

# MICRO CONTROLLER BASED AUTOMATIC OIL FILLING SYSTEM

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## Abstract:

The reason for this project is to configuration, create and screen "Programmed oil filling machine". This work gives plenty of advantages like low force utilization, low operational cost, less support, precision and more. This undertaking depends on Industrial computerization. A micro-controller is utilized as the controller to control the programmed activity of this machine where the machine comprises a transport framework and filling stations. The micro-controller is chosen as the controller since it is simpler to learn and the reduced size makes it simpler to join it with the system. The programmed fluid filling machine is created to be low cost contrasted with the other filling machines in the market. The machine is additionally simple to work and easy to use. The machine controller is likewise versatile and can be connected to the conveyor or can be left independent.

## Introduction:

The primary target of the venture is to Design and Develop an Automatic fluid filling to cans of various stature with Micro-Controller Integration. The present machines are that it can fill just a specific kind of holder of explicit volume, and the filling sum is as set by the administrator. To build up a filling machine which can fill diverse volume of containers on the bases of volume. This can use in various ventures like medication, oil, and so on. With this framework that works consequently, every procedure can be smooth and the way toward topping off can lessen the labor cost and activity time. For the transportation of cans in the manufacturing plant, we are utilizing a transport line. The material utilized in the belt is elastic which pivots on the DC engine. [1] Mijar et. (2018)The main intention of this paper is to implement automation in small scale bottle filling industries because the tiny scale industries choose manual operations to manufacture bottles, filling and capping them.[2] Kailas Pawar et (2018)The solenoid valve was used for bottle filling and the cap is fitted by utilizing pneumatic chamberwhich is fitted at next station. So we reduce the maintenance of the machine and increase the efficiency of the machine, and also increase the production rate.In this venture we they concentrate on bottle filling and pressing procedure, which must finish in just 2 stages. Right now there are three stages for finishing of jug pressing procedure. So less time is required when contrasted with present application machine. [3] Ashwini P. Somawanshi et (2013) Filling is a task carried out by a machine that packages liquid products such as cold drinks or water. The bottle filling project serves as an interdisciplinary engineering design experience. It introduces aspects of computer, electronics and mechanical engineering. [4] Abbas Al-Refaie (2017). This research aims at improving the performance of the filling line machine using fuzzy goal programming. Two main quality responses including the number of defective products and the production rate of the filling machine are of main interest.

### Methods and Experimental Work:

The bottle filling process begins with the client input given through the console. The user input is fed into the micro-controller. The microcontroller triggers the dc engine drive circuit. This switches on the DC servo engine. The transport framework begins moving until the IR sensor identifies the nearness of containers, along these lines halting the chain transport. The IR sensor is capacitive in nature and triggers the small scale controller to incite the solenoid valve, switch off the engine and energies the valve to fill the fluid. At the point when the necessary volume is filled, the MSP430 controller removes the excitation current to the solenoid valve and at the same time turns over the dc engine. Consequently, a similar procedure rehashes for the filling of the next containers until the batch amount is fulfilled.

### Flow process:

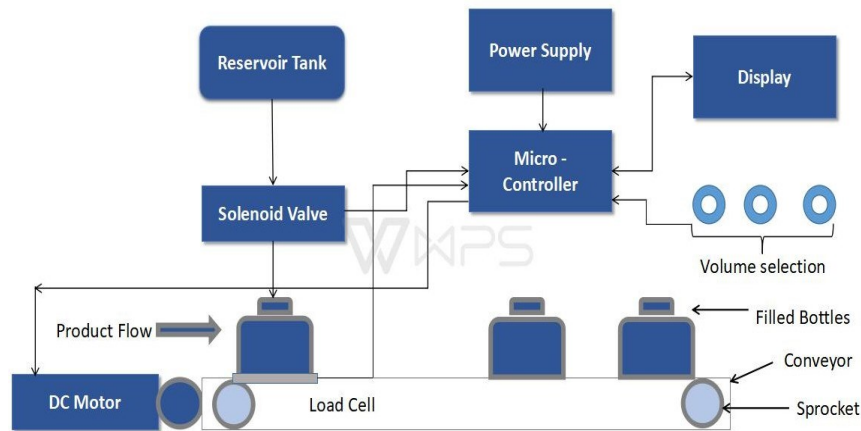


Figure 2- Process flow sensor

### Process Circuit diagram:

The circuit diagram is shown in the figure. The Solenoid valve is interfaced with the microcontroller. And a relay is interfaced for connecting the motor for conveyor movement. The connections are shown in the figure 3.

