

## ABSTRACT

*Distortion on the workpiece is one of the problems that generally occurs in the production process or machining process. The material that has wasted during the process of machining can reach 90% and cause distortion and twisting which is caused by cutting force, temperature, and clamping force. Because of many wasted materials, the machining costs are quite large and the company will suffer losses if the workpiece has defects due to distortion and twisting. This study will be doing machining parameters optimization that can affect distortion and twisting (spindle speed ( $s$ ), feedrate ( $f$ ), dan depth of cut ( $d$ )) on the workpiece which will be analyzed by conducting machining experiments using Taguchi Method and ANOVA testing. The material used is aluminum alloy 6061 and the results of the orthogonal array design are L9(3<sup>3</sup>). Based on the notation obtained, the number of experiments to be carried out in this study is 9 times with three machining parameters and three levels. The minimum distortion occurred in the T4 experiment of 0,039 mm with parameters  $s = 1600$  rpm,  $f = 200$  mm/min,  $d = 1,0$  mm. While the minimum twisting occurred in the T7 experiment of 0,168 mm with parameters  $s = 1700$  rpm,  $f = 200$  mm/min,  $d = 1,5$  mm. The most influential parameter on the distortion value is the spindle speed, while for the twisting value the most influential parameter is the depth of cut.*

**Keyword:** *thin wall component; distortion; twisting; Taguchi Method*