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Design and Development of Mobile Operated Electric Wire Cutting Machine

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ABSTRACT: During the past few decades, the electronic industry has shown great progress in automatic control of different system. Same as the automatic barrier control system, the manual handling of any system results in less accuracy as compare to the microcontroller-based control system. This project is basically giving an initial theme that how we can approach to a barrier control system using mobile application. So, we had designed an automatic wire machine which give more accuracy and reduces the human error, decrees man power, reliable work done and save the wastage of wire and make it affordable in price so it can be used by small scale electrical industries. In electrical industry there is huge requirement of wires and its measurement. The Heavy wire weight is needed to be measured accurately. The wire measurement and cutting is traditional and human efforts are required for it.

KEYWORDS: Microcontroller, DC motor driver, Mobile connected, Wire shear, Arduino UNO, MSPS 12 Volt.

I. INTRODUCTION

In electrical industry there is huge requirement of wires and its measurement. The Heavy wire weight is needed to be measured accurately. The wire measurement and cutting is traditional and human efforts are required for it. The proposed project will automatically calculate wire length and cutting machine will cut it. The project is based on microcontroller platform which can easy to use and flexible. The system can measure wire length accurately as per given input. The motors are driven by microcontroller with required speed (revolution per meter). The cutting tool is precisely designed to measured wire length in proper format. The length of the wire can be decided by the user as per requirement. An embedded system for colour detection of insulated electrical wire, which is to cut, stripped by an automatic WCM (wire cutting machine). These wire segments would be used in the assembly of Wire Harness. It describes the subsystems which together will compose the required application.

II. LITERATURE SURVEY

Automatic Wire Cutting Machine Authored by Department of ECE, Adhiyamaan College of Engineering, Hosur, Tamilnadu, India the human endeavors in electrical wiring are high and the material utilized for the assembling of the wires is exorbitant. Along these lines it ought to be utilized viably. Hence, this venture is proposed to configuration to limit the human endeavors and to maintain a strategic distance from the wastage of the wires. This framework can precisely quantify wire length and cutting machine can cut wire into number of pieces .The framework works deftly by utilizing legitimate info given by console and showing the information given on LCD or smartphone. The goals of this venture are to plan and build up a programmed wire slicing machine to accomplish minimal effort cutting. It works quickly and lessens the cutting time. The down to earth goal of the programmed wire slicing machine is to cut required length of wire in required number of pieces.

A review on microcontroller used in project Authored by Ms. Poonam Mane¹, The project is based on microcontroller platform which can easy to use and flexible. The system can measure wire length accurately as per



given input. The motors are driven by microcontroller with required speed (revolution per meter). The cutting tool is precisely designed to measured wire length in proper format.

Automatic wire cutting machine Ms. Poonam Mane¹, Ms. Shalaka Mali² The project is based on describing, Wire cutting system is automatic, easy to handle, and reduces man power, save wires from damage because it is automatic with zero error with reliable process. It is advantageous for the industries and for workers. FUTURE SCOPE This system can be used for the wireless automatic wire cutting system using GPS and GSM . This will have a great impact on the electrical industry. And in order to operate it from mobile or cell phone, Android application can be developed.

Sawant OT* , Patil MS Department of Electronics and Telecommunication Engineering, Rajarambapu Institute of Technology, Rajaramnagar, Sangli (M.S.), India This paper presents the Development and designing of Automatic wire cutting system based on Microcontroller for industrial Application in real time. The proposed system implements a real time state of art automatic wire cutting system. The system is based on an ARM 7. Preliminary result shows that embed platform are a promising path for the implementation of “Automatic Wire Cutting System” application in real world. In recent years of technology, automation has reduced human efforts and errors to a large extent. The development of automatic wire cutting system will reduce human efforts required to cut the wire in proper length. The time required for cutting different length wires depends on efficiency of workers. Quality depends on accuracy and skill of workers.

Automatic Wire Cutter Bachelor’s Thesis in Mechatronics PHILIP HAMILTON RASMUS HOLMSKOV This bachelor thesis project in mechatronics involved making a working prototype of an automatic wire cutter and evaluating its accuracy. The accuracy of the machine was increased by analysing measurements of the machine’s initial precision and thereafter performing a calibration to diminish the eject of unwanted errors.

Design and Development of Automatic Wire Cutting Machine: A Case Study in Small Scale Industry Sammed Narendra Patil¹ , Sourabh Popatlal Karyappa² , This Paper gives the detailed information about the design and development of automatic wire cutting machine. At present conventional method is used for wire cutting and measuring which takes more time which requires man power. The accuracy obtained by conventional method is also poor. The automation system solves the labour problems it saves cost, increases accuracy, decreases human errors. By using automation our objectives to achieve low cost cutting which works fast and reduces cutting time. The practical objective of automatic wire cutting machine is to cut required length of wire in required number of pieces. This machine is simple and portable.

