Use of Solar Panel on The Road to Use the Available Space And Produce Solar Energy

Bharati Jadhav[1]; Prof. Pravin Thorat[2]; Kalyani patil[3]

[1,2,3]Department of civil Engineering, Atma Malik institute of technology and Shahapur,Thane, Maharashtra, India

Corresponding Author Email: jadhavbharati92@gmail.com

Abstract

A solar road is an electric road that can charge electric vehicles (EVs) anywhere using the clean energy of the sun. Solar powered r oads have solar panels built into the models we use. Each solar panel (approximately 1m x 1m) is connected to adjacent panels to f orm a solar system. Since the size of the sun and its energy production capacity are a function of the solar modules, the application of the solar system is easily scalable and versatile. Pay the bill. Solar powered roads have solar panels built into the models we use. Each solar panel (approximately 1m x 1m) is connected to adjacent panels to form a solar system. 1 Since the size and energy prod uction capacity of the solar system is a function of the number of solar panels, the use of solar technology is easily scalable and mo re. .

Introduction The concept behind solar panels is very simple in theory, we know from the problems with urban heat islands that roa ds are generally exposed to more solar radiation per day. If we can extract some of that energy, we can solve public and energy pro blems using new technologies. 7 Two methods have been developed in the past to achieve road energy production by using asphalt pavement as a solar collector and installing piezoelectric generators to collect vibration energy from traffic. 1 Recent research has a lso begun to use generators to take electrical energy off the road and convert it directly into electricity. This project uses another m ethod to realize this concept because through photovoltaics solar energy is directly converted into electricity. No heat or vibration c onversion. 8 The solar energy system can distribute energy from the parking lot and driveway (made of solar panels) to all business es and buildings connected to the system. 2 In addition to electricity, information signals (cable TV, high-

speed 2 Internet, telephone, etc.) can also be transmitted through solar channels, which serve as channels for light red (cables). This feature eliminates the wires, poles and relay stations we see all over the country. It also eliminates power outages caused by damag ed cables or poles. Driveways supporting solar-

powered roads will produce three times the total electricity needs, about three times the cost of paving an asphalt road, but will last longer. 1 Road can also communicate with drivers by using visual information to alert drivers to pedestrians in the crosswalk. They could make the emerging EV market cheaper and more manageable. They can help us eliminate the external cost of cremation, wh ich runs into hundreds of millions of rupees or more every year. We can also become world leaders in the application of clean tech nologies that can significantly reduce air pollution and greenhouse gas emissions. In 2009, Solar Street 2 USA received a contract f rom the Federal Government to build the first solar panel prototype. During construction, technocrats learned many lessons and fou nd new and better ways to complete the project. With this technology, no more electricity, no electricity, no combustion (50% of gr eenhouse gases), less demand for fossil fuels, less dependence on oil and less pollution. How about this in the long term: The electr ic road allows all electric cars to be charged everywhere: rest stop, parking lot, etc. Our dependence on oil will end immediately.

I. LITERATURE

1) • Domenico Vizzari (2021) [2] He invented solar pavements: A critical review Resilient, smart and sustainable: these are the key phrases for the subsequent era of avenue infrastructures.As a renewable and environmentfriendly power harvesting pavement, 9 the concept of a solar pavement has Grow to be one of the most researched new motorway transportation infrastructures with a goal to convert the street machine from the energy client 1 to the energy company alleviate pollutants from the supply of strength.
2) Biao Liu (2021) [6] She invented studies and Exploration of section change substances on sun Pavement and Asphalt Pavement The intake of non-renewable assets has made the earth's aid crisis increasingly distinguished. Renewable strength sun power is increasingly famous four)
3) Mohiuddin Munna (2020), [11] 2 Concrete and asphalt are the number one substances used to construct Roadwaylar Roadway® proposed a solar pavement technology instance, solar street panel (SRP) as an 1 alternative materials and

strength source.sun Roadway® done a load, traction and impact take a look at to apply SRP in non-important use software like parking masses. For critical use like public roads engineering assessments are executed example, freeze, moisture absorption, heavy automobile, and shear pressure on "SR3" prototype. general results show "SR3" prototype is robust, bendy and useful for "actual global" test situations five)

