

ABSTRACT

Basically, quality is the overall features and characteristics of a product that is relied on in its ability to satisfy or perform, being one of the most important factors in the performance of a business. This research begins when new operators or people who do not have experience using the ACD-3346 CNC router machine will use the machine using assumptions and estimates techniques, resulting in low product quality, using assumptions and estimates in operating the machine, this has several The first impact is that the tool blade will wear out quickly if the treatment given is not appropriate, the second there will be clumping in the tool blade caused by the machining chip not being removed, the third treatment of feedrate and spindle speed on a machine that is too high will result in the workpiece shifting, the impact of which is high. The last one resulting from assumptions and estimates in setting the level of the machine is that the tool wears out quickly, because the treatment given to the machining process is not appropriate. The parameters used in this study use DOC (Depth of Cut), Feedrate, Spindle Speed, then each parameter has a level with details of DOC 2 levels, feedrate 12 levels, spindle speed 7 levels. Furthermore, this study uses the full factorial design (FFD) method which is part of the design of experiment (DoE), full factorial is a method that integrates all levels of factors by performing an orthogonal array, it was found that the number of combinations that will be carried out in this study is 168 sample. After getting it, the next step is to experiment with the number of 168, then after completing the experiment get the results of machining the material, which is measured using the Mitutoyo surface roughness tester, with the smallest surface roughness value of 0.165 m with details of the parameter value DOC 0.1, feedrate 6000 mm/rev, spindle speed 9000 rpm.

Keywords — ACD-3346 CNC router, Parameters, Surface roughness, Full Factorial, DoE.