksi je nekajkrat povečala dejansko proizvodnjo. Rezultati simulacije so pokazali, da je treba podvojiti intenzivnost dobave podjetja, to pomeni, da je pogostost vstopa, nastavljena na 0,15 dni za vsako vrsto lesa. Ta prilagoditev je večkrat povečala učinkovitost neizkoriščenih naprav in celotnega proizvodnega sistema, in sicer na 54.475 proizvedenih lesenih gradbenih elementov, kar predstavlja povečanje proizvodnje za približno 199,6 %, ob ohranjanju prilagodljivosti podjetja.

PODATKI O ČLANKU

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**Kontaktna oseba:*
martin.straka@tuke.sk
(Straka, M.)

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