A new management approach based on Additive Manufacturing technologies and Industry 4.0 requirements

Patalas-Maliszewska, J.^{a,*}, Topczak, M.^a

^aInstitute of Mechanical Engineering, University of Zielona Góra, Poland

ABSTRACT

Nowadays, it is necessary to formulate and implement a development strategy in manufacturing enterprises, in line with the assumptions of the Industry 4.0 concept. In this context, a gap in the research has been observed in effective management methods, in order to gain a competitive advantage through the implementation and use of Additive Manufacturing (AM) technologies. The main purpose of the study is to build a new approach to management, based on the implementation of new AM technologies and good practice. This paper uses the detailed literature studies and results from the empirical research of some 250 Polish manufacturing enterprises; this material contains a sample thereof, processed into a new approach. The major contributions of the work are as follows: (1) identification of current management areas in which manufacturing companies focus their activities, in the context of Industry 4.0, (2) the establishment of the correlation between gaining a competitive advantage and implementing AM technologies in the context of Industry 4.0, (3) Defining the so-called AM4.0CARD as a new management approach, based on AM technologies and the requirements of Industry 4.0. Managers of manufacturing enterprises, thanks to the use of the proposed approach, may take a strategic decision, regarding the implementation of AM technologies, due to the possibility of forecasting the impact of such an investment on the improvement of the company's competitive advantage.

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*Corresponding author:

j.patalas-maliszewska@iim.uz.zgora.pl
(Patalas-Maliszewska, J.)

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Nov pristop upravljanja, ki temelji na dodajalni tehnologiji in zahtevah industrije 4.0

Patalas-Maliszewska, J.^{a,*}, Topczak, M.^a

^aInstitute of Mechanical Engineering, University of Zielona Góra, Poland

POVZETEK

V današnjem času je pomembno oblikovati in izvajati strategijo razvoja proizvodnih podjetij, skladno s predpostavkami koncepta Industrije 4.0. V tem kontekstu je bila opažena vrzel v raziskavah o učinkovitih metodah upravljanja, s katerimi bi pridobili konkurenčno prednost, in ki temeljijo na uporabi dodajalne tehnologije (AM). Glavni namen študije je zgraditi nov pristop k vodenju, ki temelji na vpeljavi novih AM tehnologij in dobrih praks. Ta članek uporablja izsledke podrobne študije literature in rezultate empirične raziskave približno 250 poljskih proizvodnih podjetij. Glavni prispevki raziskave so: 1.) identifikacija trenutnih področij vodenja, na katera proizvodna podjetja usmerjajo svoje aktivnosti, v kontekstu industrije 4.0, 2.) vzpostavitev korelacije med pridobivanjem konkurenčne prednosti in vpeljavo AM tehnologije v kontekstu industrije 4.0, 3.) opredelitev t. i. AM4.0CARD kot novega pristopa upravljanja, ki temelji na AM tehnologijah in zahtevah industrije 4.0. Vodje proizvodnih podjetij lahko s pomočjo uporabe predlaganega pristopa sprejmejo strateško odločitev o uvedbi AM tehnologij, saj jim pristop omogoča napoved vpliva takšne investicije na izboljšanje konkurenčne prednosti podjetja.

PODATKI O ČLANKU

Ključne besede:

Pametna proizvodnja;
Industrija 4.0;
Dodajalna tehnologija (AM);
3D tiskanje;
Strategija;
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Empirične raziskave;
Konkurenčna prednost;
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**Kontaktna oseba:*

j.patalas-maliszewska@iim.uz.zgora.pl
(Patalas-Maliszewska, J.)

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