iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** III **Month of publication:** March 2023

DOI: https://doi.org/10.22214/ijraset.2023.49462

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue III Mar 2023- Available at www.ijraset.com

Design and Fabrication of Floor Cleaning Machine

Shivam Mishra[1], Vaibhav Shankar Tripathi[2], Mohd Arish Beg[3], SatyamShahi[4], Vineet Kumar Rai[5]
[1, 2, 3, 4]*Department of Mechanical Engineering, Institute of Technology and Management, Gida, Gorakhpur*
[5]*Head of Department of Mechanical Engineering Institute of Technology and Management, Gida, Gorakhpur*

Abstract: ***With the progress of science and technology, automatic floor scrubbers have increasingly attracted the attention of researchers, bringing convenience to human life. The concept is growing in economic countries but is not popular due to the design complexity of the, the cost of the machine and the operating costs in terms of electricity tariffs. In this article, a semi-automatic floor cleaning machine is presented. It effectively cleans floors in wet and dry-cleaning tasks. The floor cleaning machine was designed with fundamental considerations of reducing cost and workload, while the is environmentally friendly and easyto use. The machine will run on electricity and consist of simple fabrications. These jobs are very useful to improve the lifestyle of human beings.it is very in construction and easy to operate anybody can operate this machine easily.***
Keywords: semi-automatic, floor cleaning machine, dry and wet cleaning, cost, and effort saving, electricity, solar battery operated, simple manufacturing.

I. INTRODUCTION

Fully automatic and semi-automatic machines on the market have a wide range and high weight. Therefore, pay attention to the weight and cost of, not everyone can afford it, such as the organizing committee of hotels, hospitals, and hotels. Therefore, there is a need to design and develop a versatile and cost-effective floor cleaning machine. In some places like bus stops, temple halls, byres, floors are not cleaned regularly due to lack of machines. Thereis no machine available on the market for smooth and rough floors. Considering the weight standard, the machine is assembled and the handling of the machine is very flexible. Due to its purpose and cost, this machine is affordable for everyone



II. OBJECTIVE

1) The objective of this project is to manufacture a semi-automatic floor cleaningmachine.
2) Reduce overall cost.
3) Reduce headcount.
4) Improve the efficiency of floor cleaning.

© IJRASET: All Rights are Reserved |

III. LITERATURE REVIEW

A. Akash Nagtode (2017)

"Solar Floor Cleaning Machine. He is developing a cleaning system project based on solar energy. For this, he used PV panels, which convert energy particles (photons) into electricity.It uses this clean energy to power its cleaning machine".

B. M Ranjit Kumar (2016)

"The regular floor cleaning machine is mainly used in aircraft terminals, railway platforms, shopping centres rehabilitation, the transport stations and the mall and part of many other commercial establishments. The activities of these devices require electrical power and are not readily available. In India, especially in summer, there is an emergency of control and most floor cleaning machines cannot be used successfully because of this problem, especiallyin transport stations. In this work, the demonstration and investigation of the floor cleaning machine was carried out using appropriate affordable programming. From the limited component survey, we see that the anxiety of the floor cleaning machine with manual work is as deep as possible".

C. Sandeep. J. Meshram ET AL [2016]

"Design and development of a three-wheeled street cleaning machine" - developed a three-wheeled street cleaning machine. In this research paper, he builds a model specifically for rural areas. He concluded that was less effective at cleaning streets.

D. Mohsen Azadbakht ETAL [2014]

"Design and manufacture of a tractor-powered leaf collector with suction blower system" - "The author explains the production of a blower leaf collector driven by a tractor. He assembled the machine using the frame, pump, fan, gearbox and hydraulic cylinders. They concluded that the machine's had a total power consumption of around 14634 W and could cover up to 20 meters.

E. Manreet Kaur [2014]

"Design and manufacture of floor cleaning robot (manual and automatic). The author designed a sweeping robot in automatic mode and in manual mode. His robot is equipped with sensors infrared, four motors and a water pump. The He encapsulates the convenience of two-mode operation for effortless floor cleaning."

F. Manyajain, Pankaj Singh Rawat (2016)

"This item is used for household and industrial purposes, self-cleaning surface. When activated, it will move as it moves across the surface (ground or any other area), absorbing dust. In the modern age, the automatic floor cleaner is necessary. Thus, the cleaner is designed to be able to clean the area, reducing labour by simply activating the cleaning unit.

G. Sahil Bharti, S.R. Sandhave (2016)

"The development of an automatic cleaning aid helps to clean flat surfaces, is easy to controlremotely and works more efficiently. The surface cleaning machine proposed in this project is a device that helps to clean surfaces. Motion control needs to coordinate More features."

H. Dr. Jhameed Hussian (2017)

"This microcontroller automatic floor cleaning module is used for cleaning floors and sweeping dust. In this there is a module with a remote-control motor which is a gear motor connected at the front axle between the front wheels, this motor has a cleaning brush attached to the front, the gear motor is connected to a 12 volt battery and the remote motorhas a 9 volt battery attached. remote motor is controlled by a microcontroller".

IV. CRITICAL REVIEW

Different authors have done a lot with the floor cleaning machine, from its full automation to its eco-friendly manufacturing and the easy-to-use. Some use AI to automate the process,others use custom manufacturing for various cleaning needs such as wet or dry cleaning. Butwhat all the machines have in common is a lower overall cost and greater ease of using the machine in a versatile way. Going forward, the range is a fully self-contained cleaning machine that can perform various cleaning tasks and operate on various environmentally friendly energy sources such as solar or wind power without human intervention.