4) F. Kehagia, (2019) [7] He invented Renewable power has developed into an integral part the future Their precise function being perpetual and ate up close the masses and consequently within urban new ways of their integration. solar Collector Pavements mesh developing operational and efficient resources of strength for unique applications
5) 6) Kiran pal kour (2019), [2] as impact studies are the essential attention of this research existing studies which have been undertaken to impact associated with sun toll road and PV improvement.we can use sun avenue for electric vehicle charging street mild and near network quandary of solar avenue is high renovation fee. It could not be constructed within the poorest developing nation due to excessive preliminary price. In long term its gives lots of advantages. It is general inexperienced renewable electricity
6) 7)Psomopoulos etal. (2019),[4] The paper gives the 2 sorts of sun pavements thermal and electrical collector, instance of modern shape main to sustainable avenue infrastructure research have confirmed the viability of sun pavement or sun road. In thermal pavement the array of water pipe embedded in floor layer of asphalt road, allowing keeps series of heat on warm days, accordingly producing on website renewable power. In electric collector device solar cells or panels are placed in street surface. To protect solar cells high strength obvious tough layer is supplied, for this reason power generated through photovoltaic device.
7) 8) Harpreet Kaur Channi (2019), [5]the existing paper shows the statistics approximately solar road and noted the three layers of sun road is avenue floor layer, digital layer, base plate layer and their work or function.nine) the main cause of this sort of road to update asphalt avenue which generate power and incorporates lots of blessings. There are 3 predominant Layers street surface layer it's far high electricity obvious and water-resistant layer digital layer includes mini microprocessor boar for controlling warmth, solar cells and LEDs. This residue can sense how tons weight is at the panels and control the heating detail to melt snow. Base plate layer is for protection of electronic layer form floor temperature and moisture.
8) Bonghyun Kim (2018) [3] He invented this take a look at is a development of street device making use of sun panels to road pavement block. Concrete pavement block to mount solar panel is designed to verify effective of electricity era. Pavement blocks with solar panels is photovoltaic block that permits to produce renewable energy
9) Dezfooli ital. (2017) [1] the prevailing work is performed to assess the feasibility of the use of solar pavements as a sustainable power manufacturer to deliver electric power. For this cause, we prepared two prototypes entitled as “solar panel” (solar cellular embedded in rubber and Plexiglas) and “sun pavement” (solar mobile embedded among porous rubber layers) which each are able to harvesting and converting the sun strength into photovoltaic cells
10) Sadeghi Ital. (2017) [4] He invented solar pavement: a new emerging era. The present work is performed to assess the feasibility of the use of sun pavements as a sustainable power producer to deliver electrical electricity "solar pavement" which each are able to harvesting and changing the solar energy into photovoltaic cells. in this work, additives of the brand new sun pavements thirteen)
11) Prajakta Patil (2017) [9], we've got plenty of kilometres asphalt avenue across the country in summer time it absorbs a plenty of warmth worming the street as much as a hundred and forty° F. If we are able to harvest that heat, we can use it for day by day use, save on fossil fuels and decrease international warming. There's three technique to harvest power. One is solar mobile covered dual carriageway that generates power with photovoltaic system. 2d is water pipe gadget in asphalt layer that generating thermal power and 1/3 one is producing of energy thermoelectric effect.
12) Azin Sadeghi Dezfooli (2017) [10], the prevailing paper is performed to evaluate the possibility of the usage of solar pavement as a sustainable energy manufacturer for This two prototypes take one is sun panel (solar cellular embedded in rubber and Plexiglas) and sun pavement (sun embedded between porous rubber layer). Which each are succesful to harvesting electricity? The British pendulum tester (BPT) and established check system UTM had been used for measuring surface frictional assets and determining the power or houses of prototypes. Solar pavement is better than solar panel inside the following take a look at skid resistance underneath moist and dry circumstance. Drainage check loading resistance monitoring take a look at and energy conversion

13) Nawaj sharif (2017), [3]A solar panel may be located on the street with sufficient reinforcement of glass and such substances have potential to face up to the breakage of panel and transmit the daylight. The solar panels in advance invented to lie on the street and generate energy having masses of issues. This panel is long lasting but no longer suitable for its set up time on the special concrete pavement. If a few adjustments are made at the panels and the street then it will likely be viable to lay the panels on the conventional street. 3 techniques is used for using sun panels are Lock system, sixteen)

