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Automatic Variable Size Bottle Filing System

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Abstract: The objective of Automatic Bottle Filling System project is to provide easy access to the industries for filling bottles automatically. The project is mainly useful in the cold drinks Manufacturing Company in which drinks is automatically filled in the bottle. Here we use conveyor for whole operation which is controlled with the help of ardiuno microcontroller. In market most of automatic bottle filling systems are having high cost. The target of our project is giving this system to customer in low price.
The aim of this project is to design a microcontroller based automatic variable size bottle filling system. In it the bottle moves on the conveyor belt for fixed duration which is already programmed then it sense the level up till which liquid is to be filled in it and then fills it accordingly up to that fixed level.
Our project works in two steps. In first step the height of the bottle is measured by an IR sensor and in second step the water is filled up till that height.

I. INTRODUCTION

Our Bottle filling systems are part of industrial process automation. Project is an attempt to make a programming variable size bottle filling system.
The project is based on popular microcontroller arduino unoATMEGA328 the automation of bottle filling system can improve the efficiency of units as well as reduce the production cost.
In small industries bottle filling operation is done manually. The manual filling process has many disadvantage like overflow of water while filling it in bottle, equal quantity of water may not be filled, delay due to human activities. Our project is meant for small industries.
It aims to eliminate problem faced by small scale bottle filling system and different size of bottle can be filled With this system that operates automatically, every process can be smooth and the process of filling can reduce workers cost and operation time. The system operates by the program that designed to do the operation.
The aim of this project is to design a microcontroller based automatic variable size bottle filling system.
In it the bottle moves on the conveyor belt for a fixed duration which is already programmed in the programming then it sense the level up till which the liquid is to be filled in it then it fill it accordingly up to that fixed level.
Our project works on two steps. In first step the height of the bottle is measured by an IR sensor and in second step the water is filled up till that height.

A. Current Problems

1) In current industries single system is used for single size of bottle for the filling process and different size of bottle cannot fill in that system.
2) Cost of the system is so high.
3) More time is using for filling the bottle.
4) More man power is also used.

II. WE PROVIDED SOLUTION OF ALL ABOVE PROBLEMS

We are make a variable size bottle filling system that's solve all the problem The aim of this project is to design a microcontroller based automatic variable size bottle filling system.
In it the bottle moves on the conveyor belt for a fixed duration which is already programmed in the programming then it sense the level up till which the liquid is to be filled in it then it fill it accordingly up to that fixed level.
Our project works on two steps. In first step the height of the bottle is measured by an IR sensor and in second step the water is filled up till that height.

