

# DESIGN AND FABRICATION OF ROAD CLEANING AND SCRAP COLLECTING MACHINE

Pravin Kokitakar<sup>1</sup>, Rachana Desai<sup>2</sup>, Yuvraj Ghode<sup>3</sup>, Umesh Misal<sup>4</sup>,  
Mhalappa Rupnur<sup>5</sup>, Avadhut Maskar<sup>6</sup>.

<sup>1</sup>Assistant Professor, Mechanical Engineering, Dr. A.D. Shinde College of Engineering, Gadhinglaj, Maharashtra, India

<sup>2,3,4,5,6</sup>UG Scholar, Mechanical Engineering, Dr. A.D. Shinde College of Engineering, Gadhinglaj, Maharashtra, India.

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**Abstract** - Cleaning is the predominant fundamental want for all human beings and it is essential for every day routine process. The conventional street cleaning machine is most broadly used in many purposes such as example roads, railway stations, airports, hospitals, Bus stands, in multi floor buildings, faculties etc. additionally this laptop makes use of human power for its working operation. In our assignment we are aimed to use without problems handy substances with low price and it can be effortlessly fabricated and convenient to use and control. It is the higher choice for traditional machine. It has been patron to enable these substances to fall on the flooring and the laptop from which they would be brushed upon the floor. At some later length these substances would be swept up and disposed of as sweepings. The intention of this mechanical engineering task is to fabricate a scrap gathering robot. Since entire automation is very complicated and even lookup amenities haven't come up with one, you better plan one that is operated by using a remote control which is both wireless or not.

**Key Words:** Scrap, Clean, Machine, Road.

## 1. INTRODUCTION

In latest years, cleanliness is turning into an essential thing for betterment of nation. To guide to reason we have carried out a study, put together a layout and working of street cleaning vehicle. In current years, most of the humans decide on to use trains or buses for commuting and for this reason these locations are littered with biscuits covers, cold drink bottles etc. Hence, it is essential to clean the bus stands and railways stations at regular interval. There is no one single cleaning technique that is appropriate for all areas and occasions and effective cleaning relies upon upon type of cleaning device, cleaning method and additionally the equipment need to be user friendly. However in India, unemployment is greater and consequently there is a want to increase much less labour oriented cleaning machine.

Cleaning machine is method to deliver effortless in time efficient cleaning of roads, by means of lowering human efforts. The simple concept to generate machine which works on basic principle of physics, the use of mechanical,

vehicle component and devices. This device is help to smooth roads in minimal time.

## 2. OBJECTIVES

The development road cleaning and Scrap collecting machine is a great deal more cost-effective than the Traditional methods. The fabricated machine can serve twin purposes, it can be managed permanently at a stationary position or it could be shifted from one region to some other as the case might also be. One excellent advantage to be derived from the use of this machine is the cost of running it minimal. The simplicity of operation of this laptop ensures that no too a great deal technical abilities required running it. When the computer is nicely maintained, its durability is guaranteed.

- To improve a machine that helps in convenient and quick cleaning.
- To eliminate the dirt from street by means of the use of scrubber which is rotate
- By the usage of wheel motion and it gather into collection tank.
- To provide the alternative technique for road cleaning.
- To minimize the labors effort and save the working time.
- To minimize the cost of machine.
- To make surroundings sanitary.

## 2. PROBLEM STATEMENT

Now, people are employed to do this stuff however it is not possible to work continuously for workers. So this is time consuming and additionally expensive method due to the fact of employee's salary. The important aspect is disposing of traffic problem due to the fact of less manpower as properly as accident. Therefore we decided to design and enhance such a computing device that minimize the human

efforts and retailer the time. The walking value of computer is low and preliminary price of laptop is blanketed by using saving of people salary.

### 3. METHODOLOGY

In this paper by literature review we found some basic idea of scrap collecting model specification and prepared model in Catia initially prepared different parts of model then assembled it as shown in figure. and components of our machine are as follows:

#### 3.1. Scrubber

The supply start from dc motor is running than Scrubber is rotated at same rpm or speed of motor. The scrubber is certainly in contact with scrap, dust, grime beside the street divider. Diameter of scrubber is 3.5 inch, nylon material is used. In challenge two scrubber used for cover the distance of vicinity and clean maximum working space.



