

Role of Process Parameters on Pocket Milling with Abrasive Water Jet Machining Technique

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Abstract : Abrasive Water Jet Machining (AWJM) is an unconventional machining process well known for machining hard to cut materials. The primary research focus on the process was for through cutting and a very limited literature is available on pocket milling using AWJM. The present work is an attempt to use this process for milling applications considering a set of various process parameters. Four different input parameters, which were considered by researchers for part separation, are selected for the above application i.e. abrasive size, flow rate, standoff distance, and traverse speed. Pockets of definite size are machined to investigate surface roughness, material removal rate, and pocket depth. Based on the data available through experiments on SS304 material, it is observed that higher traverse speeds gives a better finish because of reduction in the particle energy density and lower depth is also observed. Increase in the standoff distance and abrasive flow rate reduces the rate of material removal as the jet loses its focus and occurrence of collisions within the particles. ANOVA for individual output parameter has been studied to know the significant process parameters.

Keywords : abrasive flow rate, surface finish, abrasive size, standoff distance, traverse speed

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