

Real-time data monitoring using a PC can provide many benefits, including faster data analysis, more accurate data collection, and improved decision-making.

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ABSTRACT

Automation continues to grow as an important tool in industrial process chains. Automated quality inspection helps to improve the bottom line as well as the quality of the process. Under traditional quality control, inspection of components (checking to make sure that bolt, screw or studs are welded) takes place at the end of the operation process. The problem with this sort of inspection it doesn't work. It won't ensure quality, however you define it. By this lot of time is spent on re-work and loss for the company.

In the modern production process, the applications of the automated quality control technology receive extensive recognition, and it is considered as a major way to enhance the market competitiveness of enterprises. Here is an Automated Quality Control System which has Infra-red Sensor on the conveyor belt to detect the component and stop the conveyor belt to automatically inspect. The placement of bolts, screws or studs are detected by proximity sensors connected to microcontroller. If the component is not according to specification, then the component will be driven towards the Component Rejected Bin. If the QC is passed, then it is driven towards a different bin. Number of components passed or rejected will be shown on LCD display and buzzer warning will be aired out when the component is rejected and documented in a file on the computer. The microcontroller is connected to the computer through a line driver and stores the QC data according to the date.

1. INTRODUCTION

Under traditional quality control, inspection of goods (checking to make sure that bolt, screw or studs are welded) takes place at the end of the operations process. The problem with this sort of inspection it doesn't work. It won't ensure quality, however you define it. By this lot of time is spent on re-work and loss for the company.

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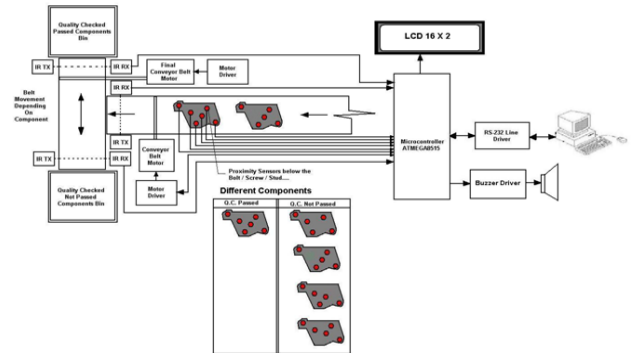
according to the date. Quality control software, and the automated monitoring capacity that it provides, also constitutes one tool that the automobile industry uses in quality control. Visual inspection also has its place in quality control within the automobile industry. During a visual inspection the quality control employee looks for such things as fissures, stripes or faint lines along the part's curvature, speckling, and waste materials, among other defects. This technique can also occur as a preparatory step for the use of an automated quality assurance system. This quality assurance methodology has the advantage of high flexibility that allows its use in quality control over a wide range of different pieces.

2. LITERATURE SURVEY

The purpose of this paper is to review the literature on automated quality control and to present an overview of implementation practices adopted by the manufacturing organizations. It also seeks to highlight appropriate enablers and success factors for eliminating barriers in successful implementation. Over the years the automotive industry has recognized the importance of automation for Quality Control improvement. While a few automated systems for defect detection have been introduced into the industry, most are limited in applications or have fallen short of expectations. Current automated optimizing cut-up systems in industry are based on single sensor technologies which are usually laser or camera based. To reach the goal of reliable and comprehensive defect detection, a large amount of research has been conducted on various sensor types. Dramatic changes in the auto industry have created a new definition of quality control for carmakers and their customers that goes beyond the basics of

making sure everything is put together right on the factory floor.

3. METHODOLOGY



Here, this project describes the non contact sensor based inspection system of production. In the modern production process, the applications of the automated quality control technology receive extensively recognition, and it is considered as a major way to enhance the market competitiveness of enterprises. Here is an Automated Quality Control System which has Infrared Sensor on the conveyor belt to detect the component and stop the conveyor belt to automatically inspect the component. The placement of bolts, screws or studs are detected by proximity sensors connected to microcontroller. If the component is not according to specification, then the component will be driven towards Component Rejected Bin. If the QC is passed, then it is driven towards a different bin. Number of components passed or rejected will be shown on LCD display and buzzer warning will be aired out when the component is rejected and documented in a file on the computer. The microcontroller is connected to the computer through a line driver and stores the QC data according to the date.