Fig. 3.1 Scrubber

#### 3.2. Brush

The cleansing brush is placed at outdoor of the computing device and it is set up on the shaft which is turned around with the assist of chain and sprocket unit. The primary work of the brush is to push the Garbage into storage tank Brushes used for cleaning come in a number of sizes, ranging from that of a toothbrush there are brushes for cleaning tiny cracks and crevices and brushes for cleaning large warehouse floors.



Fig. 3.2 Brush

Brushes perform a multitude of cleaning tasks. For example, brushes gently dust the tiniest figurine, they get rid of dirt from tires, and they take away the dirt and debris found on floors with the help of a dust pan. Specific brushes are used for diverse activities from cleaning vegetables, as a bathroom brush, washing glass, cleaning tiles, and as a mild abrasive for sanding.

#### 3.3. DC Motor

A DC motor is any of a type of rotary electrical machines that converts direct current electrical energy into mechanical energy. The most common types rely on the forces produced through magnetic fields. Nearly all types of DC motors have some inner mechanism, either electromechanical or electronic, to periodically change the direction of current flow in part of the motor.

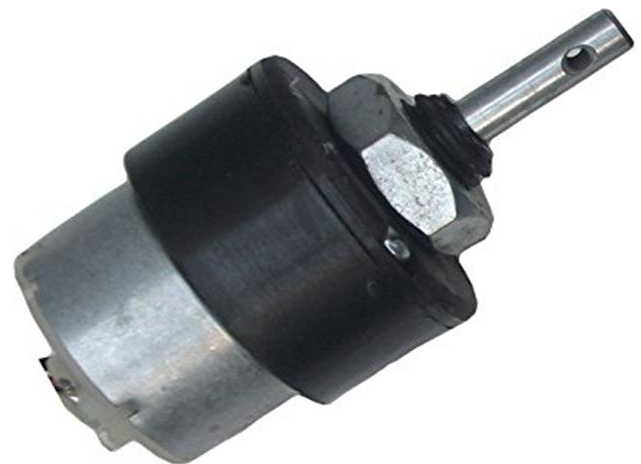


Fig 3.3 DC Motor

DC motors had been the first type widely used, since they could be powered from existing direct-current lighting power distribution systems. A DC motor's speed can be controlled over a wide range, using either a variable supply voltage or through changing the strength of current in its field windings. Small DC motors are used Variety of applications like tools and toys etc. The universal motor can operate on direct current but is a lightweight motor used for portable power equipment and appliances. Larger DC motors are used in propulsion of Hybrid vehicles, elevator and hoists, or in drives for Mechanical Industries.

#### 3.4. DC Motor

An electric powered battery is a system consisting of one or greater electrochemical cells with exterior connections. When a battery is presenting electric powered power, its superb terminal is the cathode and its terrible terminal is the anode. The terminal marked bad is the supply of electrons that when related to an exterior circuit will float and supply power to an exterior device. When a battery is

linked to an exterior circuit, electrolytes are capable to pass as ions within, permitting the chemical reactions to be carried out at the separate terminals and so supply power to the exterior circuit. It is the motion of these ions inside the battery which lets in modern-day to float out of the battery to function work.



Fig. 3.4 DC Motor

All the DC gear motors works on the DC power, Hence the vehicle propel via the DC source it self .12V batteries are employed to make the vehicle propel. The Robotic Arm additionally works on the DC power. All the motions of the Arm are controlled via a manage panel which employs 12V battery.

### 3.5. Plastic Wheel

In its primitive form, a wheel is a round block of a tough and long lasting fabric at whose core has been bored a round hole via which is positioned an axle bearing about which the wheel rotates when a moment is applied by using gravity or torque to the wheel about its axis, thereby making together one of the six easy machines.

When positioned vertically underneath a load-bearing platform or case, the wheel turning on the horizontal axle makes it feasible to transport heavy loads; when positioned horizontally, the wheel turning on its vertical axle makes it feasible to manage the spinning motion used to shape materials. When hooked up on a column connected to a rudder or a chassis mounted on different wheels, one can manipulate the direction of a vessel or vehicle. When related to a crank, the wheel produces or transmits energy.



