iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 2 **Issue:** XII **Month of publication:** December 2014

DOI:

www.ijraset.com

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ISSN: 2321-9653
International Journal for Research in Applied Science & Engineering Technology (IJRASET)

A Review Report for Study of Drilling For Different Materials in Machining

H.Surjith[1], Natesh[2]
Department of Mechanical Engineering, Assistant professor
SNS College of Engineering, Coimbatore, India

Abstract: Metal drilling processes are important due to increased consumer demands for quality metal drilling related products reduce tool wear and better product surface roughness that has driven the metal drilling industry to continuously improve quality control of machining processes. To improve the production facilities, research has been done on to analyze the drilling for various materials. Many drilling parameters in machining are studied to get better results and problem optimization. A survey about machining the different materials is carried out as review report in this paper.

I. HISTORY OF SURVEY

Some literature survey about drilling has been made for a period. From that study the following observations are made. During 2012 Oğuz Çolak explains the paper deals with experimental investigation on machinability of Inconel 718 in conventional and alternative high pressure cooling conditions. The experiments are designed according to Taguchi L18 orthogonal array based on three levels of cutting speed, feed rate and fluid pressure and two levels of depth of cut. The cutting forces and tool flank wear were measured, while turning Inconel 718 work pieces, using (Ti, Al)N+TiN coated CNMG0812 carbide cutting tools. In order to determine the importance of cutting parameters on tool flank wear and cutting forces, ANOVA (Analysis of variance) was employed. Moreover, with multi regression analysis, empirical equations that indicate relation between tool flank wear and cutting forces with machining parameters were defined. The experiment results have proven that the tool flank wear and cutting forces considerably decrease with the delivery of high pressure coolant to the cutting zone. Moreover, ANOVA results also indicate that high pressure cooling has a significant beneficial effect on cutting tool life.

During 2008 A.R.C. Sharman, A. Amara singhe, K. Ridgway explains drilling is one of the most important processes in aerospace manufacture and is often the last operation performed. When combined with the fact that holes amplify any in service stresses a significant demand for high surface integrity and production process security is created. In contrast to other machining processes there are relatively few publications regarding the drilling of nickel-based super alloys. Following a brief review on the general machinability of Inconel 718 a series of experiments examining the tool life/wear of various commercially available drills, recommended for use on nickel-based super alloys, is detailed. In addition a comparison of the resultant hole integrity produced by drilling alone is compared to that obtained using reaming and a relatively new technique of mill boring. The main conclusion is that when using commercially available drills the resulting hole quality is not sufficient to meet the requirements of the aerospace industry and therefore secondary processing is required. Mill boring with a standard milling tool appears to have significant potential for improving productivity and reducing costs compared to reaming.

During 2012, Turgay kivak, kasım habali , ulvi seker had done tool wear during the drilling of Inconel 718. To study the effect of cutting parameters on the hole quality (circularity and hole diameter) and tool wear during the drilling of super alloy Inconel 718 with coated and uncoated carbide drills was investigated. Drilling tests were carried out with uncoated and TiN and TiAlN coated carbide drills of5 mm diameter using a CNC vertical machining center under dry cutting conditions by drilling blind holes of 8 mm depth and employing four different cutting speeds (10, 12.5, 15, 17.5 m/min) and three different feed rates (0.05, 0.075, 0.1 mm/rev). Regarding hole diameters and the circularity measurements a comparison has been made in terms of the quality of the hole between cutting tools. It was observed that there was a decrease of tool performance and hole quality at high cutting speed and feed rate combinations. A serious increase in tool wear was observed when increasing cutting speed. The Utmost wear type was seen in the form of flank wear and chisel edge wear.

The lowest deviation from circularity values were obtained at the 12.5 m/min cutting speed whereas the highest deviation values were obtained at the17.5 m/min cutting speed. At the 17.5 m/min cutting speed the feed rate played a great role in the variation of deviation from circularity values. As the feed rate increased, deviation from circularity values also increased. The lowest deviation from circularity values were obtained from the holes that were drilled with uncoated tool.

Outer: With the increase of cutting speed serious increases were observed in the tool wearing. Utmost wearing type was seen in the form of flank wear and chisel edge wear. From the point of view of the hole quality under dry cutting conditions, in the

drilling of Inconel 718uncoated cementite carbide tools are recommended. Furthermore, the hole quality can be increased by using lower feed rates.

