

## HARNESS TESTING AND LIVE DATA UPDATING SYSTEM

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### ABSTRACT

Automobile Wire harness is one of the most essential parts of electronic mechanism. It serves as bridging and connection among various parts together in order for machine to work. There are many kinds of wiring harness in complete automotive body.

When manufacturing seat belt harnesses should be in exact quality because the seat belt prevents this from happening by restraining passenger movement and holding the passenger in place. The passenger may end up with bruises from the seat belt, but these are minor compared with the injuries that would otherwise occur.<sup>1</sup>

Therefore for the testing harness should be done in proper way. For this Wireless Harness Testing machine could be proposed. There is another major difficult is that factory managers needed identify progress of the production randomly. In this case the existing system is only attending to each line supervisor for check progress of the production.

For above identified problems as a solution, Harness testing and live data updating system can be proposed that will store testing results in real time in a database and shows in a wide screen. Through this automation system, data loss will be eliminated and human interaction for collecting data is excluded therefore managerial staff will be beneficial through this proposed system since production data relevant to the harness testing machines can be gathered quickly via the display of the system.

**Keywords:** Automobile, Harness, Automation, Android

### 1. INTRODUCTION

Tos Lanka Co (Pvt) Ltd is renowned as valued wire harness manufacturer for our high quality wire harnesses in Sri Lanka. Tos Lanka Co (Pvt) Ltd has been serving as wire harness supplier to leading countries such as Japan, Europe, North America and India and many other renowned brands of automotive industry.

Other than being top quality automotive wiring harness manufacturer, Tos Lanka Co (Pvt) Ltd is able to manufacture wire harness as per the desire of valued clients and customers. Buyers can send their samples or wiring harness diagram as the orders to the company, therefore the company would be able to manufacture them exact replica of their wiring harness as they expected desired quality.

The company factory No.2 is mainly producing wire harnesses. For the testing of the quality of the Wire harness a machine is used to check the faulty items. In the factory the items are known as “Good” or “Not Good (NG)” items. The machine capable of detect following.

- Harness is short circuited.
- The wire connections are not in order.
- Wire connections loosely tied.

If the above conditions are satisfied then the testing machine recorded the harness is not good (NG) otherwise recorded as good.

## 2. EXPERIMENTAL

The block diagram of the proposed system for Harness testing and live updating system is shown in the following Figure1.



Figure 1: The block diagram of the harness testing and live updating system

The Harness testing and live updating system has three major components.

- Wireless harness testing machine
- Android application server
- Main server database

### 2.1 Wireless Harness Testing Machine

For the new testing machine the main circuit board extended with another Atmega328P microcontroller for collect data from the PIC16F876A secondary microcontroller. After data is collected from the secondary microcontroller, the Atmega328P microcontroller started to

communicate with ESP8266 Wi-Fi module. When the Wi-Fi module is able to establish the connection with the Android server, then the testing machine is started to send data to the Android server. After completion of the data sending the testing machine disconnected the connection with the android server for allowing other machines to communicate with other testing machines. After few seconds the wireless testing machine starts to sending requests to the Android application server. This whole process running again and again to keep Android application server and Main server database is to be updated.

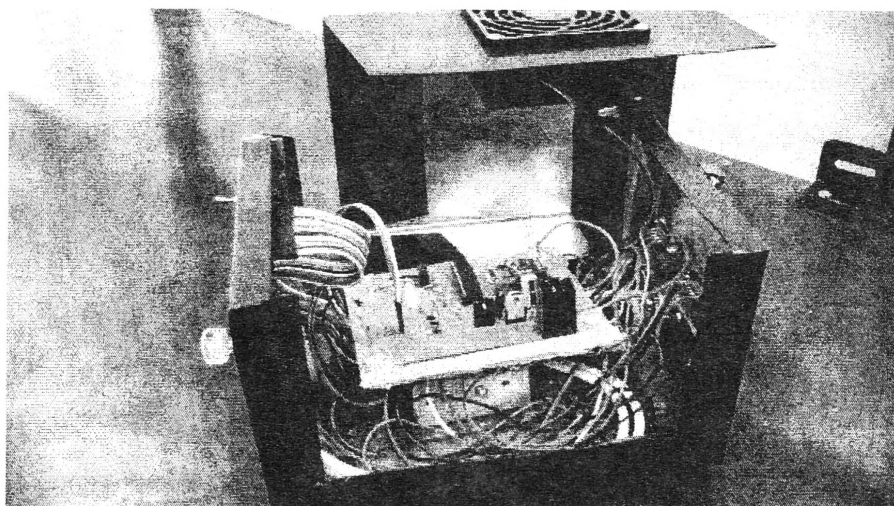


Figure 2 : Wireless harness testing machine

## 2.2 Android Application Server

Android application server is designed to match with the Hackberry A10 device. Android language is used to develop the Android application server. The Android application server is able to communicate with every Wireless testing machine via Wi-Fi. But only one testing machine can send data to the Android application server at a time.