Fig. 3.5 Plastic Wheel

### 3.6. Button Remote

In electronics, a faraway manipulate is a component of an electronic device used to operate the device from a distance. A faraway control is especially a convenience feature for the user, and can permit operation of gadgets that are out of handy attain for direct operation of controls. In some cases, far flung controls allow a person to operate a device that they in any other case would now not be in a position to reach, as when a storage door opener is precipitated from backyard or when a Digital Light Processing projector that is mounted on a high ceiling is controlled through a man or woman from the ground level.



Fig. 3.5 Plastic Wheel

Present-day remote controls are commonly consumer infrared devices to control functions such as electricity start, turn right and left, track change, speed, or other aspects varying from device to device. Remote controls for these devices are typically small handheld. For many devices, the remote control contains all the feature controls while the

controlled device itself has only a handful of essential main controls. The faraway control code, and therefore the required far flung manage device, is typically specific to a product line, but there are common remotes, which emulate the remote control made for most main brand devices. Remote control has constantly evolved and advanced in the 2000s to consist of Bluetooth connectivity, motion sensor-enabled skills and voice control.

### 3.7. NUT BOLT

Nut and bolt are commonly used in mechanical work, in our model dust and scrap collecting duct or trolley mounted in midlevel of four channel frame various condition working area not plane and threaten other component in road on this time collecting trolley left (ground level surface) adjust or set our required space in ground and bottom of trolley.



CAD Model of our prepared machine is as shown in below fig 3.4, Isometric View, Fig 3.5 Front View and Fig 3.6 Top View.

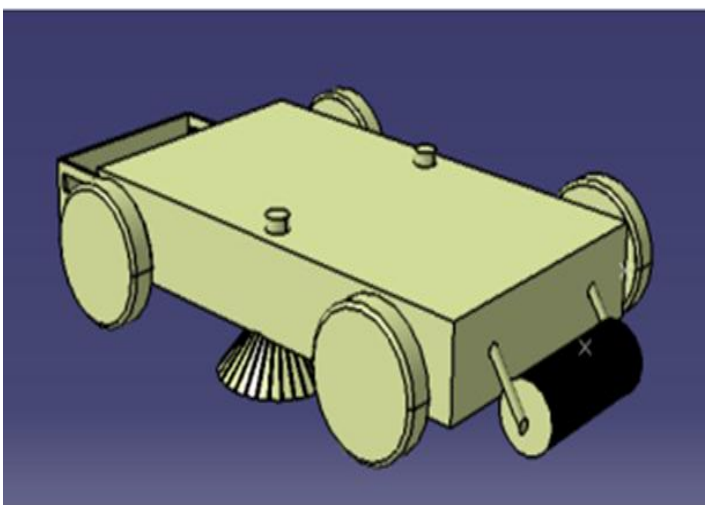


Fig 3.4 Isometric View

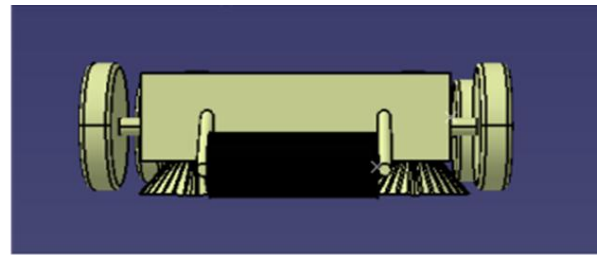


Fig 3.5 Front View

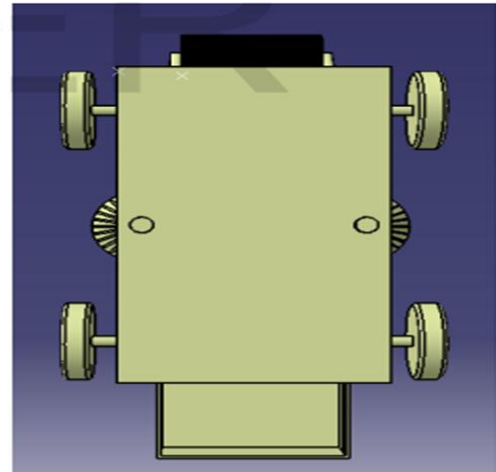


Fig 3.6 Top View

### 4. OBSERVATION

When power supply is on the DC motor starts running then the two attached scrubber is rotating at same speed of motor. At same time middle cleaning brush is start rotating with the help of chains and sprocket unit. It pushes the scrap into storage tank and clean floor.

