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Effect of Milling Parameters on Surface Quality of AA6063-T6 Aluminium Alloy During High Speed CNC Face Milling

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Abstract: This paper aims to carry out analytical and experimental study on theeffects of high speed face milling parameters like cutting speed, feed rate anddepth of cut onthe surface quality of AA6063-T6 aluminium alloy components.The experiments were conducted based on full factorial design (3^3=27) of experiments and surface roughness was measured with profilometer on the components milled by a high speed CNC vertical machining centre. A mathematical model was developed using non-linear regression analysis with the help of MINITAB software. The face milling parameters were optimized for better surface quality of the milled components by employing Taguchi method and genetic algorithm. The optimum parametric conditions obtained from the analytical study have been confirmed with the experimental results.

Keywords : High speed machining, AA6063-T6 aluminium alloy, face milling, Taguchi method, Surface roughness.

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