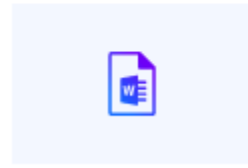
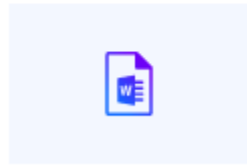


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Effect of Machining Parameters on Tool Wear and Hole Quality of AISI 316L During Conventional Drilling

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Abstract

This paper focused on the effect of drilling parameter on tool wear and hole quality such as diameter error, roundness, cylindricity and surface roughness. In this work, drilling conducting using uncoated carbide tool diameter 4 ± 0.01 mm with point angle 135° and helix angle 30° . In order to find the best drilling parameter for austenitic stainless steel AISI 316L as workpiece material, conventional drilling experiment conducted with commercial mineral oil Fuchs Ecocool 68CF2 as cutting fluid with flow rate 13.8l/min were performed at different levels of spindle speed (18 and 30 mmin^{-1}) and feed rate (0.03, 0.045 and 0.06 mm rev^{-1}). The experimental are conducted using DECKEL MAHO-DMC 825V machining center and results were collected using Raxvision microscope, KN810 Renishaw CMM and Accretach handysurf portable surface roughness tester. Comparatives analysis has been done between hole diameter, roundness, cylindricity and surface roughness of drilled holes by experimentation. From the result, all of the hole quality characteristics are mostly influenced by cutting speed and feed rate except for circularity error. Two tail t-test for circularity error gives $t_{stat} = 0.143 < t_{table} = 2.228$ for different cutting speed and $t_{stat} = 0.593 < t_{table} = 2.228$ for different feed rate so cutting speed and feed rate gives not significant influence on value

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