

Need Statement

Design an automatic machine for efficient cleaning that can be used by organizations hosting large scale events

Introduction

Automatic cleaning machines are a revolutionary new solution for organizations that host large scale events. These machines are designed to autonomously navigate through a space and effectively clean a variety of surfaces, saving time and labor while improving the overall cleanliness of the event venue. The prototype presented in this document represents the latest iteration of this technology, incorporating feedback from previous models and incorporating new features to make it even more efficient and effective. This machine has the potential to revolutionize the way that events are cleaned, making it easier for organizations to keep their spaces clean and welcoming for their attendees.

Problem Statement of Project

“Design an automatic machine for efficient cleaning which can be operated using mobile phones. Cost of the machine should range between Rs.31,600 to Rs.37,350. The materials used should be corrosion-resistant and long-lasting. The machine should power using rechargeable batteries.”

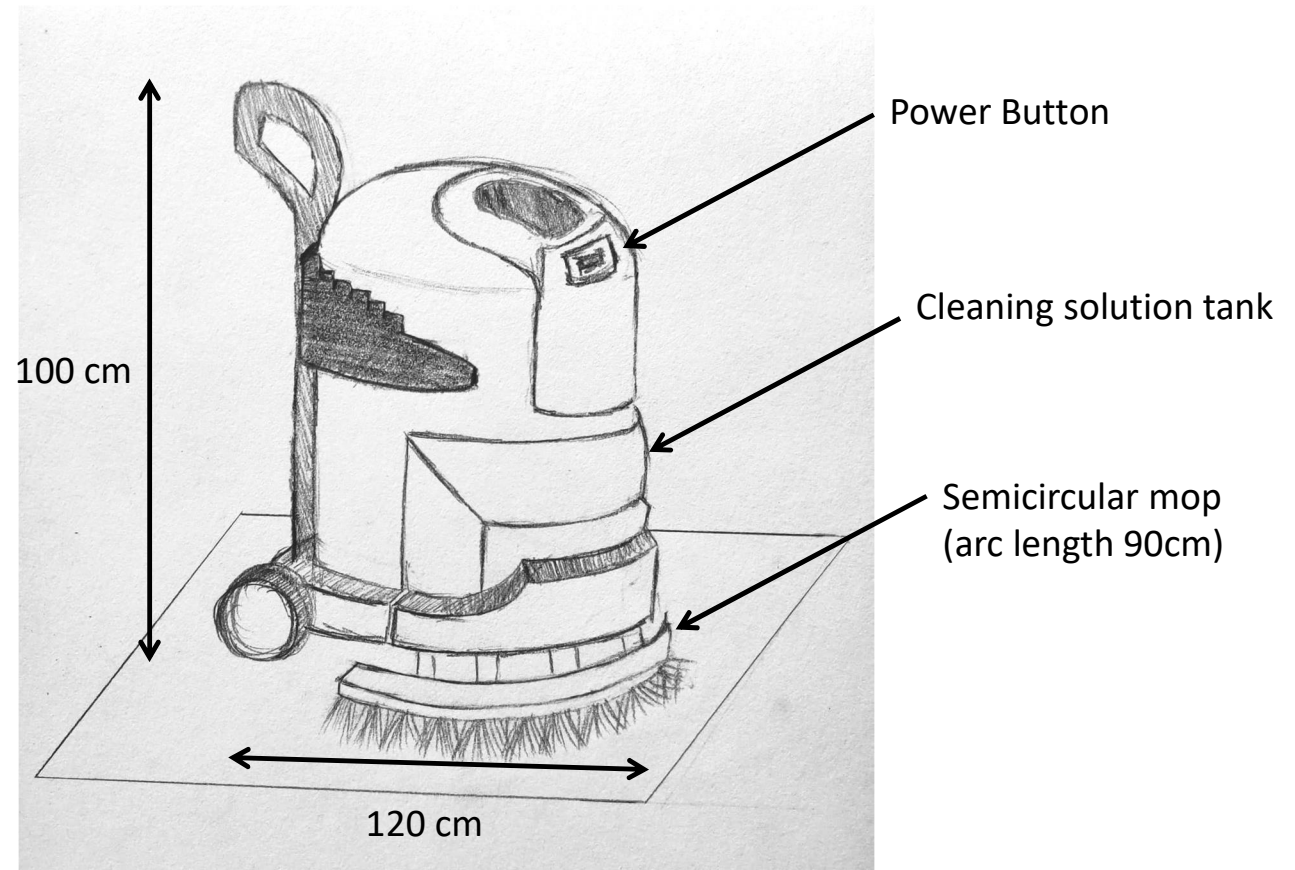
Literature Review

- 1) Based on the weight of the suction pump in the vacuum cleaner, mop, sensors, etc.; the weight of the machine should be about 80-100 kilograms.
- 2) The run-time of the machine should be appreciably convenient so that it operates in the duration of 90 – 100 minutes.
