

Fuzzy Delphi and hybrid AH-MATEL integration for monitoring of paint utilization

Kumar, A.^{a,*}, Mussada, E.K.^a, Ashif, M.^b, Tyagi, D.^b, Srivastava, A.K.^b

^aBML Munjal University, Gurgaon, India

^bMBA-Hero Lead Students, BML Munjal University, Gurgaon, India

ABSTRACT

This study investigates the unattended aspects of paint utilization selection criteria in industries. In today competitive business environment almost all companies focus towards sustainable manufacturing. The utilization evaluation and selection criteria for paint and its consumption reduction is the top priority for industry. Especially in automotive industries, paint shop stands as a centre for hazardous waste due to wastage of paint and thinner during the painting process. This research work focuses on optimizing consumption of paint by finding most important criteria affecting paint consumption and optimizing the same to achieve maximum paint yield. The study uses the routes of Delphi technique in a fuzzy environment to find out the most important criteria for paint utilization selection, so that maximize utilization and minimize consumption reduction of paint has been achieved. An integrated approach of AHP and DEMATEL methods has been implemented to prioritize the criteria and to familiarize the relationship within criteria. The outcomes of the study substantiate and prove that this study is the best way to select particular paint utilization selection criteria for the paint shop and also to anticipate the optimal level of paint utilization.

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*Corresponding author:

anilor@gmail.com
(Kumar, A.)

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Integracija metode mehki Delphi in hibridne metode AH-METAL za spremljanje porabe barve

Kumar, A.^{a,*}, Mussada, E.K.^a, Ashif, M.^b, Tyagi, D.^b, Srivastava, A.K.^b

^aBML Munjal University, Gurgaon, India

^bMBA-Hero Lead Students, BML Munjal University, Gurgaon, India

POVZETEK

Ta študija proučuje merila za izbiro barve v industriji. V današnjem tekmovalnem okolju se večina podjetij osredotoča na trajnostno proizvodnjo. Vrednotenje porabe in merila za izbiro barve ter zmanjšanje njene porabe so najvišja prioriteta industrije. Predvsem v avtomobilski industriji so lakirnice zaradi odpadnih barv in razredčil središče nastajanja nevarnih odpadkov. Ta raziskava se osredotoča na optimizacijo porabe barv z določitvijo najpomembnejših parametrov, ki vplivajo na njeno porabo in z optimizacijo le-teh, z namenom doseganja najvišje stopnje izkoriščenosti barv. Študija z Delphi tehniko v mehkem okolju poišče najpomembnejša merila za izbiro barve, ki zagotavljajo najvišjo stopnjo izkoriščenosti barv in zmanjšajo njen odpad. Za določitev prioritete meril in za vzpostavitev povezav med njimi je uporabljena integrirana AHP in DEMATEL metoda. Rezultati raziskave utemeljijo in dokažejo, da je takšna študija najboljša pot za določitev meril za izbiro barve za lakirnico ter da je primerna tudi za napoved najprimernejše ravni uporabe barve.

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**Kontaktna oseba:*

anilror@gmail.com
(Kumar, A.)

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