

AUTOMATED POSITIONER FOR WELDING THE DRIVEAXLE

CASE WITH METAL INERT GAS ROBOT

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ABSTRACT

This paper is about the emerging technologies in material handling, that deal with the design and implementation of automatic welding process for a drive axle casing of the truck; an automotive component which aims to achieve better efficiency than the conventional system. The drive axle of the truck is a *Banjo axle* one with a differential and universal joint between the axle shafts which is enclosed in an axle housing structure. Normally, MIG welding is used for joining of the drive axle casing. In this process two layers of gas welding have to be done. First layer consists of joining of the outer spherical cover and the axle shaft housing on one end and second layer consist of joining an axle shaft housing and flange at opposite end. The disadvantages of welding operation in conventional systems are manually operated with more time consuming, poor quality of the job and more wastage of energy. An industrial automation system has to be implemented which consists of several elements that perform a wide range of functions related to Instrumentation, Control, Supervision and Operations Management associated with the industrial process. The new modified system consists of servo control additional axis positioned for the material handling with hydraulic fixture and welding is operated by an industrial robot having multi axis degree of freedom. A sensor and other electronic control systems interface with communication network in the automation process. The advantage of this proposed automatic system reduces cost of production significantly by efficient usage of energy, reduced time in completion of job & manpower. Also product quality is achieved using automated precision machines. Additionally, it increases the quantity produced by several times and has made the plants safer places to work, minimizing the risk of accidents.

KEYWORDS: Welding, Inert, Component, Automation & Robot