III. METHODOLOGY

The flow of work to be done. Firstly, power supply is ON, here we are using +12v supply. Then input is given by keypad to Mobile. Here the required length of wire to be cut is given as input to Mobile and the mobile gives information to machine. It will be displayed to the mobile, input given by keypad to machine. Thus, the interfacing between micro controller and motor driver, then the both motors will start to operate.

Firstly, the motor where the bundle of wire is placed on the shaft it will rotate for particular time, according to specified duration of rotation. As the wire will be out of the bundle, it will move through conveyor belt to cutting area. After that second motor were the cutting foil is placed will start to run and thus the wire will be cut as



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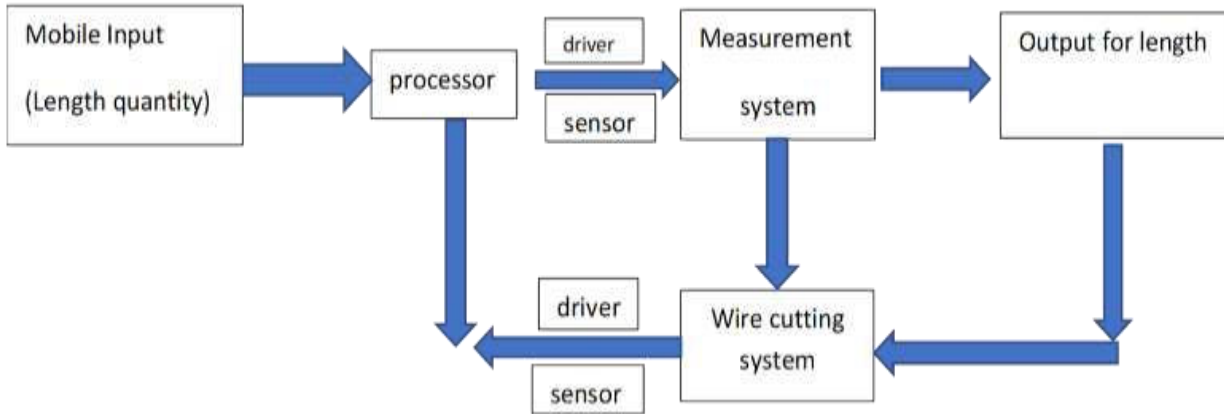


Fig. no. 3.1

IV. WORKING PRINCIPLE

The flow of work to be done. Firstly, power supply is ON, here we are using +12v supply. Then input is given by keypad to Mobile. Here the required length of wire to be cut is given as input to Mobile and the mobile gives information to machine. It will be displayed to the mobile, input given by keypad to machine. Thus, the interfacing between micro controller and motor driver, then the both motors will start to operate. Firstly, the motor where the bundle of wire is placed on the shaft it will rotate for particular time, according to specified duration of rotation. As the wire will be out of the bundle, it will move through conveyor belt to cutting area. After that second motor were the cutting coil is placed will start to run and thus the wire will be cut as per user requirement.

