

# **PENGARUH DRILLING CYCLE TERHADAP WAKTU Pengerjaan, KUALITAS GEOMETRIS LUBANG DAN KEAUSAN MATA BOR HIGH SPEED STEEL (HSS)**

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## **ABSTRACT**

CNC machining is a manufacturing process in which pre-programmed computer software determines the movement of tools and machine tools. CNC machines are operated through a CNC program which can be manually written or created using CAM software. The advantages of CNC machine tools are precision and production speed. Productivity and advances in manufacturing technology using CNC demand efficiency in the production process and produce more products. Drilling using a CNC Milling Machine requires efficient use of cutting tools. The selection of drilling G code (drilling cycle) and its parameters in CNC milling has a significant influence on product surface roughness, cutting tool wear and hole making efficiency. The drilling G codes in question are G73, G81, G82 and G83 codes. These codes have their own characteristics in the implementation process. The purpose of the study was to test several kinds of drilling cycles (drilling G code commands) and cutting speed variations so that the most optimal results were obtained which include: (1) the time required for the drilling process (drilling) the fastest, (2) tool wear (twist drill) ) the smallest, and (3) the best hole geometric quality. The research method used is experimental. The material used is St 37 steel and the cutting tool used is a twist drill made of HSS with a diameter of 8 mm. The machine used is a CNC milling machine and the software used is Mastercam X7. Instruments for data collection include: a stopwatch, a vernier caliper with an accuracy of 0.01 mm, a digital microscope with a magnification of 600x to 1000X. Data analysis was carried out by comparing the results of making holes from all treatments. The experimental results show that the selection of drilling cycles (G code) with the same cutting speed affects the diameter dimensions, drill twist wear and hole roughness and affects machining time.

Kata Kunci: *CNC, rudeness, drilling, machining*