

Abstract

Computer Numerical Control (CNC) machine has been vastly used nowadays because it can machine the part very fast and very accurate. However, the movement of the machine table still has some errors in contour and corner movement. The movement mechanism of the CNC table in each axis controls by the movement of the servomotor. The servomotor makes the ball screw move, then, the table that locates on the ball screw will move to the design location. If the movement of the CNC table has some errors, it will cause the defect on the shape and the dimension of the finish part. This objective of this study is to find the parameters that have the effect on the contour error movement of the CNC table. These factors are feed forward coefficient, velocity feed forward, backlash acceleration, and radius of the contour movement. The factorial experimental design has been used. The results show that three factors, which are feed forward coefficient, velocity feed forward and radius of the contour movement, have significantly effected on the contour error movement of the CNC table. The results also show that the contour error movement is decreased when the signal of the feed forward and the velocity feed forward are increased and the radius of the contour is larger. The backlash acceleration has less effected on the contour error movement that the previous three factors. The equation to estimate the contour error movement is also done by using the linear regression analysis.