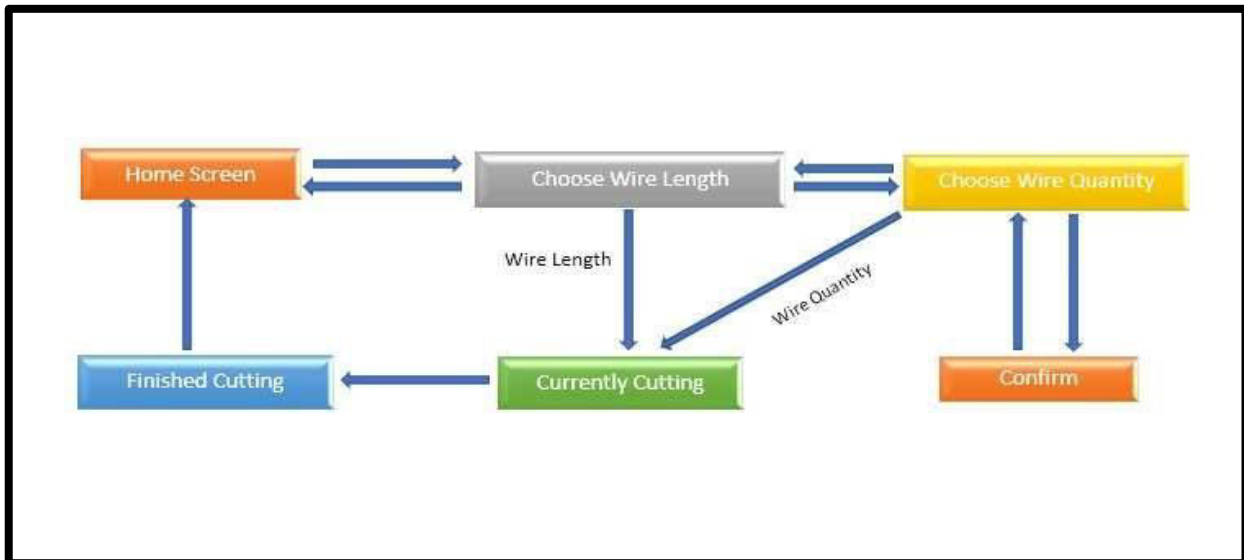


Fig. no. 4.1



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V. ASSEMBLY DRAWINGS

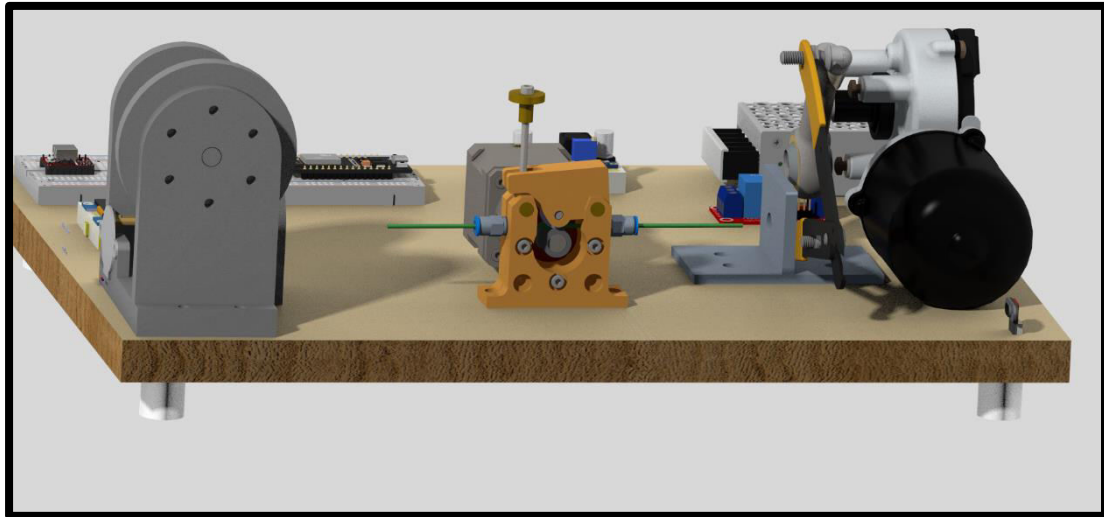


Fig. no. 5.1

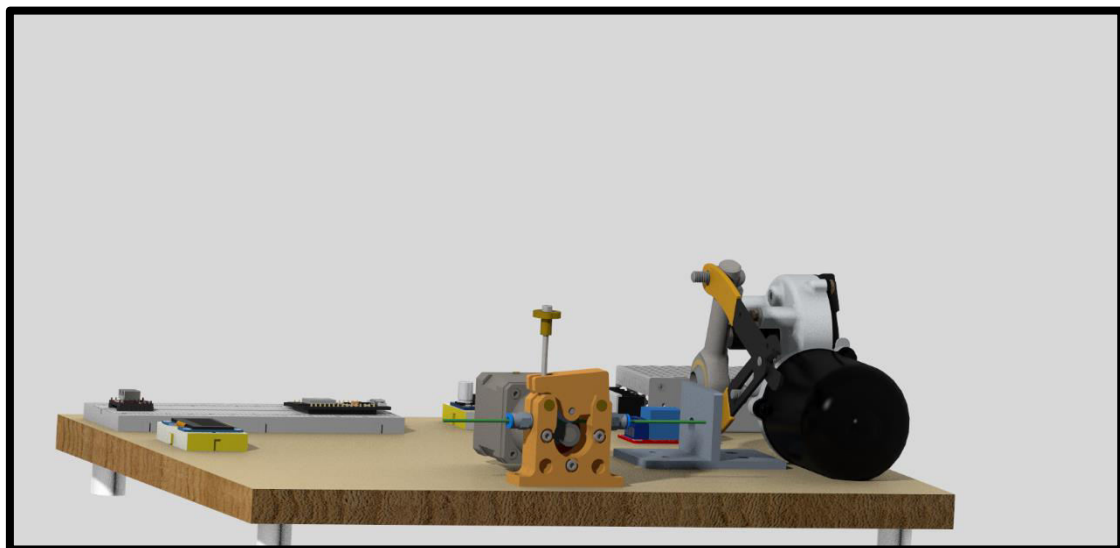


Fig. no. 5.2

VI. SCOPE OF WORK

This system can be used for the wireless automatic wire cutting system using Mobile Application. This will have a great impact on the electrical industry and in order to operate it from mobile will give us a good efficiency. These are the future aspects of project development in this particular field.

VII. CONCLUSION

Hand tools called wire cutters are frequently used on a daily basis in many different sectors. Sadly, using handheld wire cutters for repeated activities may make health problems worse. On the other hand, the outdated and ancient industrial wire cutting machines that are still in use in industry are exceedingly slow, inaccurate, and prone to jamming. A lot of manufacturing facilities, technical shops, and electrical contracting businesses employ this kind of



machine. Because new wire cutting machines are typically expensive, small manufacturing facilities or technical shops prefer to keep using their outdated machinery. The wire cutting machine concept described in this paper will help technicians, electricians, and factory workers by providing a convenient and economical tool that will.

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