

Automatic Cleaning of Road

Vinay Krishna*

Corresponding Author*

Vinay Krishna,
Department of Civil Engineering,
KMEA Engineerig College, Kerala, India,
E-mail: remyareghukrb99@gmail.com
Tel: + 8075376866

Copyright: © 2021 Krishna V. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Received: 27 August 2021; **Accepted:** 10 September 2021; **Published** 17 September 2021

Abstract

Self-cleaning of road is that to reduce the dust and temperature to maintain the roads atmosphere. In this project fixing two types of sensors which are dust sensor and temperature sensor. When temperature will increase, the temperature sensor will active and then water will spray through the nozzle and the same function to the dust sensor. When the dust is increasing the dust sensor will active and water will spray through the nozzle. The circular nozzle connected to spray water at sensible times. Then the water from pipeline connected with a solenoidal valve to nozzle for spraying water. So the connection completed and it will work.

Keywords: Water spraying on roads • Road stud • Spraying nozzles • Solenoidal valve

Introduction

In India mostly two types of roads are constructed bituminous and concrete roads. Bituminous roads are cheap to construct compare to concrete roads. The load carrying capacity of Bituminous is less comparatively. One of the major reasons for it is variation in temperature. In India temperature varies with different time span even high temperature in afternoon and low at night. Concrete roads are fails mainly because of cracks [1]. Cracks appear due same reason as mentioned above. Another problem observed on concrete road is that, we cannot drive our vehicle fast on it. Because Concrete roads are hot and when we drive our vehicle fast on it the friction is developed in concrete and vehicle's tier which leads failure of tiers. So the cracks lead to failure of roads and friction in concrete leads to accidents. So the problem is temperature changes observed on the roads. And also the dust on road causes many of the pollutions. Dust developed due to the fast moving vehicles and it causes health problems in humans and causes air pollution. To avoid this problem, water is the best solution on it. Our solution for this kind of problem is that we provided water sprayer inside the road stud. The purpose of water spraying is to clean the dirt and dry the road quickly. Pipes will provide water to the road studs. This concept can be used for smaller length of road and if possible it can be used to longer distance also. Road maintenance is one of the important of the entire road system. The main problems are temperature and dust. For this problem to solve two types of sensors are used. The sensors are temperature sensor and dust control sensor. When temperature raises on road the temperature sensor active and water sprays on the road. And also the dust sensor will active when the dust increases on road and to maintain the moisture condition on road [2]. The road is being specially made from this side that they have not been cleaned; they are already using such technology, so that these roads can be cleaned. In fact, while making these roads, water pipes have been fitted in them so that these roads can be cleaned without any problems. When this road is cleaning

then pollution from vehicles and vehicles comes along the way to surface of the road, due to which there is a reduction in the pollution caused by trains and also the atmosphere around the road has also been cleaned. Due to which the pollution in the air has decreased.

Literature Review

The study of the scientific basis of street cleaning activities as road dust mitigation measure road dust emission causes health problems due to increase in PM concentrations and other carbonaceous compounds. This document is aimed to gather all available and relevant information, and divulgate them among relevant stakeholders. The road cleaning machine can be used for cleaning the long distances and wide width reduces the human effort, so that the cleaning can be done in a single drive. It is seen at present that a human pushing machines and cleaning is doing with human effort, and it is always to be done when roads are operated without traffic. This system is very costly and to make less effort and very efficient system and also not possible because of due to large loads, with running traffic. That study says, collection of objects from 250 GMS to fine dust can collect from roads with high efficiency. Primarily the city of behaves reasonably well in an environmental aspect. The two main flows, when it comes to cleaning streets, are processed with contemplation.

A project of title with a literature study on the cleaning of streets in Stockholm city. Swedan is a county with winter roads which makes it necessary for us to use winter tires for traffic safety. This is one two big matters causing street dust. It is very useful for cleaning the wet as well as dry roads. In modern days interior decorations are becoming an important in our life cleaning roads is very important for our health and this roads cleaning machine reduces the efforts required for cleaning. Hence this project is very useful in our day to day life. It is very simple in construction and easy to operate, anybody can operate this machine easily. This road cleaning machine consists of moisture cotton mop, swiping brushes, wipers and vacuum cleaner for reducing the cleaning time. The overall cost of this machine is also cheap. Such type of machines is widely used for this purpose but they are working under different principles and the cost is very high. In recent years road cleaning machines are getting more popular for cleaning large floor area in minimum time. However in India, which is a developing country requires large type of such machines to satisfy the cleaning needs.

