



**DESIGN, ANALYSIS AND FABRICATION OF TWO AXIS  
MOTORIZED BENCH**

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## **ABSTRACT**

Workbench is designed to hold workpieces to allow the worker to form and finish of according to the selected manufacturing process. Workbenches should be follow two criteria in common, the structure is heavy and rigid enough and it is capable to keep the workpiece still while of is being worked upon. The workpiece should be placed at a comfortable position and height so that the worker is free to finish the shape with the tools. For the welding industries, most welding benches are static design, the worker has to move about to finish the deposition process. This mean the worker is more tiresome and the work efficiency is lower. To improve the work efficiency and reduces material handling activities, the welding benches should be developed to support material handling and work positioning simultaneously. Welding production employing mechanized welding process such as SAW, GMAW, GTAW and FCAW will be much easier to perform if the workbench can position the workpiece in two axis. With this concept in mind, a motorized workbench will be developed than can transport a workpiece and move it at practical range of arc welding speed or arc cutting, between 50mm/min to 200mm/ min. Initially, the prototype can carry a maximum load of 50kg. From the sketched, concepts a prototype is fabricated and assembled for demonstration. The strength of the bearing system, gearing system and the actual performance is analyzed.

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