

# Modified Floor Cleaning Machine

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**Abstract** – This study has presented a comprehensive overview of the technological advantages helped in the real life various. For the convenience of most of the people who are extremely busy in there chores. The need of the seminar has come up because of a busy schedule of a working in a corporate sector. So this has resulted in coming up with an objective of making a floor cleaner. The study comprehend of automated floor cleaner which having components to DC motor operated wheels, roller brush, cleaning mop, the garbage container. A 12V rechargeable battery is used as power supply. Other than this is compresses of special technique of UV germicidal cleaning technology. The study has been done keeping in mind economic cost of product.

**Index Terms** – Autonomous roaming, Manual control, Power status indications, Power controls, Power efficient.

## 1. INTRODUCTION

### 1.1 Introduction

Floor cleaner is very much useful in cleaning floors in hospitals, houses, auditorium, shops, computer centers etc. It is very simple in construction and easy to operate. Anybody can operate this machine easily. It consist of moisture cotton brush, the brush cleans the floor and dried with aid of small blower. Hence it is very useful in hospitals, houses, etc. The time taken for cleaning is very less and the cost is also very less. Maintenance cost is less. Much type of machines is widely used for this purpose. But they are working under different principles and the cost is also very high. Good well-maintained entrance matting can dramatically reduce the need for cleaning. For public and office buildings about 80 to 90% of the dirt is tracked in from outside. Installing a total of 15 feet of matting consisting of both indoor and outdoor sections will remove about 80% of this. Thus about two-thirds of the dirt can be removed at the entrance.

#### ➤ **Methods of floor cleaning**

The treatment needed for different types of floors is very different. For safety it is most important to ensure the floor is not left even slightly wet after cleaning or mopping up. Sawdust is used on some floors to absorb any liquids that fall rather than trying to prevent them being spilt. The sawdust is swept up and replaced each day. This was common in the past in pubs and is still used in some butchers and fishmongers. It used to be common to use tea leaves to collect dirt from carpets and remove odours. No wadays it is silly quite common to use diatomaceous earth, or in fact any cat litter type material, to remove infestations from floors. There are also a wide variety of floor cleaning machines

available today such as floor buffers, automatic floor scrubbers and sweepers, and carpet extractors that can deep clean almost any type of hard floor or carpeted flooring surface in much less time than it would take using a traditional cleaning method.

#### **A. Wood flooring**

Wood flooring should be treated completely differently depending on whether it waxed or oiled, or whether it has a polyurethane coating. It is important to determine the type of finish of a wood floor and always treat it the appropriate way, for instance it is difficult to clear wood floor wax from a polyurethane floor. Simple cleaning instructions:

- Clear the floor of any fur nature that's easy to move.
- Sweep or vacuum all loose dirt and debris.
- Mop the floor, going along with the grain. If your floors are polyurethane, dampen a mop with water and a few drops of dishwashing liquid. Be sure to ring out the mop thoroughly before using it on the floor. Run the mop back and forth, going with the grain of the wood in smooth strokes. If your floors are lacquered or shellacked, don't use water, which can stain the wood and cause buckling.
- Buff the floor with a soft cloth to remove any soapy residue. Cloth diapers work well for buffing, because they're very soft and absorbent.

#### **B. Tile and stone floors**

Nowadays many modern kitchens, stairs, and bathrooms have tile flooring that can be cleaned in three simple steps:

1. Dirt or dust should first be removed with a vacuum cleaner or a broom.
2. Have a floor cleaning solution or spray bottle for the appropriate floor. If you are cleaning stone floors (marble, granite, travertine, etc.), make sure the cleaning agent states that it is for stones. An acidic tile cleaning solution can be used on ceramic and porcelain floors.
3. After spraying the tile or stone floors in a small area, use a mop to clean and scrub floors.

#### ➤ **Reducing the need for cleaning**

Good well-maintained entrance matting can dramatically reduce the need for cleaning. For public and office buildings about 80 to 90% of the dirt is tracked in from outside. Installing

a total of 15 feet of matting consisting of both indoor and outdoor sections will remove about 80% of this. Thus about two-thirds of the dirt can be removed at the entrance.

### 1.2 Objectives of Study

- The objective of the seminar to provide details specification of component in floor cleaner machine.
- To developed machine and easy and quick cleaning.
- To provide valuable and supportive services to the Society.

### 1.3 Scope of Study

- Circular disk brush can be used for better cleaning.
- Brushes at the corner may help the cleaning the corner.
- Motor can be fixed for moving purpose for easy moving.

### 1.4 Benefits from Study

- In this study, there is need of less electricity that's why it is pollution free easy to handle, no circuit and software required.
- Time required for cleaning is very less. Maintenance and replacement of component and assemblies is very easy and not costlier.
- The part can be removable it consume less space storage.

## 2. RELATED WORK

Traditionally floor is cleaned by hand using different handmade instruments. Initially it was being washed by different reed brushes. According to Egyptian houses were built of sun-dried mud bricks at times white-washed and the floors were stamped earth. The floor of the outdoor kitchen too was simply the ground baked stone hard by the sun. Unless it was raining, which happened only rarely, these floors were easy to keep clean by sweeping. Like most ancient Egyptian tools, these brushes did not have long handles which would have rendered their use less irksome, and required bending low when employing them.

For the ease of human beings different designs of brushes are evolved. Again during the age of monarchs carpets of different designs are utilized to cover the floor to keep it clean. As the time passed new scientific era begins a lot of new methods are used to clean the floor. The first among those was the reciprocating action of brush actuated by muscular force.