II. CONCLUSION

Hence, it is concluded from the review report that the study of various material's and itscutting parameters during cnc turning. Therefore, in the existing work it is observed the cutting parameters like feed rate, depth of cut, cutting speed are good compare to other machining process. An attempt has been made to analyze the cutting parameters of various materials using cnc turning.

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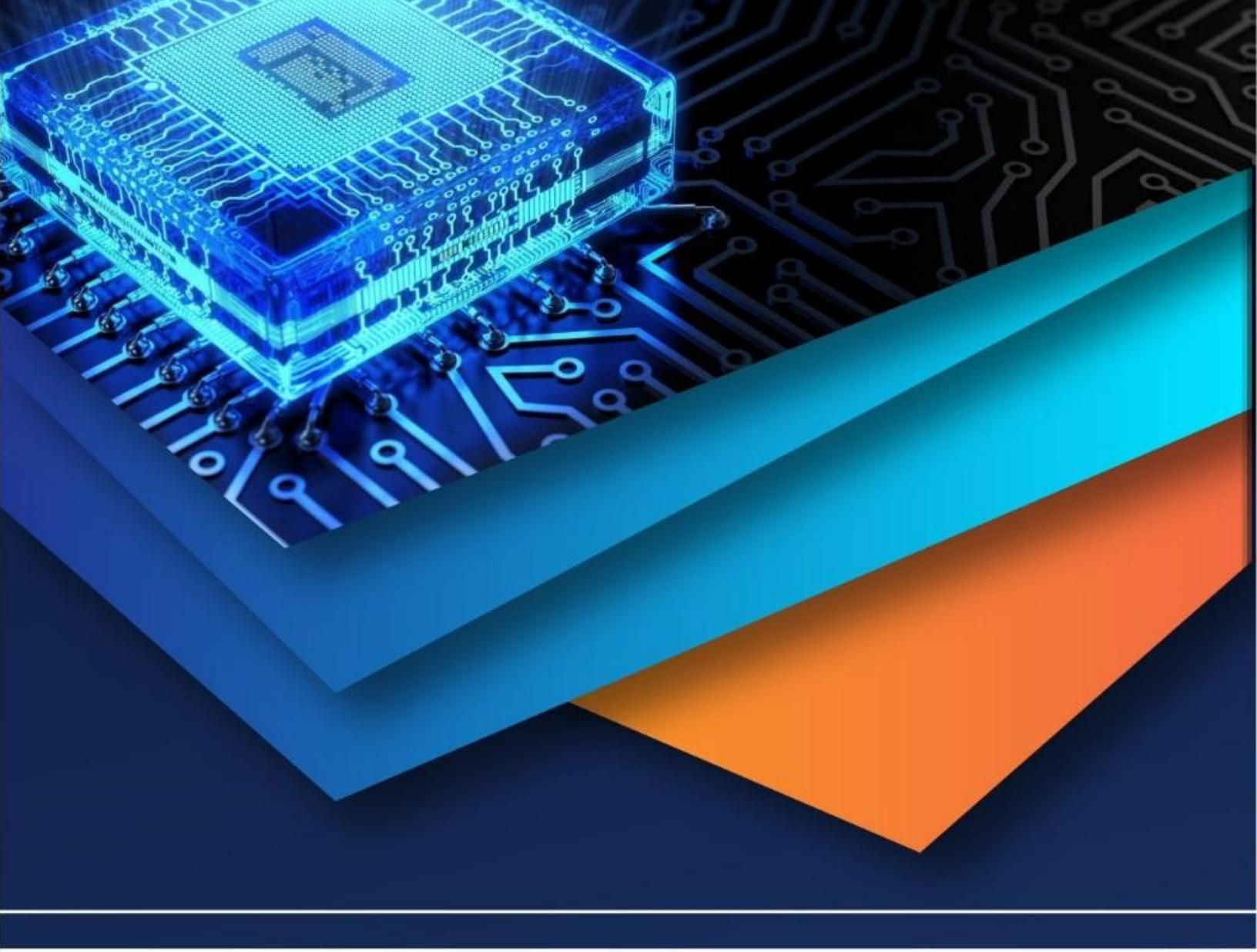

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