© IJRASET: All Rights are Reserved |

V. PROJECT DETAILS

Project construction is simple and efficient. Lower construction and operating costs than other products on the market. The machine works very well. The machine consists of the following parts:

1) Custom frame with wheels.
2) Compressor.
3) Vacuum pump.
4) Brushes and mops
5) Water tanks and storage tanks.
6) Battery and standard.

VI. CONCLUSION

The Using of innovative technology not only significantly reduces costs, but also reduces labour while increasing the efficiency of cleaning floors.

Less work means cleaning floors more often, improve overall cleanliness and promote healthy well-being.

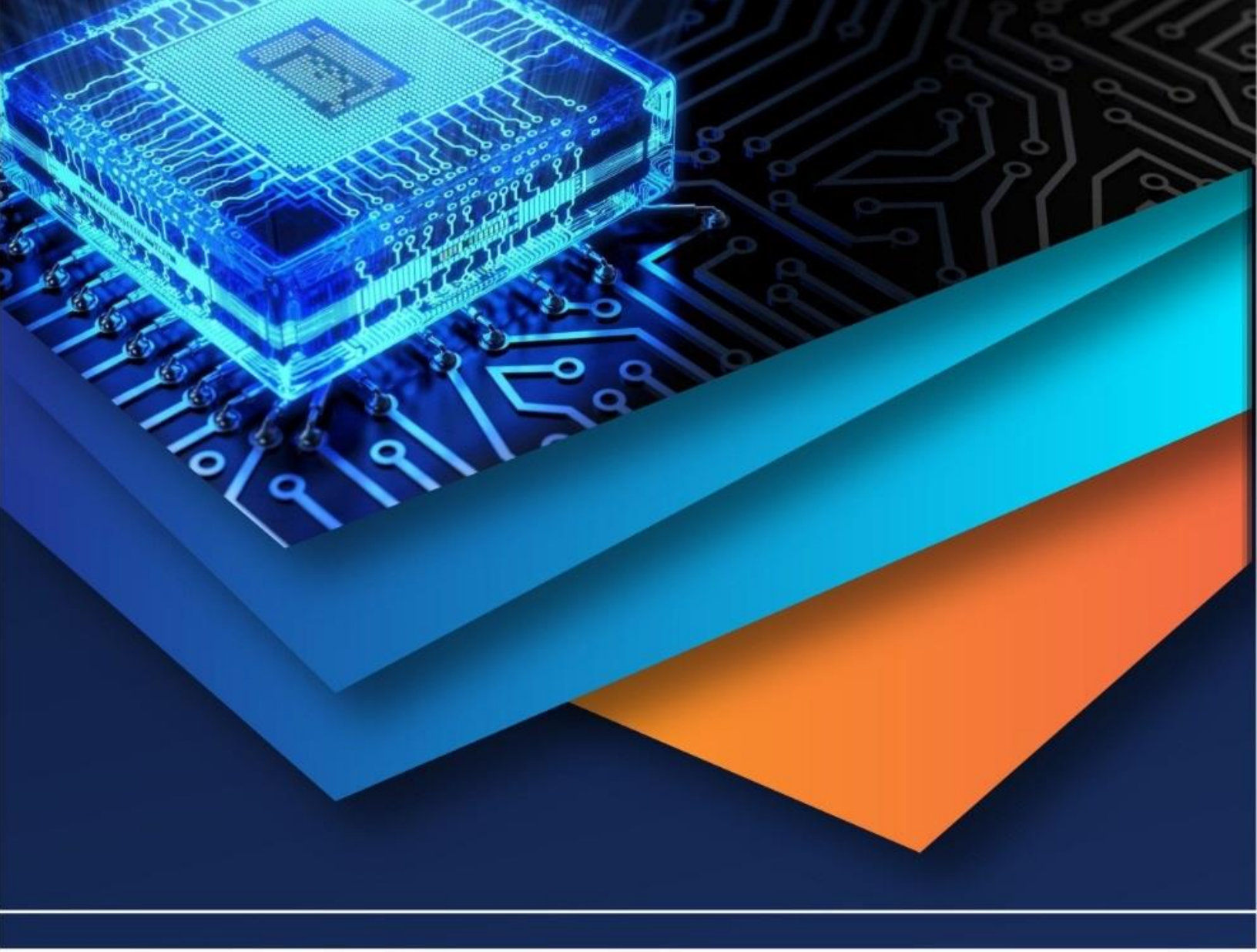
Small technological advancements like this will have a bigger impact in the future and make India a better country.

This project are very useful for future because it is working on non-conventional and it is notharmful for environments and easy to complete the work with less effort and less cost.

REFERENCES

[1] M. Ranjit Kumar and N. Kapilan, "An overview and study of physically operated floor cleaning machines", IJERT ISSN: 2278- 0181 Vol. 4 issue 04, April 2015.
[2] Sandeep. JMeshram, PhD G.D. Mehta - "Design and Development of a Three-Wheel Drive Street Cleaning Machine" - Journal of Mechanical Engineering Information, Knowledge and Research ISSN 0975 - 668X November 15 - October 16Volume- 04, Issue- 01.
[3] Dr J. Hameed Hussain, R. Sharavanan - Remote Control Floor Cleaning Machine.
[4] Automatic Floor Cleaner Manya Jain1, Pankaj Singh Rawat International Journal of Soft Computing and Artificial Intelligence, ISSN: 2321-404X
[5] Solar floor cleaning machine Akash A. Nagtode1, Amit P. Kamdi2, n° 6 - ICRTEST January 2017.

© IJRASET: All Rights are Reserved |



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)