# *Implementation of 3 Axis CNC Mini Router in Making Automotive Component PCB Layouts Using Arduino Uno Kontrol Control*

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## *ABSTRACT*

*The application of CNC (Computer Numerical Control) machines in the manufacture of automotive component lines can make it easier and more efficient because it uses an automatic system that is operated by commands that are programmed briefly and stored in storage media which will later be processed through micro control used to convert program data into movement (mechanical) on the X, Y and Z axes. One of the micro-controls that can be an alternative is Arduino uno, using the Arduino Uno micro-controller will make it easier to manufacture CNC machines independently. This study aims to facilitate the manufacture of automotive component PCB layouts. CNC machine design using AutoCAD Software and Software to determine tools using Aspire with variations in cut sizes of 20 mm, 40 mm and 60 mm. for variations in depth of 0.5 mm, 1 mm and 2 mm. feed rate 200mm/min. The results showed that the highest error value on the X and Y axes was 20 mm with an Error Y of 0.84% and X 0.94%. While the smallest error in the test size of 60 mm with Error X 0.36 % and Y 0.36 %. Testing the depth of the injector cleaning circuit layout with a plunge speed of Z (plunge rate) 150 mm/minute, a feed rate of 200 mm/minute, there is a difference in the average error value on the size variables, namely the depth of 0.10 mm, 0.15 mm and 0.20 mm. The highest error is at a depth of 0.20 mm, which is 1.9% and the lowest error is at 0.10 mm, which is 0.76%. The error value is higher if the size of the object being worked on is getting smaller. Likewise, the Error value will be lower if the size of the workpiece being worked on is getting bigger.*

***Keywords**: Arduino uno, Diptrace Software, PCB layout*