

ABSTRACT

In the metal cutting process the level of surface roughness is one factor of quality. To produce this level of roughness, Ultrasonic Vibration Assisted Turning (UVAT) is a new technology that can reduce noise, vibrations in lathes, can reduce the occurrence of cracks in metals, and produce a workpiece surface can be finer in the cutting process. In UVAT technology, using piezoelectric devices, which have advantages in the accuracy of movement, faster response and great style. For piezoelectric places a special tool holder is needed. In this study a lathe tool holder will be created using the prototyping method. The prototyping method has four steps, namely setting the goal of making a prototype, setting the approximate level of the concept, outlining the experimental plan and making scheduling for production and testing. In the tool holder production process there are two main manufacturing processes, namely milling, drilling which is simulated on Mastercam which will produce production time and numerical control code (NC-code) for CNC machines. Based on this method a prototype tool holder was produced with duralium material, production time of 17 hours 40 minutes, and manufacturing costs of Rp. 1,750,000. Based on the dimensions of this prototype according to the design specifications on Solidworks applications with a thickness of 3.5 mm, a distance of 1.5 mm.

Keywords: *Tool holder*, Ultrasonic Vibration Assisted Turning, Piezoelectric Actuator, Prototyping