A. Steps of Working

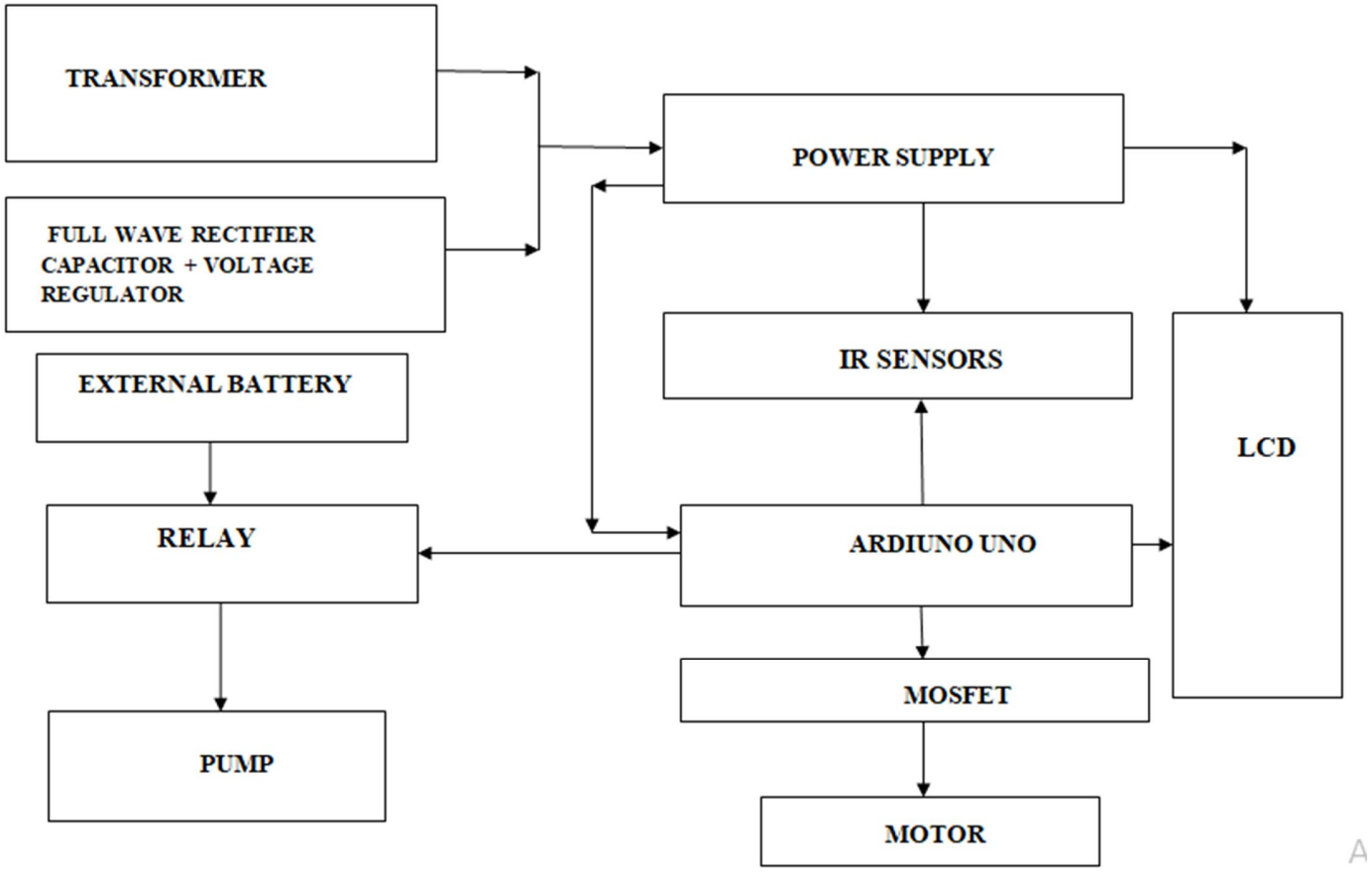
1) *Step 1:* At first power supply is given to all components like arduino.
2) *Step 2:* Then conveyor belt moving continuously for a fixed time.
3) *Step 3:* The IR sensors regularly check the bottle.
4) *Step 4:* when the sensors detect the bottle then the sensors measured the height of bottle.
5) *Step 5:* After that Bottle moves through a conveyor belt and reaching the liquid filing system arrangement.
6) *Step 6:* Then the sensors sense the bottle and stop conveyor belt.
7) *Step 7:* After that water motor getting start and fill liquid according to the pre define time.
8) *Step 8:* Liquid fill successfully and then conveyor belt is started.
9) *Step 9:* This process is continuously repeated automatically.

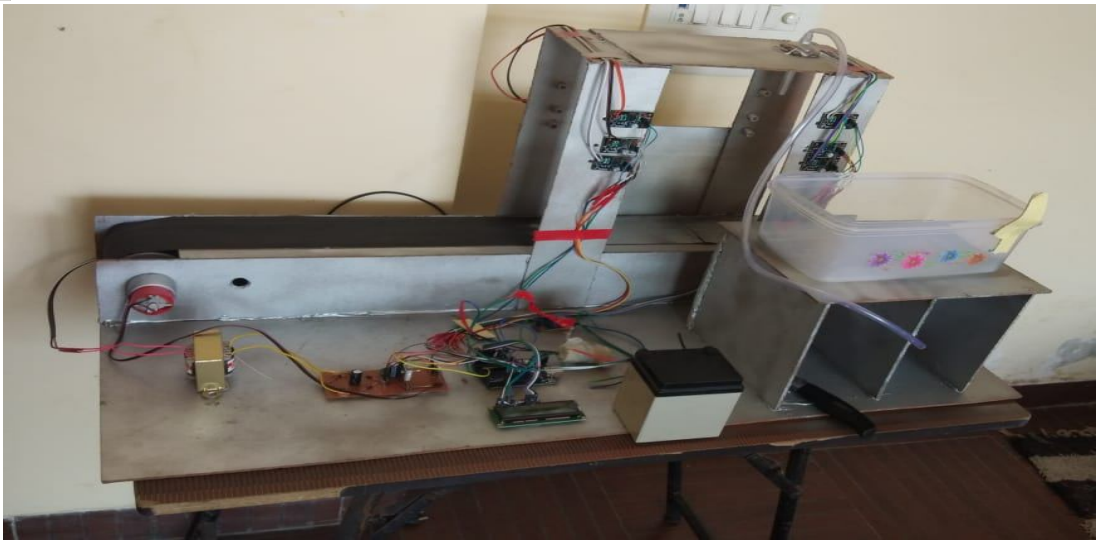
III. METHODOLOGY

The methodology of our project can be discussed in following steps:

A. The Ir sensor regularly checks for the bottle
B. If the ir sensor does not find any bottle then the conveyor belt moves ahead again.
C. Now if the bottle is detected by the ir sensor then sensor measured the height of the bottle.
D. After that the bottles go to the pipe arrangement and pipe arrangement holding sensor for filling of the bottle.
E. After that the water motor gets start. And the water pump fills the bottle with water.
F. As soon as the water filled in the bottle according fixed time duration after the end of fixed duration the water pump is off and the bottle moves ahead and the complete process is ahead.
G. This complete methodology is give above in form of **C** language which has been downloaded in microcontroller Atmega 328.