Discussion

Concrete technology is subject of continuous development and improvement. One of the very recent contributions to durability and sustainability of concrete is the self-cleaning ability. This effect is achieved by applying photo catalytic materials to the concrete mix. This paper describes the effect of self-cleaning and air purification [3]. Since about 10 years concrete paving stones, provided with this function, are available. With the development of a test setup and using nitric oxide (NO) as model pollutant an approach was found to quantitatively assess the air-purifying ability of those paving stones. This seems to be of interest since a real comparative analysis of air purifying concrete products is not available and the establishment of a measurement standard for concrete products is still in a draft-state. A brief technical description of this test setup will be presented to the reader. Using this innovative setup, the influences on the degradation efficiency are studied and a basic reaction model is derived.

There are lots of reasons for death of human being. The major cause is due to accidents. Accidents can be of many types like earthquake, tsunami etc. The accidents cause by natural calamities is not in our control. The amount of road accidents is more comparative to other ones. India is country where the death rate due to road accidents is more. In future, lots of highways will be constructing in India. In India temperature changes rapidly which causes cracks to roads leading to

failure of road [4]. These problems are solved out by following remedy. By watering the road every day and by spraying air on it, the road can be reuse within few hours. This is easy and quick method of watering of road.

Self- Cleaning of Street by Sewage Treated Water using Street Stud. The paper gives solution for road washing problems. This technique is used in South Korea, but this can also be used in India. The paper gives the detail description about all the advantages of this technique. Road washing is a good for its aesthetic and durability. So to maintain road washing works the road stud can be very useful at dividers preventing it from breaking from vehicles due to its advantages of using it.

The purpose of this project is to clean the road in colleges, hospitals, auditoriums, malls and workshops. The aim of this project work is to design and develop process for cleaning the road. It is very useful for cleaning the road and ground. In modern days interior decorations are becoming an important in our life cleaning of road is very important for our health and the road cleaning machine reduces the effort required for cleaning. Hence this project is very useful in our day to day life [5]. It is very simple in construction and easy to operate and little bit cheap, anybody can operate this machine easily. The road cleaning machine consists of, broom and for reducing the cleaning time.

Conclusion

The Automatic cleaning of road project finding a solution of a problem in road and street. In this project install the automatic cleaning system on

road to maintain temperature and to reduce pavement failure and the system to create clean roads and attractive environment. Automatic water wash and dry system gives a broad impact of cleaning and maintenance process of road. The overall cost of this machine is also cheap. Such type of machines is widely used for this purpose but they are working under different principles and the cost is very high. In recent years, floor cleaning machines are getting more popular for cleaning large area in minimum time. However in India, which is a developing country requires large type of such machines to satisfy the cleaning needs.

References

1. Chang MS, Chou JH, Wu CM (2010) Design and implementation of a novel outdoor road-cleaning robot. *Adv Robotics* 24: 85-101.
2. Mayer H, Hinz S, Bacher U, Baltsavias E (2006) A test of automatic road extraction approaches. *Int Archives Photogrammet Remote Sens Spatial Info Sci* 36: 209-14.
3. Sasipriya K, Suriyaprabha R, Prabu P, Rajendran V (2013) Asphalt Surface Shot Blast Cleaning Machine for Road Surface Blasting. *Mater Res*. 16: 824-30.
4. Stewart BD, Reading I, Thomson MS, Binnie TD, Dickinson KW, et al (1994) Adaptive lane finding in road traffic image analysis. *Int Confer Road Traffic Monitor Control* 1994 133-136.
5. Matkan AA, Hajeb M, Sadeghian S (2014) Road extraction from lidar data using support vector machine classification. *Photogrammetric Eng Remote Sensing* 80: 409-22.