

Welding Automation

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Abstract- *These In today's edge of technology, the demand of precision is increasing. The tradition methods are replaced by the automation to increase accuracy and precision increase the quality of welding; incorporation of the semi- automated welding machine is done for. Certain application. For that different parameters and methods have to be considered from different research paper for the welding machine for selection of mechanism like controller, welding process, weld angle etc. to get accuracy and quality weld. The technical constraint that has to be considered while designing and developing the machine is to achieve the stability, degree of freedom, linear and angular motion, and uniform speed of the welding torch for feed and uniform thickness of weld for quality product. The presentation deals with the designing of mechanism, which can weld the circular component with accuracy and are relatively less cumbersome than traditional welding process. The technical constraint that has to be considered while designing and develop in the mechanical is was to achieve the stability, linear and uniform speed of welding torch and uniform weld thickness for quality product. The details of testing on various pipe to flange. In near future variable frequency drive (VFD) can be installed for its full atomization.*

Keywords- Automatic welding, Robotic Welding, Machine Design

I. INTRODUCTION

Welding is a process used to join materials, usually metals or thermoplastics, by causing combination. This process is carried by melting the work-piece and adding a filler material to form a pool of molten material (the weld pool) that cools to form a strong joint, with pressure which is used in conjunction with heat, or by itself, to produce the weld. This process is opposite to that of soldering and brazing, which involve melting a lower-melting-point material between the work-pieces to form a bond between them, without melting the work pieces. The welding can be done in different manner, such as: Gas Tungsten Arc Welding, Shielded Metal Arc Welding, Tungsten Inert Gas and Metallic Inert Gas. MIG (Metallic Inert Gas) includes a wire fed "gun" that feeds wire at an adjustable speed and sprays a shield gas (generally pure Argon or a mix of Argon and CO₂) upon the weld puddle to protect it from the outside world. with GMAW (Gas Metal

Arc Welding) becoming more widely used in the industry worldwide and increasing demands towards higher the productivity the demand for higher deposition rates arose.

Since the introduction of automatic orbital welding in pipeline application in 1961, significant improvements have been acquired, in orbital pipe welding systems. Requirement of more productive welding systems for pipeline application forces manufacturers to create new advanced systems and welding processes for the pipe welding method.

II. THE SPECIFICATION CONSIST OF

(1) Frame (2) Head (3) Welding Gantry (4) Chuck; (5) Power supply The use of an arc sensor and a vision-based totally sensor, examined the performance of the automatic manipulate era by way of girth-welding specimen metallic pipes in downhill welding sequences, nondestructive testing validated that the welded joints were lack of fusion, incomplete penetration and different flaw, produce great welded joints independent of the competencies of welders or welding operators.

III. SOME COMMON MISTAKES

In SAW & TIG welding or sometimes electric arc welding the need often arises for welding of circular shape components, where the welding is carried out on the entire periphery or a partial arc length of the job. The electrode is thus moved along this circular path in the conventional method But movement of the electrode is much more difficult and it is much easier to index the job. Due to the fact that standards are getting more stringent in pipeline welding, all joints are required to be uniform and it is difficult for the welder to comply with these requirements, and by growth of pipe welding applications. The need of automatic pipe welding machine that weld pipe in its location with higher productivity, greater weld quality, lower cost, and accuracy became one of the important requirements now. Choose the best form for welding from three different forms in which the weld quality is high, and defect-free as possible. Reduce the time required to complete the welding process with a reduction of workers, which increases productivity and profits.

Automatic welding process compared with manual welding and find differences between them.

IV. DESIGN

A. Body paragraphs

Main Assembly of machines are following:

This type of automatic machine is work on programming language. The different types of operations are possible with the help of multi tooling machine system.

B. Main Components

Main Assembly of machines are following:

a) Frame

Frame is use for the leveling of whole machine. When installing the machine maintain alignment of this frame using water level system.

b) Head

This components is used for

c) Welding Gantry

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