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## Automatic Wire Cutting Machine

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### ABSTRACT

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.

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### 1. 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.

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### 2 Hardware Used

- Arduino
- LCD Display 16x2
- Stepper Motor
- NEMA 17 Stepper Motor & Extruder

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### 3 Working

The flow of work to be done. Firstly power supply is ON, here we are using +5v supply. Then input is given by keypad to Arduino. Here the required length of wire to be cut is given as input to Arduino and the Arduino gives information to LCD. It will be displayed to the LCD, input given by keypad to Arduino. Thus the interfacing between micro controller and motor driver, then the both motors will start to operate. Firstly the motor were 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 per user requirement.

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### 4 Literature Survey

Mane, M.P., Mali, M.S., Korade, M.P. and Katkar, M.S., 2017. Automatic wire cutting machine.

Cheng, K., Ni, J.F., Lv, L.L., Ding, Z.J. and Xu, X.W., 2011. Research on Automatic Programming System of High Speed Wire Cutting Machine. In Applied Mechanics and Materials (Vol. 43, pp. 637-640). Trans Tech Publications Ltd.

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## 5 Scope of Project

- 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 .
- These are the future aspects of project development in this particular field.SS

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## 6 Methodology

Shows the flow of work to be done. Firstly power supply is ON, here we are using +5v supply. Then input is given by keypad to Arduino . Here the required length of wire to be cut is given as input to Arduino and the Arduino gives information to LCD. It will be displayed to the LCD, input given by keypad to Arduino . Thus the interfacing between micro controller and motor driver, then the both motors will start to operate. Firstly the motor were 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 per user requirement.

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## 7 Algorithm for Arduino code

1. Start
2. Initialization of Control Unit
3. Enter the desired quantity of wire piece
4. Enter the length of wire piece
5. If count is <= Entered quantity
6. Cut Wire

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## 8 Conclusion

Automatic Wire Cutting System” provides high level of accuracy and exact cutting of wires than the present cutting system in the market. Thus due to this the efficiency of production is increased. This system gives exact number of wires with the required length. The circuit complexity is reduced in this system. As the complexity in the circuit is reduced, it is easy to understand. The main advantage of this system is that the accuracy is increased and the required result is obtained in very less time. The time required to cut wires is less compared to the manual cutting of wires. Due to simple hardware it is handy for the people. As the price of the project is not high, it is economically affordable to common people and has been successfully implemented in the industry.

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