

عنوان مقاله:

Experimental investigation of the effect of input parameters on geometric characteristics and surface quality of Teflon carbon composite (PTFE/CARBON) in waterjet process (AWJM)

محل انتشار:

دومین کنفرانس بین المللی پیشرفت های اخیر در مهندسی، نوآوری و تکنولوژی (سال: 1402)

تعداد صفحات اصل مقاله: 19

نویسنده:

Omid balakhial - *Master's degree in mechanical engineering with a focus on manufacturing and production*

خلاصه مقاله:

The purpose of this paper is to experimentally investigate the effect of input parameters on the geometric characteristics and surface quality of Teflon carbon composite (PTFE CARBON) in the water jet process (AWJM), which according to the experimental tests by abrasive water jet on the desired workpiece, machining with parameters from advance speed and the distance between the nozzle and the workpiece and the amount of abrasive particles. The output parameters include surface roughness, surface quality and the size (width) of the cut. In this article, Teflon carbon nanocomposite was used for cutting in the water jet of abrasive particles, and the VMM device was used to measure the dimensions of the cut width and the SEM device was used to photograph the cross-sectional surface of the cut. The findings obtained from this research indicate that by increasing the speed of cutting and the distance between the nozzle and the work piece, the amount of roughness increases and the quality of the surface decreases, and with the increase of abrasive garnet particles in the fluid, the quality of the surface increases, and as a result The advance mode of 100 mm per minute and nozzle distance of 5 mm, the percentage of particles is 30%, with 2.90 micrometers, has a smoother surface, and at the speed of 300 mm per minute and the nozzle distance is 15 mm and 15% particles with 6.91 micrometers, it has the highest surface roughness. Results It shows that at a constant advance speed, with the increase of the SCD nozzle distance, the size of the cutting width and the amount of surface roughness increase and the quality of the cutting surface decreases. Also, by increasing the weight percentage of garnet abrasive particles in the water jet fluid, the size of the cutting width increases and the surface smoothness quality improves and the surface roughness decreases. On the other hand, the advance speed of the nozzle is 100 mm per minute and the distance between the nozzle and the work piece is 5 mm, as well as the abrasive particles of 30%, it is the best condition for machining carbon Teflon nanocomposite and it achieves a better surface quality with a low roughness of 2.90 micrometers.

کلمات کلیدی:

geometric characteristics, waterjet process, Teflon carbon composite

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1767134>



