

# AUTOMATIC TOILET CLEANER

Swachh Bhart Abhiyan  
Ek Kadam Swachhata Ki Aur

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**ABSTRACT-** Moving towards our glorious goal of vision 2021 as a developed and prosperous nation, cleanliness is one of the biggest need. ‘Swachh Bharat Abhiyan’ being our motto the invention ‘Smart Toilet’ is the great leap towards the cleanliness of our prestigious Indian Railways. Unclean toilets cause contagious diseases which are hazardous for human life. It is a remedy for human health as well as our goal towards ‘clean and smart India’.

The purpose of this system is to maintain hygienic level of Railway toilets through automation with the help of IOT. At present, cleanliness system of Indian Railway is worst and leads to health issues. Proposed system automatically cleans the squat pan toilet with the help of robotic arm. There is a sequential cleaning algorithm. The robotic arm has a brush attached to its end effector is used for the cleaning purpose. Water jets are provided.

**INDEX TERMS** – Public Toilet Cleaner, Swachh Bharat Abhiyan, Urinal Cleaning for Bus Stand and Railway Station Urinals

## I. INTRODUCTION

The biggest source of travelling is Buses, Railways etc. But in bus stop and railway station most important facilities i.e. ‘TOILET’ which unfortunately are not clean. Every one use the public toilet but no one ready to clean the toilet this leads to several diseases, such as malaria, hepatitis, flu, typhoid etc.

As a solution to all this problems we are developing our system which cleans the toilet automatically without the help of human being. Our system work like ‘ROBOTICS ARMS’ we use pendulum which is like brush rotates 180 degree and clean the wall.

In this, system there is minimum usage of water & electricity. Auto door locking system is provided during the working of this system to avoid the human interference. To maintain the periodicity of cleanliness level different kind of sensors are used. A database is maintained which gives all the notifications to authorities of cleaning department of railway on a web page and an android application by using Wi-Fi.

The advantages of the system are that it reduces the labour work and its working is flexible. In India this type of project is not implemented. It is affordable for Indian Railway department for its implementation. This system is robust and it has long life.



**Fig 1:** In India these types of toilets are use in bus stop and railway station.

## II. CONCEPT

Below the figures are shows the conceptual idea of urinals and toilet cleaning mechanism. This system will include the telescoping mechanism, oscillating mechanism, timer and control unit. For specific time timer will activate and control unit will send the signal to the system. System will activate for cleaning the urinals and toilets for specific time. Time will be generally mid night or early morning because rush in urinals at this time will be negligible. This system will be activating without the interference of human being. The system will be totally automatic.

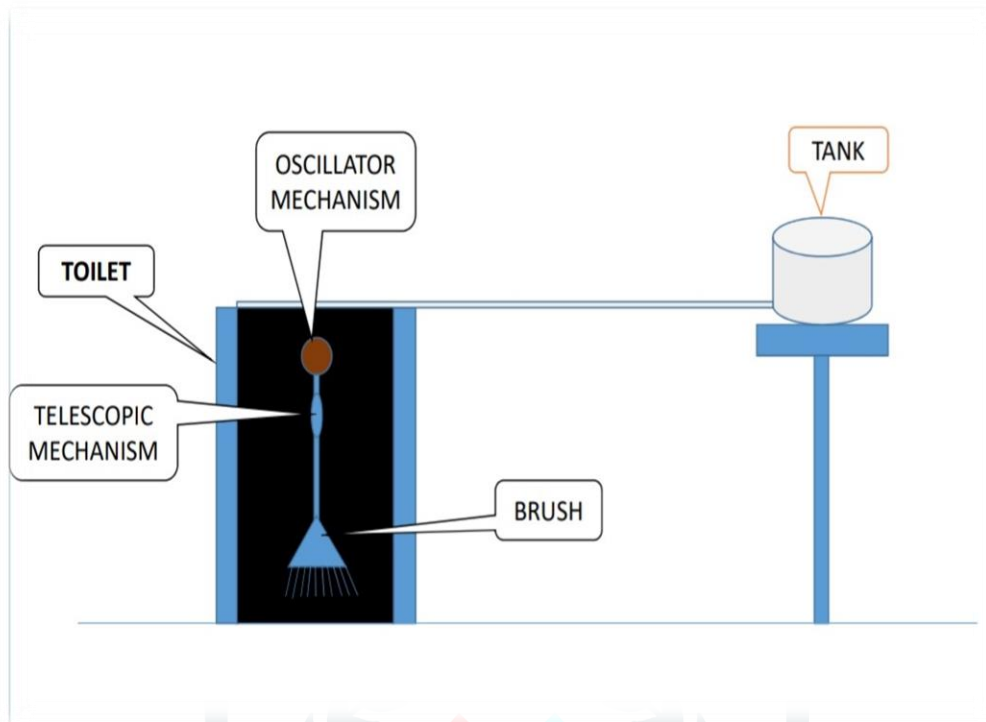


Fig 2: Conceptual diagram of public urinals cleaner (Bus stand, Railway station etc.)

