

AUTOMATION OF CIRCULAR WELDING

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Abstract –In today's world of technology the demand of precision is increasing. The traditional methods are replaced by the automation to increase the accuracy and production rates. For increasing the quality of welding, formation of the semi-automated welding machine is done for certain application of welding. For that different aspect and methods have to be considered for the welding machine like controller, welding, etc. to get good weld quality. The technical aspect that has to be considered while designing and developing the welding machine is to achieve the stability, linear and angular motion and uniform speed of the welding torch for feed and uniform thickness of weld for good quality of product and increase the productivity at less cost and minimizing the labour requirement.

Key Words: MIG Welding, Indexer, Semi automatized, Manufacturing, Proximity Switch, Weld Defect.

1. INTRODUCTION

In that various fixture is use for various welding, but in many application we use some technique which is not work efficiently & accurately. Moving the electrode along the welding line is a skill full work and especially for circular component become much more difficult. To avoid such a problem we implement welding rotator. The need of a special device which can rotate the job at an fixed rate to assist the welding process for circular component and ensure good profile and homogeneous welding. Many different energy sources can be used for welding, including a gas flame, an electric arc, a laser, in now days of mass production it is often required data to automate the manufacturing processes that were conventionally done manually. In presence various welding technique is used for the welding processes such as CO2 welding or Electric arc welding, TIG (tungsten inert gas welding), an electron beam, friction, and ultrasound. While often an industrial process, welding can be done in many different environments, including open air, under water and in outer space. Regardless of location, welding remains dangerous, and precautions are taken to avoid burns, electric shock, eye damage, poisonous fumes, and overexposure to ultraviolet light

2. LITERATURE SURVEY

A. System Design.

The system design plays the vital role in the development of welding machine. It depends upon the selection of gear, selection of the frame material and weight of workpiece to

be weld and efficiency of the machine. The designing process is important process for the life span of any machine.

B. Welding type.

The welding used in our welding machine is used MIG Welding and CO2 is used as gas in the welding. CO2 is the less expensive gas than other of the common shielding gases, making an attractive choice when material costs are the main priority for welding.

C. Productivity.

Increase in the productivity is the aspect of this machine and should be less time consuming. While manufacturing this machine this machine, the aim was to increase the productivity and reducing the cost of production, decrease the labour requirement and reduce the time of the productivity.

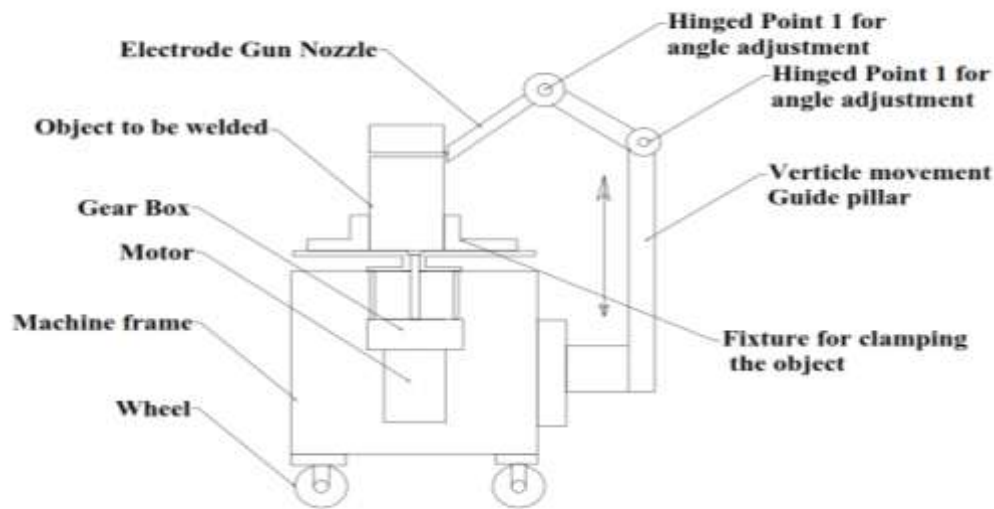
D. Discussion on literature review

We have discussed various techniques of welding which are operated manually. By seeing various research paper we understand that in the market there use of only manual machine and it take lot of time. We have discussed in early stage of automatic welding, the welding gun rotated which is to hard for welding. Now, we come to conclusion that we are going to rotate the fixture plate with workpiece and we use proximity sensor to sense the completion of the welding.

3. FUTURE SCOPE

It will play vital role in mass production system and in following process like painting, air washing, wire winding, circle marking, any geometrical shape welding, act as indexer, CO2 welding of circular or staggered welded joints, electric arc welding of circular or staggered welded joints, plastic moulding for multiple position dies, bottle filing plants

4. EXPERIMENTAL SETUP



The job to be welded is placed on the indexer table and considering the welding process and electrode size the speed regulator is adjusted to give desired table speed. The table carries indexer buttons as per no of welds and position of the same. Table is indexed to the first stop position. Now inching switch is operated simultaneously as the welding process is started, the job rotates as welding operation is done, after the second indexer button comes in front of the proximity switch it stops the welding process and the table movement. Inching switch is operated which starts the next position welding and the process is repeated till the last stop i.e., the first stop comes in front of the proximity switch. The job welded is unloaded and new work-piece is loaded for the next operation

Material of gear: Cast Iron

Gear reduction ratio: 4:1

B. Motor Selection

Type: Bus Wiper Motor 150 W/ 12 V

High Speed: 35 rpm

Low Speed: 25 rpm

C. Shaft Selection

Material Type: C30 Steel

Diameter: 10mm

D. Frame

Material: Mild Steel

6. APPLICATION

1. Welding of circular components.
2. Spray painting.
3. Sand Blasting.
4. Bakery Products

7. CONCLUSION

The main conclusion of this project is to semi automised welding technique at low and to reduce weld defect happening while welding. It also reduce the time consumption in the production line.



5. SYSTEM SPECIFICATION

A. Gear Selection

Type: Spur Gear.

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