Block Diagram of Automatic Variable Size Bottel Filling System





IV. CONCLUSION

Now we can say that variable size and shape bottle could be filled in the same conveyor belt without any problem we are using IR sensors for detecting height the bottle size and successfully filled. The automated bottle filling system was give advantage to reduce work, time and cost of filling. Hence it must be used all filling applications .

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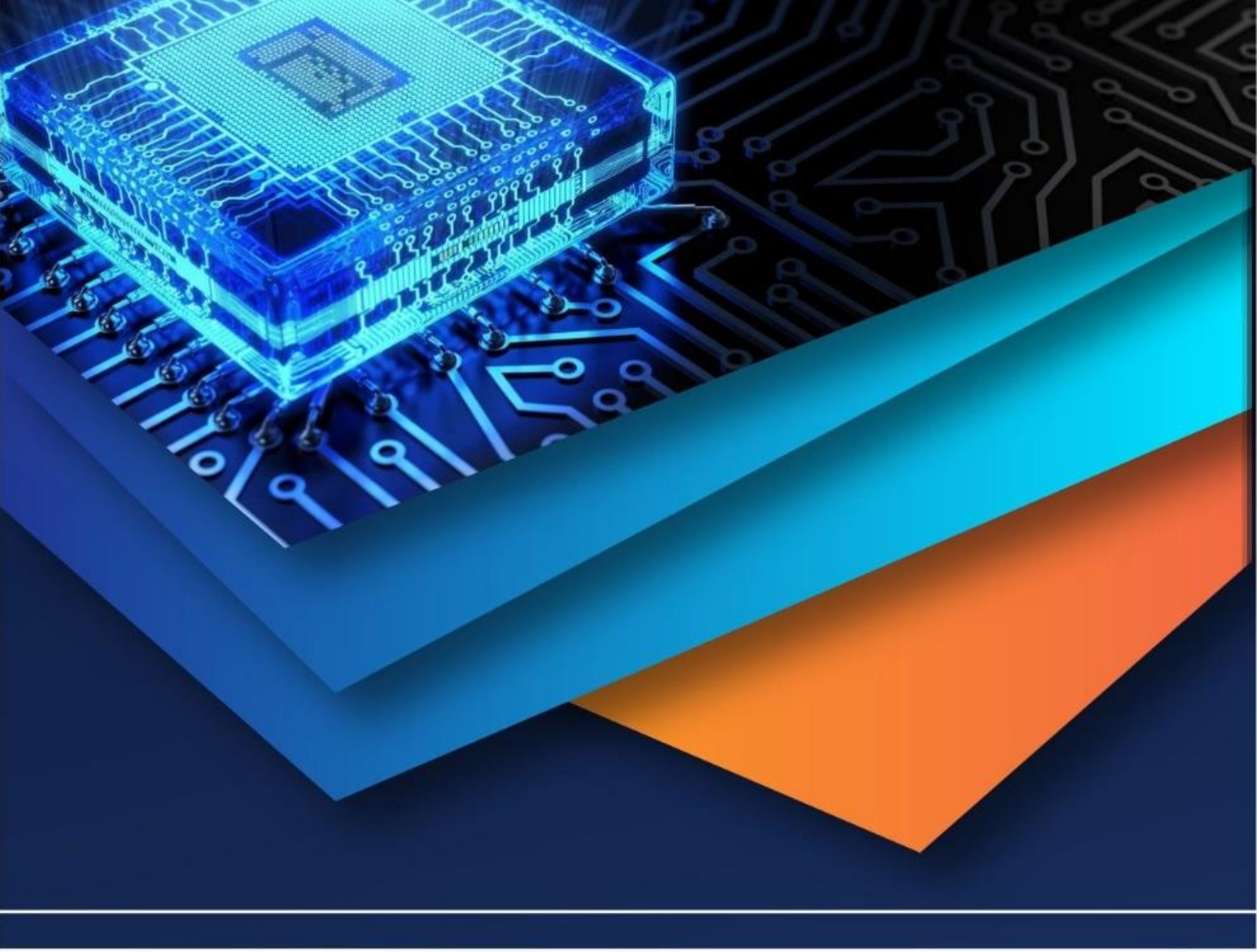

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