

# The impact of using different lean manufacturing tools on waste reduction

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## ABSTRACT

Lean and green production was introduced to the western manufacturing industry nearly thirty years ago. The essence of the new business model was to eliminate waste through lean tools according to Taiichi Ohno's eight categories of waste. Many companies became more competitive with waste reduction techniques but some of them faced, and still are facing failures. Such failures are closely related with misapplication of lean and green tools, and its sequential order of implementation. In order to define most powerful lean tools for reduction of certain types of waste, a study was made among lean companies. The concept of a study was to define best lean toolbox for reduction of each category of waste and to determine right sequential order of lean tools implementation. Stepwise multiple regression model revealed that Total Productive Maintenance, Poka-Yoke, Kaizen, 5S, Kanban, Six Big Losses, Heijunka, Takt Time, Andon, OEE, SMED, and KPIs are best waste management techniques. Nevertheless, it has been demonstrated that 5S, Kaizen, Kanban, Poka-Yoke and TPM are highly recommended for start of every lean manufacturing initiative.

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## Vpliv uporabe različnih vitkih proizvodnih orodij na zmanjševanje odpadkov

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### POVZETEK

Vitka in zelena proizvodnja je bila zahodni proizvodni industriji predstavljena pred skoraj tridesetimi leti. Bistvo novega poslovnega modela je bilo odstranjevanje odpadkov s pomočjo vitkih orodij v skladu z osmimi kategorijami odpadkov Taiichija Ohna. Številna podjetja so postala bolj konkurenčna s tehnikami zmanjševanja odpadkov, vendar pa so se nekatera izmed njih soočala in se še vedno soočajo z napakami. Napake so tesno povezane z nepravilno uporabo vitkih in zelenih orodij ter z vrstnim redom izvajanja teh orodij. Da bi opredelili najprimernejša vitka orodja za zmanjševanje posameznih vrst odpadkov, je bila narejena študija, ki je vključevala več vitkih podjetij. Koncept študije je bil določiti najboljši nabor vitkih orodij za zmanjšanje posamezne kategorije odpadkov in določiti pravi vrstni red izvajanja vitkih orodij. Model postopne večkratne regresije je razkril, da so Total Productive Maintenance, Poka-Yoke, Kaizen, 5S, Kanban, Six Big Loses, Heijunka, Takt Time, Andon, OEE, SMED in KPI najboljše tehnike ravnanja z odpadki. Dodatno je bilo dokazano, da so 5S, Kaizen, Kanban, Poka-Yoke in TPM zelo priporočljive začetne tehnike vzpostavljanja vitke proizvodne.

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### PODATKI O ČLANKU

#### *Ključne besede:*

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