- 3) The machine parts should be made of non-corrosive metals and the mop/broom should be made of durable synthetic fibers.
- 4) The body of the machine should be made of materials having self-cleaning and anti-bacterial properties.
- 5) The cleaning mop/broom should have a plano-convex shape so that it covers curved and sharp corners and edges efficiently.

Literature Review

- 6) The cleaning machine can be connected to android/i-phone(s); it can be operated with the help of voice assistants like Google Home and Amazon Alexa.
- 7) Batteries are rechargeable; a suitable battery adapter needs to be provided.
- 8) The machine has sensors that detect obstacles and navigate around the place that is to be cleaned; a gyroscopic motion sensor mechanism that runs on light-powered rotations to detect objects in its path and thus navigate accordingly should be instilled.
- 9) The machine should have a warranty of at least 2 years.

Preliminary Design (Sketch)

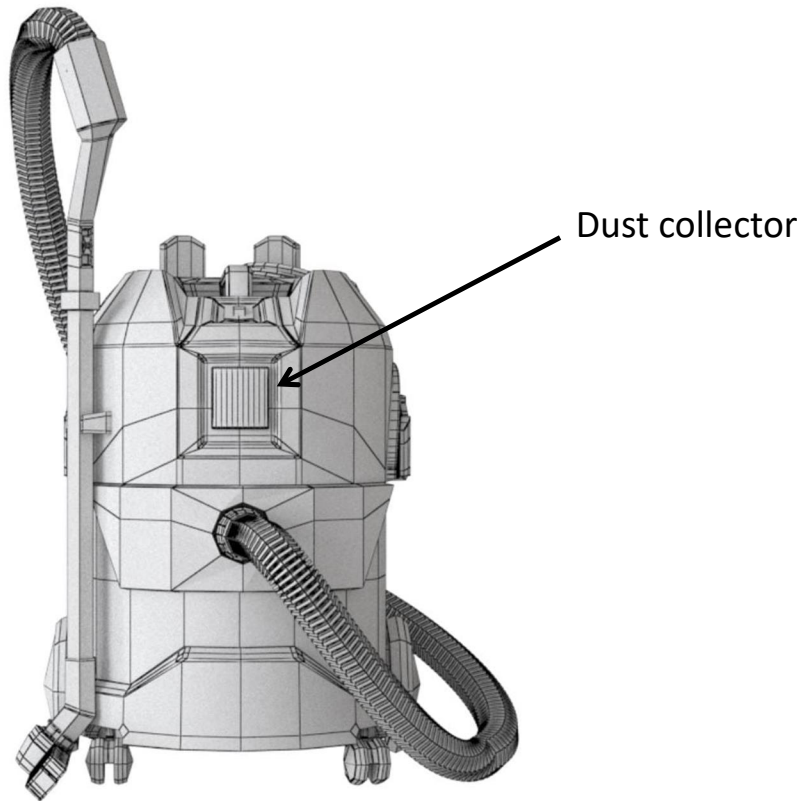




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Preliminary Design (Alternate version)





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List of Components

1. Nano-sized titanium dioxide and zinc oxide body
2. Stainless/galvanized steel or aluminium oxide metal parts
3. Suction pump (vacuum cleaner)
4. Cleaning mop made of long-lasting synthetic fibers
5. Semicircular chassis to mount the mop/broom
6. Bluetooth USB dongle
7. Batteries
8. Battery Adapter
9. Gyroscopic motion sensors

References

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