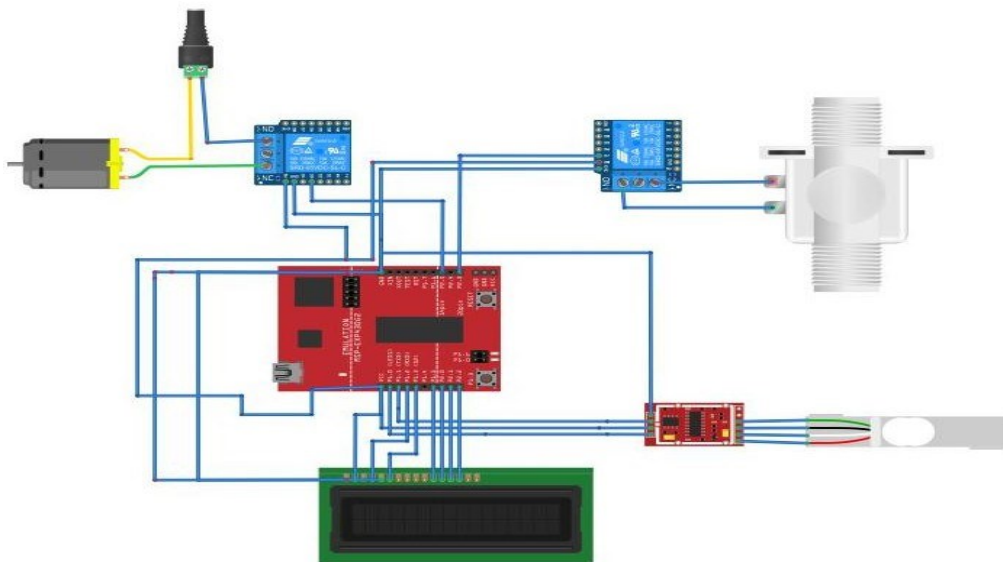


Figure 3. Circuit Diagram

**Conclusion:**

Bottle filling framework gives a lot of uses in the field of mechanization, particularly in small scale manufacturing ventures where there are countless segments to be prepared and taken care of in a brief period. The programming of this framework is adaptable, rapid and simple. The exhibition, adaptability, and dependability depend on the speculation. The whole framework is increasingly dependable, efficient and easy to understand. The framework has demonstrated to work successfully evading superfluous spill or wastage of fluids. The framework likewise gives high exactness and high accuracy in the extent of the fluid blend. The control framework and the field unit has been effectively introduced and the testing was done under determined conditions.

**3.1 Approximate time taken (for single can):**

WEIGHT (Kg)	Existing method (min)	Automatic filling method (min)
30	6	5.18
15	3	2.3
10	2	1.73

**Existing system VS Automatic system:**

The difference between manual and automatic filling system based on time is shown in a graph. The graph is shown in figure 5.

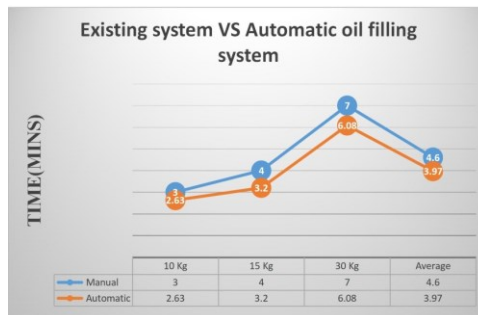


Figure .4- Existing system VS Automatic system

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