Before vacuum cleaners existed, people had to take their carpets outside and beat the dirt out of them. Some people cleaned their carpets only once a year during the spring. (The

dust mites must've loved that!)The first vacuum cleaner, the "Whirlwind," was invented in Chicago in 1868 by Ives W. McGaffey.

In the late 1990s and early 2000s, several companies developed robotic vacuum cleaners, a form of carpet sweeper usually equipped with limited suction power. Some prominent makers are Roomba, Neato, bObsweep among others. These machines move autonomously while collecting surface dust and debris into a dustbin. They can usually navigate around furniture and come back to a docking station to charge their batteries, and a few are able to empty their dust containers into the dock as well. Most models are equipped with motorized brushes and a vacuum motor to collect dust and debris.

## 3. PORPOSED MODELLING

### 3.1 Construction of Machine

Construction of component attachment of the floor cleaner machine.

- The DC motor resting on pedal space and remove pedal so that human effort less necessary.
- The attachments of battery of the motor operate so that easily to work at a time.
- The pulley are arranged to transmit power and the shaft to other attachment of part.
- Brushes of attach of separate motor therefore all of surfaces area to clean as possible.
- The attachment belt to modified floor cleaner machine power can be easily transmit.
- This modified floor cleaner machine attach of automatic flow of liquid to help of motor pump.
- The other side of liquid also attach water tank to help cleaning of dust.
- The modification of attachment breaking system to easy to control proprieties.
- The modification of all component to control arrange of control panel.



Figure 3.1: Modified Floor Cleaning Machine

### 3.2 Function of floor cleaner machine

Following various function of floor cleaning like

1. Vacuuming
2. Mopping
3. Soaking
4. Cleaning
5. Drying

• **Vacuuming**

It is a function of floor cleaner machine to create vacuum on machine to accepting the dust and wastage of row material on surface area of ground.

• **Mopping**

It is a function of floor cleaner machine to developed mopping on the area of surface wastage of row material.

• **Soaking**

It is a function of floor cleaner machine. This function can be soaking the dry dust on small paper will be surface area. This type function is can be very important as a floor cleaning machine.

• **Cleaning**

It a type of function floor cleaner machine to clean the area to remove dust and wastage of material to the clean.

• **Drying**

It is a type of function floor cleaner to dry the surface area of floor to the after soaking and cleaning to the surface floor and the machine dry box can be attach to the floor cleaner.

## 4. RESULTS AND DISCUSSIONS

### 4.1 Manual mode for Garbage Collecting Purpose

**Table No. 4.1:** Result for Manual mode for Garbage Collecting Purpose

Sr. No.	Parameters	Specification
1	Torque needed to move the vehicle	122.919 N-m
2	Power Required to run the cleaner	130.49 att

It assures the process of garbage collection in less power consumption. For our vehicle it only requires 131 Watt.

## 5. CONCLUSION

The ultimate need of this seminar is satisfied and with the help of this component machine is able to clean the floor easily. As

the component selected motor can consume much less power so it will be the power saving and cost saving too. The components are designed in order to enable easy operation and to reduce the effort of human beings.

### REFERENCES

- [1] Andrew Ziegler, Christopher John Morse, Duane L. Gilbert, Jr., Andrew Jones, "Autonomous surface cleaning robot for dry cleaning," U.S. Patent 8782848 B2, July 22, 2014.
- [2] Andrew Ziegler, Duane Gilbert, Christopher John Morse, Scott Pratt, Paul Sandin, Nancy Dussault, Andrew Jones, "Autonomous surface cleaning robot for wet and dry cleaning," U.S. Patent 7389156 B2, June 17, 2008.
- [3] Ashraf A. Kassim, , B.V.K. VijayaKumar" Path planners based on the wave expansion neural network", Robotics and Autonomous Systems(1999) 26 1–22
- [4] Ayoub Bahmanikashkoolia , Majid Zareb, Bahman Safarpourc, Mostafa Safarpourd" Application of Particle Swarm Optimization Algorithm for Computing Critical Depth of Horseshoe Cross Section Tunnel "APCBEE Procedia( 2014)9 207–211
- [5] Harvey Koselka, Bret A. Wallach, David Gollaher," Autonomous floor mopping apparatus," U.S. Patent 6741054 B2, May 25, 2004.
- [6] Joseph L. Jones, Newton E. Mack, David M. Nugent, Paul E. Sandin, "Autonomous floor-cleaning robot," U.S. Patent 6883201 B2, April 6, 2005.
- [7] M.R.B. Bahara, A.R. Ghiasib, H.B. Bahara, "Grid roadmap based ANN corridor search for collision free, path planning ", ScientiaIranica (2012) 19 1850-1855.
- [8] Michael Dooley, James Philip Case, and Nikolai Romanov," System and method for autonomous mopping of a floor surface," U.S. Patent 8 892 251 B1, November 18, 2014.
- [9] Shih-Che HUNG, Yao-Shih Leng, "Cleaning robot and control method thereof," U.S. Patent 20130231819 A1, September 5, 2013.
- [10] Spyros G. Tzafestas"11 – Mobile Robot Path, Motion, and Task Planning", Introduction to Mobile Robot Control(2014) 429–478
- [11] Spyros G. Tzafestas"9 – Mobile Robot Control V: Vision-Based Methods", Introduction to Mobile Robot Control(2014) 319–384
- [12] T. Palleja, M. Tresanchez, M. Teixido, J. Palacin" Modeling floor-cleaning coverage performances of some domestic mobile robots in a reduced scenario", Robotics and Autonomous Systems(2010) 58 37-45.

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