After completing the data receiving from one testing machine the Android application server recorded the data, and send data to the main server database through Wi-Fi. And the same time the Android Sever updated the screen. Storing data in the main server database is also controlled by the android server. PHP script manages the database connection and run this script using HTTP protocol from the android server. Therefore the Android server is able to update the main server database at the same time.

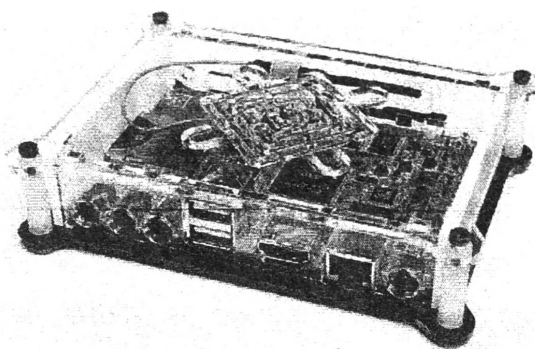


Figure 3 : Hackberry A10

### 2.3 Main Server Database

MySQL workbench is used to build the database for the Wireless Harness testing system. The tables were created for each testing machine to store live data. Only authorized persons could see the content of the database because the MySQL database is protected by using a password.

Altogether above major components will make complete Harness testing and live updating system. Using this completes system the company is able make exact quality of wire harnesses.

## 3. RESULTS AND DISCUSSION

Developed Harness Live Data Updating System consists following main parts.

- Showing live data in a LCD screen through Wi-Fi.
- Sending the live data to the main server database through Wi-Fi.

In order to observe proper outcome of the system, above mentioned parts should be precisely operated simultaneously.

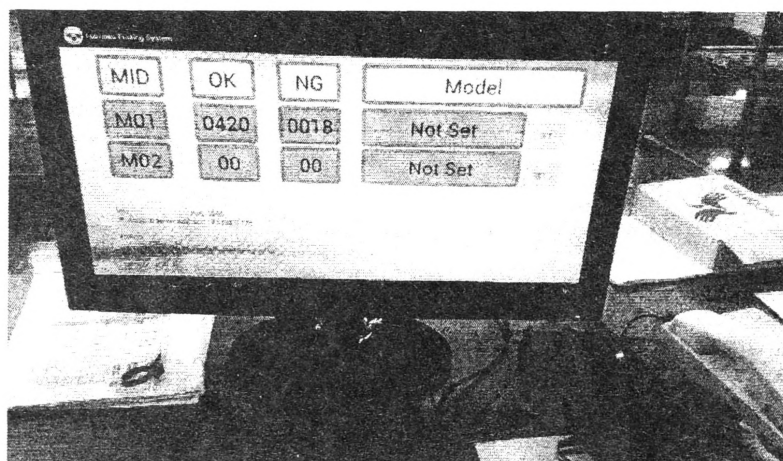


Figure 4 : Android application server output

The major task to achieve during the development of this system was to avoid data loss and human interaction for collection data. Therefore managerial staff will be beneficial through this proposed system since production data relevant to the harness testing machines can be gathered quickly via the display of the system.

The system was tested after completing the designing. It worked successfully. This project reflects optimum solution for the above described issues with most appropriate and cost effective manner.

#### **4. CONCLUSION**

The existing testing machine which had previously is only able to check quality of the wire harness. By this improved of implementation system, if a testing machine is fails, the data not getting lost due to the failure. Therefore production process never getting slow due to failure, because laborers do not require recounting manually. Also there is another advantage regarding the developed system for the factory managers, if they needed to identify the progress of the production randomly they do not necessary to attending to each line supervisor for check progress of the production. Only they have to log into the main server database and they could download what they want immediately.

Since most of the times customers are visiting to the company therefore the implemented system shows the ongoing process of the production lines. Therefore customers would get satisfied by looking at the company ongoing process of the production line and can increase their business with the clients by getting orders from the foreign countries as well as the local market according to the requirements.

After completing the project, the completed system was tested at the company. The system was worked successfully. Especially displaying data and updating the remote server database are can be monitored quickly. When considering the system especially the technology that used, the system can be implemented for any kind of real time data logging.

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