Hybrid Roads: A Mixture of Topmix Permiable And Solar Road

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***Abstract* :Usually the roads are made up of concrete or asphalt, it can be replaced by solar panels and Topmix permeable for our future purpose. It is a roadway which generates electricity as well as absorbs the water to prevent the remote city from flood like calamities. However it also improves drivers and pedestrians safety as well as it improves better living hood to the locality people.**

Keywords:- Solar panels – Topmix permeable concrete – electricity in India – water injected – clean power – tempered glass – weight balance – flood prevention.

I.INTRODUCTION:

'Electricity' which became one of the essential need for human being nowadays. It is a one of the energy form which is easy to produce, to use, to transport and to control. There are many forms of electrical energy which is being used some of them are polluting in form and some are non-polluting. Solar road is one of the roadways which produces non polluting electrical energy by converting sunlight into electrical energy. Currently the common place to install solar panels are roofs and empty lands.

The road made up of Topmix permeable concrete absorbs the water and injects it to the ground water table and prevents the panel as well as the city livelihood.

II.LITERATURE SURVEY:

Julie and Scott Brusaw;
Abstract:

The roadways which usually made of concrete or asphalt might be replaced by solar roads in the near future. The solar roads are road surface that convert sunlight into electricity. Not only are the solar roads generating clean energy, but they also increase the driver's and pedestrians 'safety. However, there are still a lot of challenges about solar roads, such as their cost, efficiency, and maintenance.

Uzma Jabeen and Er. Bharamjeet, Amloh;
Abstract:

High quality polymers that meet specifications are rare and more expensive in many parts of India. Flexible pavement specifications require the use of high quality polymers, this increases the cost. Although the broad definition of marginal totals does not perfectly match the specifications used in public countries on public roads it works well under special circumstances due to climate characteristics, technical progress or special handling of modern roads. It is usable. Therefore, if the physical or structural design is appropriately adjusted so that local materials can be used, construction is accelerated and significant financial benefits are obtained.

III. PROBLEM FORMULATION:

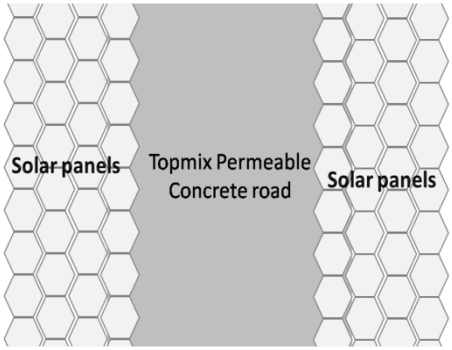
Here SR3 type solar panel is being suggested which, is 0.40 m^2 in size, can produce 48 watt/hr. installing these panels in Indian national highway, of length 111,111 km, alone can produce,

Length of national highway: 111,111,000 meter
Width of one lane road
: 3.75 meter
Considering minimum of two lane in highway road then its area will be,

:111,111,000*3.75*2
= 833,332,500 meter.
Number of panels used
: 833,332,500 /
0.4078443
= 2043261362 panels
Amount of energy produced: 2043261362 * 48
= 98.076 gigawatt

IV. METHODS USED AND DESCRIPTION:

The solar panel is installed in the roads with the Topmix permeable. The panels are installed in the edge of the roads and Topmix permeable concrete in the center, for easy maintenance.



The main components of solar panel installation in road is tempered glass, solar panels, weight sensors.

Tempered glass:

Solar panels which is a electrical circuit is not suitable to support any weight in top of them. Hence tempered glass is used to which is capable of withstanding human weight or even heavier loads like trucks on top of it. It is produced by the technology of that by heating it to the higher temperature (almost 1200 degree Fahrenheit) and then cooling it to the glass. It is much safer since when it is broken the glass shatters into small pieces which does not tear the car tires and hurt human bare foot. The traction of the tempered glass is textured in such a way that a vehicle going 60 kmph is able to stop within the required distance.

Topmix permeable:

The Topmix permeable concrete is made by tiny pieces of crushed granite packed together known as 'no-fine concrete'. It consists of three layers as Topmix permeable, aggressive sub-base, mealiable base. They inject the water to the ground water table.

The conversion of power from DC to AC source gives some loss, but it can be managed as the outcome will be wider.

V. RESULT:

The overall power demand of our country (India) is 345.5 GW. The power generated by this method is around 98 gigawatt. It is produces almost 22.08 % of power to compensate our demand.

VI. CONCLUSION:

This hybrid roadway can become the future roadway system in India because it can produce clean power as well as prevent us from large calamities like flood.

VII. FUTURE SCOPE:

There are many challenges like maintenance, cost and efficiency. In future these challenges can be reduced. Since the solar panels are installed in the corners of the roadway a lane can be designed for charging the electric vehicles in the future.

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