ADVANTAGES

Automation delivers powerful benefits. However it also creates new and often difficult challenges for an organization. The fact is that for every benefit there are significant consequences to manage.

Smaller staff - Efficiency can lower staff headcount. Each person is more highly leveraged. This can expose your organization during times of high transient demand or when someone is unavailable unexpectedly.

More tasks per person – Automation frees people to perform other activities. Many times, this widens the scope of their responsibilities, spreading them out over more tasks or greater areas of the software. Some people welcome the broader scope while others find it overwhelming.

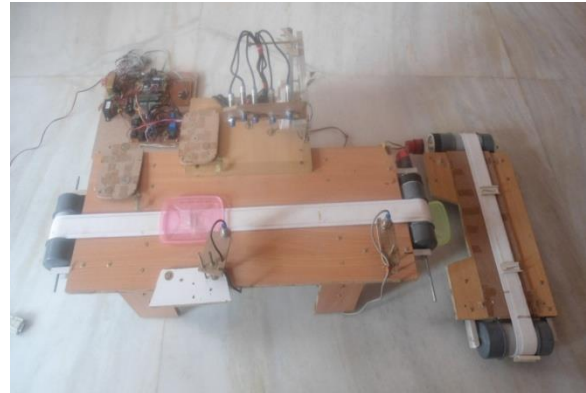
Faster turnaround – With automation, everything happens faster. This is mostly a good thing, but it can suddenly overtax some personnel who are accustomed to a slower pace. Furthermore, faster turnaround translates into increased expectations to be responsive with defect analysis. This can become an issue, especially when individuals are also expected to handle more tasks in a shorter time.

New assets for your business – Automation creates valuable, reusable assets for your business. Adopting automation requires skilled individuals who are able to build maintainable test assets. Some team members may not possess the technical or organizational skills to create and maintain automated assets.

4. DEVELOPMENT OF THE PROJECT

Figure shows the complete setup of the project, which contains circuit board, Proximity sensors, Inspection conveyor, and segregation conveyor. The setup of proximity

sensors to inspect the component which moves on conveyor, the movement of proximity sensors is controlled by the DC motor. When the component detect on conveyor, the sensors setup will moves towards the component for inspection.



The gap b/w sensor and component is 0-3mm. After the inspection the sensors setup will get back to its original position with help of the DC motor. the conveyer control sensor, which is used to stop the movement of conveyer, when detects the component on the conveyor. The sensor is placed above the conveyor as shown figure. shows the segregation conveyor which is used to segregate the accepted and rejected parts, in which the accepted parts will moves in one direction to assembly line and rejected parts will move to rejection bin (in opposite direction). A single DC motor is placed at side of the conveyor and it rotates in both directions with respect to input command.

CONCLUSION

This study highlights the recent automated quality control inspection, which leads to check studs, screws or bolts missing. Their value remains greatest during the inception of automation and ongoing creation of test scenarios, but becomes less during testing itself. Automated quality control inspection initiates the production, helps the streamlining manufacturing and other business

functions, and garnering sustained profits. This implementation is the reduced in the occurrence of unexpected production losses. A key objective is eliminated or minimizes all losses related to manufacturing system to improve overall production effectiveness. To minimize the rejection of the parts using online inspection concept. This study eliminates the waiting time losses involving multi-process and multi-stand operators and line-balance losses in conveyor work.

Through highly advanced IC's and with the help of growing technology of the project has been successfully implemented. The sensors and Integrated Circuits has been successfully designed and tested. Integrating features of all the hardware components have been used to develop. 3. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit.

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