

# Water Dispense Unit Using Bottle Crushing Machine

Rutuja Y Rakate<sup>1</sup>, Rutuja N Patil<sup>2</sup>, Nikhat S Mulla<sup>3</sup>, Sharanabasppa R R<sup>4</sup>

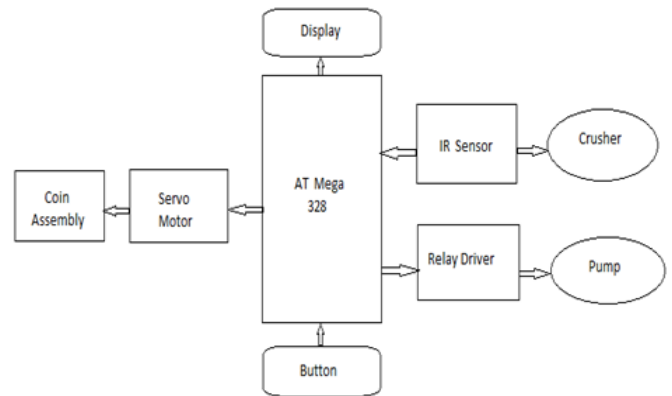
<sup>1,2,3</sup> Student of Sanjay Ghodawat Institute, Atigre, Maharashtra, India

<sup>4</sup> Assistant professor of Sanjay Ghodawat Institute, Atigre, Maharashtra, India

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**Abstract** - This project describes about the experimentation of plastic bottle shredder (crushing) machine and water vending machine and analysis of mechanism used in system. Plastic crusher is a machine used for cutting the plastic into small pieces to make waste management easier. While a vending machine is used for distribution of drinking water. We making this project model for recycling of plastic wastage in domestic area, industries etc. in this area the plastic waste is present in large quantity, but the available machine used to recycle this waste are very costly. They pack this waste and give them to local processing plants. So our intension behind this project is to process the plastic waste as cheap as possible by shedding where it is made for reducing cost of processing and transportation. Benefit of this machine is the reduction of labour work which result in cost reduction.

## 1.1 Block Diagram



**Key Words:** Sensors, Crusher, Coin Assembly, Pump.

## 1.2 General specification

### 1. INTRODUCTION

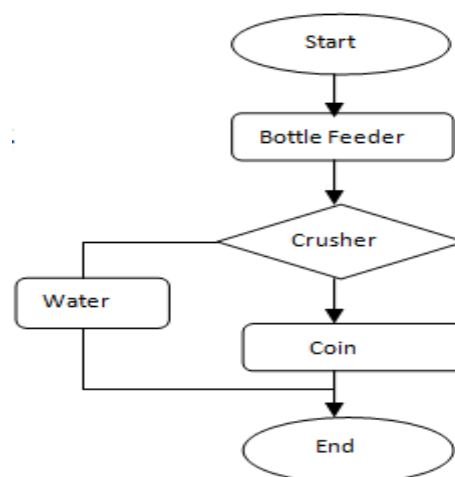
Plastic waste is a major concern worldwide. It takes more than 1000 years for plastic to decompose. Most of the plastic waste is created because of packaged drinking water bottles. India generates 5.6 million metric tons of plastic waste annually, with Delhi generating the most of at municipality at 689.5 metric tons every day, according to a report from the Central Pollution Control Board (CPCB).

India's rank in the top 20 countries generating mismanaged waste available to enter the oceans. Empty plastic water bottles are hard to deal with as users tend to leave the empty bottles wherever they please, and so they need to be collected. Some 1600 tons of garbage is generated within PMC (Pune Municipal Corporation) limits every day, out of which 15 per cent, or almost 240 tons is plastic.

So we have to reduce the stewardesses of plastic bottle, we choose project on it name as "Water Bottle Crushing And Water Wending Machine" As we know the function of crushing machine and vending machine. with the same technology used we are going to design a system. It has been specially designed for use on Railway station, Bus depose, public places etc. This system is based on Microcontroller.

The project is designed to develop for water bottle crushing and water Dispense Unit. The system consists of a ATmega 328 uc,, DC Motors, crushing machine, Motor drivers, coin assembly, power supply. In this system, if we insert the plastic bottle inside the bottle feeder, the IR sensor sense the bottle and send signal to Controller. If the bottle sense signal reach at controller, it drive the motor and Crushing machine crush the bottle and collect crush inside the box and you have receive the coin or water as per your choice. Water Dispense Unit works on the principle of bottle detection. When we insert the bottle in the feeder, it will detect the bottle and according to size of bottle & it will generate signal. This signal used by controller to calculate how much amount of water provide by vending machine.

### 2. Flow chart



## Components description

### Microcontroller:

ATmega328P is the heart as well as the brain of the system. Depending on the sensed levels the microcontroller will decide the further action to be taken, that is, whether to keep the motor in the ON state or to put in OFF state.

The high-performance Microchip picoPower 8-bit AVR RISC-based microcontroller combines 32KB ISP flash memory with read-while-write capabilities, 1024B EEPROM, 2KB SRAM, 23 general purpose I/O lines, 32 general purpose working registers, three flexible timer/counters with compare modes, internal and external interrupts, serial programmable USART, a byte-oriented 2-wire serial interface, SPI serial port, a 6-channel 10-bit A/D converter (8-channels in TQFP and QFN/MLF packages), programmable watchdog timer with internal oscillator, and five software selectable power saving modes. The device operates between 1.8-5.5 volts.



### IR Sensor

IR Sensors work by using a specific light sensor to detect a select light wavelength in the Infra-Red (IR) spectrum. By using an LED which produces light at the same wavelength as what the sensor is looking for, you can look at the intensity of the received light. When an object is close to the sensor, the light from the LED bounces off the object and into the light sensor. This results in a large jump in the intensity, which we already know can be detected using a threshold.



### Inductive Sensor

An inductive proximity sensor belongs to the category of non-contact electronic proximity sensor. It is used for positioning and detection of metal objects. The sensing range of an inductive switch is dependent on the type of metal being detected. Ferrous metals, such as iron and steel, allow for a longer sensing range, while nonferrous metals, such as aluminum and copper, may reduce the sensing range by up to 60 percent. Since the output of an inductive sensor has two possible states, an inductive sensor is sometimes referred to as an inductive proximity switch.



## 3. CONCLUSIONS

The project or the system which is being made is a working prototype of the bottle crushing and water vending. In this system acceptance ratio is almost 100%, also the study on operation and mechanism is done in the process subsequently which is designed to crush plastic bottles to avoid stewardesses of plastic. A water dispenser is used, which plays a vital role in this system.

## ACKNOWLEDGEMENT

We take the opportunity to express our reference to Sanjay Ghodawat group of Institute, Atigre Kolhapur for the support and available facilities during this project. The encouragement given by the Institute motivated us. Dr. V. A. Raikar, the (Director) and Mr. S.M Hirugade. (HOD of E&TC department), deserve special thanks for encouraging us. We thank all our teachers for their contribution in our studies.

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