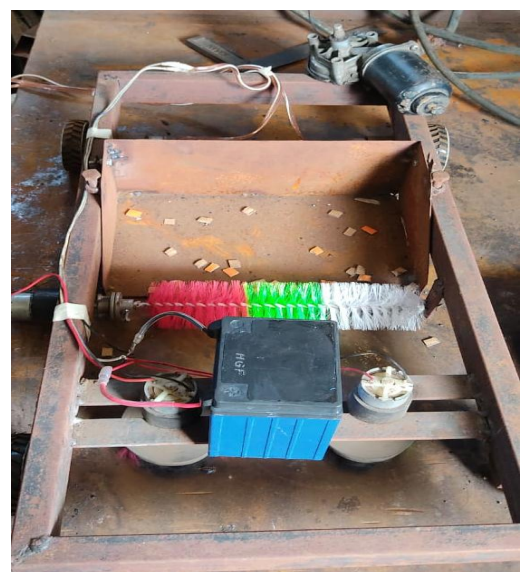


Fig.4.1 Machine

## 5. CONCLUSION

A mechanical setup is designed with synergies of pneumatics and mechanical structures to provide efficient cleaning, both at flooring and the road surfaces. This project works implements the manually operated eco-friendly avenue cleaner for avenue cleansing that lowering the cost, human efforts as nicely as time. It is the pleasant choice for computerized avenue cleansing computing device at some point of energy crisis. The easy mechanisms employed in this device makes the car less complicated for operation.

This layout of eco-friendly street cleansing machine can be used to smooth any type of far off places. There is a want of a brush which operates automatically. As nicely as affords new add on of sanitization of road. Successfully designed, analyzed and fabricated. This undertaking works implements the manually operated eco- pleasant avenue cleaner for avenue cleansing that decreasing the cost, human efforts as properly as time. It is the nice choice for automatic avenue cleansing computer at some point of energy crisis. It is located that the current street cleansing machines makes use of petrol and diesel. It can purpose air pollution and additionally the vibration produced in the computing device reasons noise pollution. While guide cleansing may additionally motive healthful trouble as the man or woman immediately comes in contact with dust. Also, the shoulder trouble due to constantly sweeping occurs. A manually operated eco-friendly avenue cleaner is an choice notion for fending off such problems. The manually operated eco-friendly avenue cleaner can work very correctly with admire to masking area, time and fee of street cleaning manner in contrast with the present machineries. It was once considered whilst trying out of machine, that the cleansing is much less fantastic the place the street looks to be very difficult and damaged.

## 6. RESULT

1. By using this scrap collecting we can save the time and money.
2. We can easily handle this machine in the hospitals and various industrial area to collect hazardous waste.
3. It reduces manpower.
4. It is a power consuming.
5. It works skillfully and effately.

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## BIOGRAPHIES



### Pravin Kokitakar,

Assistant Professor, Dr. A. D. Shinde College of Engineering, Gadhinglaj, Maharashtra India.



### Miss. Rachana Desai

UG Scholar, Dr. A. D. Shinde College of Engineering, Gadhinglaj, Maharashtra India.



### Mr. Yuvraj Ghode

UG Scholar, Dr. A. D. Shinde College of Engineering, Gadhinglaj, Maharashtra India.



### Mr. Umesh Misal

UG Scholar, Dr. A. D. Shinde College of Engineering, Gadhinglaj, Maharashtra India.

**Mr. Mhalappa Rupnur**

UG Scholar, Dr. A. D. Shinde College of Engineering, Gadhinglaj, Maharashtra India.

**Mr. Avadhut Maskar**

UG Scholar, Dr. A. D. Shinde College of Engineering, Gadhinglaj, Maharashtra India.