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Four-Circuit Protection Valve Opening Pressure Automatic Adjustment System Based on Machine Vision

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Abstract:

Aiming at the problem of non - intelligent opening pressure regulation of four-circuit protection valve, a set of automatic adjustment system for four - circuit protection valve opening pressure is designed. The system of the host computer takes LabVIEW software as the development platform, and the programmable logic controller PLC as the next machine, with using COGNEX intelligent camera to accurately locate the four exhaust center coordinates of four-circuit protection valve, coordinating with OPC server communication and NI Assistant camera calibration and other technologies, so that the servo movement system dynamically controls tightening mechanism automatically adjusts the four-circuit protection valve opening pressure. Online authenticating is performed on the two-station hardware experiment platform, and the results show that the system is fast and stable, which also meets the requirements of the industrial positioning accuracy of less than or equal to 0.5mm, and has a 95% success rate of opening pressure adjustment.

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I. Introduction

Machine vision [1]–[3] uses computers and cameras to stimulate the function of human eye, obtaining image signals by controlling the camera and sending the signals to the image processing system, to turn the signals into digital signals according to the color of the image, pixel distribution and brightness. And then digital signals are used for a variety of operations to achieve a specific purpose. Machine vision system can improve the quality and precision of product testing, and reduce labor costs and improve work efficiency to a certain extent. In the automated production process, people have been widely using the machine vision system auto parts testing, especially for four-circuit protection valve opening pressure of the automatic adjustment.

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