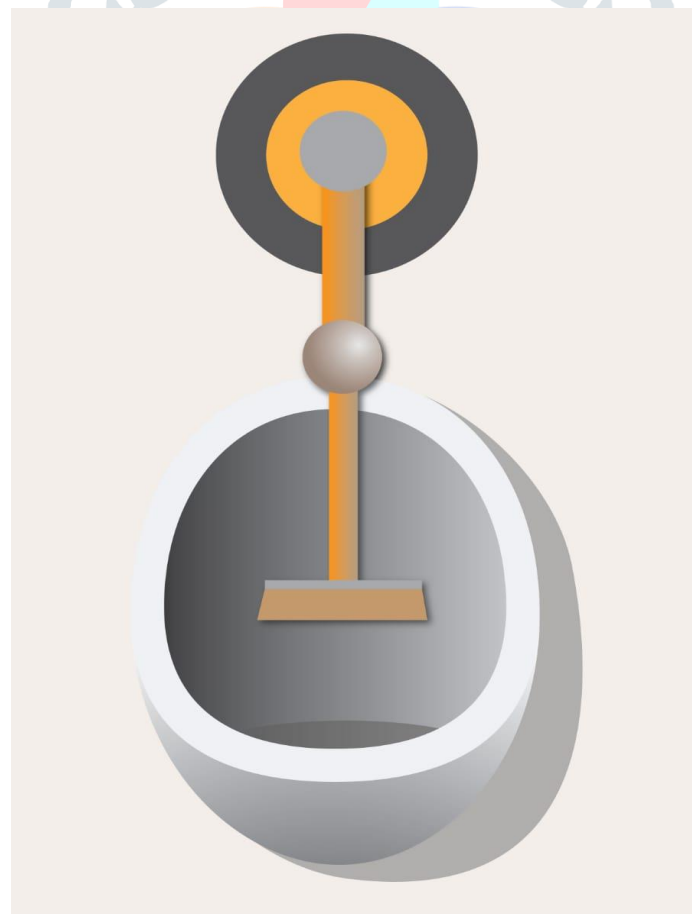


Fig 3: Conceptual diagram of public toilet cleaner (Government offices)

As per point of view of prime minister “Shri. Narendra Modi” “*Ek Kadam Swachata ki Aur*” we make this model. Our model work on same principal,

1. Oscillator mechanism.
2. Telescopic mechanism.
3. Brush.
4. Time and control Unit

The explanation of this as follows:

1. Oscillating Mechanism: - We use oscillator which is top on the rod and attached to wall. On the bottom side we place a brush for cleaning the wall. The work of oscillator is to oscillate the rod and with help of this the brush is also oscillate. This mechanism work like the human arm which reduces human effort.
2. Telescopic mechanism:- In short the in human hand the work of elbow known as telescopic mechanism. It create pressure on the lower side of the wall for rubbing the wall and cleaning the wall. According to time which we set on the machine it automatically it create pressure and also release the liver so that why pressure automatically handle.
3. Brush: - Brush is use for cleaning the wall.
4. Process: - As the machine is start the automatically firstly the water come out through pipe. Then at a time the oscillator start. Then after some seconds the water stop and soap water are come out and spray on the wall and with the help of brush the wall will be clean.

### III. APPLICATION

- Public toilets and urinals urban as well as rural areas.
- Government offices, Schools and Colleges toilets and urinals.

### IV. ADVANTAGES

- By using solar energy, wind energy we can operate this system.
- After installing this system there will be no interference required of human being.
- System will be cheap in cost and easy for operations.
- Due of this system public toilet and urinals will be clean and due to that reducing the chance of infection, allergies, etc.

### REFERENCES

- [1] <sup>1</sup>Dharmesh Katariya, <sup>2</sup>Pratik Parik, <sup>3</sup>Akshay Pincha, <sup>4</sup>Gauri Lodha, <sup>5</sup>Anita Borse, “Smart Toilet”, International Journal of Electrical, Electronics and Data Communication, ISSN (P): 2320-2084, ISSN (E): 2321-2950 Volume-6, Issue-5, May-2018.
- [2] <sup>1</sup>Mrs.K.Elavarasi, <sup>2</sup>Mrs.V.Suganthi, <sup>3</sup>Mrs.J.Jayachitra “Developing Smart Toilets Using IOT”, International Journal of Pure and Applied Mathematics, Volume 119 No. 15 2018, 3061-3068 ISSN: 1314-3395.
- [3] <sup>1</sup>Arun Kumar C, <sup>2</sup>Adithya Bharadwaj A, <sup>3</sup>Balasubramanian R, <sup>4</sup>Gowtham P, “Autonomous Lavatory Cleaning System”, International Journal of Robotics and Automation (IJRA), Volume (6) : Issue (4) : 2015.
- [4] <sup>1</sup>Dhananjay G. Dange, <sup>2</sup>Dattaprakash G. Vernekar, <sup>3</sup>Sagar D. Kurhade, <sup>4</sup>Prashant D. Agwane, “Methodology for Design and Fabrication of Human Waste Disposal System for Indian Railway – A Review”, IJSTE - International Journal of Science Technology & Engineering | Volume 2 | Issue 07 | January 2016 ISSN (online): 2349-784X.
- [5] <sup>1</sup>Er. Sushant B. Wath (Senior Scientist), “Automatic Mechanical Urinal-Toilet Flusher *NEERFLUSH*”, *India: 194DEL2013*.
- [6] Mohamed Aamir, Kamalanathan, “Automatic Urinal Flushing System”, International Journal of Science, Engineering and Technology Research (IJSETR), Volume 4, Issue 4, April 2015
- [7] Badadal Raghavendra R, “Experimental Determination of cutting force required for several vegetables”; International Journal for Innovative Research in Science and Technology;1:8, 2015.