II. MATERIALS AND METHOD

All materials listed in this project (such as solar panels) are materials used in making solar energy. This study aims to examine the f easibility of solar powered roads in India. The solar pathway was constructed manually with the help of the IRC 58 specification fo r hard pavement design. Let's assume the design wheel weight is 5100 kg and the ground coefficient is 5100 kg. The combined effe cts of road traffic include wheel loads, friction loads, and bending loads at road edges and corners. The main steel frame was desig ned taking into account all conditions of the house. The research study discusses the comparison between the characteristics of ordi nary roads and solar-powered roads and the advantages of solar-
powered roads. What a sunny road. Each solar panel (approximately 1m x 1m) is connected to the panels to form a solar system. Si nce the size of the sun and its energy production capacity are a function of the solar modules, the application of the solar system is easily scalable and versatile. Solar panels are divided into three layers: Street layer.electrical layer.base layer. The road pavement is translucent and high strength, rough enough to provide adequate traction but still allow sunlight to pass through the solar collector cells, LEDs and heating elements inside. This layer must be able to lift today's heaviest products under the most difficult conditions , be resistant to weather conditions, fire processes and keep them clean. The electrical system consists of photovoltaic cells that abs orb solar energy. It also has a microprocessor board with support circuit 4 to sense the loads of the area and control the heat to redu ce or eliminate snow, ice, and schools and workplaces closed in the weather. Layers should be prepared in preparation;
the first is the construction of solar roadbed made of granular materials or asphalt or concrete buildings, which provides greater sup port for the panels and should be taken into account when choosing products.back
we need to place the panel consisting of 3 layers: road layer, electrical layer, substrate layer. The panels on both sides are covered with aluminum frame elements
Data collected for this project, all data are collected from research data and reference data, some data. The book was provided by g uide and expert Private Awais Ahmed Ansari. For solar energy information such as principles and types of solar cells. They should be translucent and strong. It is also designed to be rough enough to provide more traction to prevent the vehicle from slipping. Beca use the material is roughly made, but the material is translucent, sunlight can still pass through and reach the embedded solar photo voltaic cell, LEDs, and heating element inside. It is robust enough to carry today's heaviest loads in the harshest conditions and is w aterproof, protecting the electrical layer underneath. Glass strength, on the other hand, is not lost due to plastic deformation, unlike polymers. To create a safe tempered glass design it must meet the standard glass floor, so the structure must incorporate many piec es of tempered glass together so that in the event of any layer failure other processes can still support the cargo design. . The tempe ring process also means that if a piece of glass is not damaged it will break into small pieces rather than large sheets of glass, and la minating also helps to piece the broken pieces together for the other layers of glass in the panel. It was forwarded to
the rest of the panel. Solar cells Also known as photovoltaics, the sun produces energy through the photovoltaic effect. Most solar c ells are made of silicon as the material ranges from amorphous (non-
crystalline) to polycrystalline and crystalline (single crystal) silicon materials, thus increasing efficiency and discount. Unlike batte ries or fuel cells, solar cells do not use chemicals or require fuel to generate electricity, and unlike generators, they have no moving parts. Solar cells can be arranged in large groups called arrays. These arrays of thousands of human cells act as a central station that converts sunlight into electricity distributed to commercial, industrial and residential customers.

III. CONCLUSION

The operating cost of solar powered roads is the same as existing systems (asphalt roads and fossil fuel burning power plants). The solar system will eliminate global warming. No interruptions9 (roaming or otherwise). Home and wor Solar systems produce enough energy to power surrounding buildings and can take entire homes and cities off the grid, which is pr etty nice. A lot of money from the government. It is expected that solar panels will become a widespread technology throughout th e country in the next 10-
15 years. Overall, this exciting concept offers a promising solution to the world's problem of finding renewable energy

REFERANCE

1. Dezfoolietal(2017) The feasibility of using solar pavements as a sustainable energy producer to supply electrical energy.
2. Domenico Vizzari (2021) Invention of Solar pavements: A critical review Resilient, smart and sustainable.
3. Bonghyun Kim (2018) & Sadeghi etal. (2017) Study of development of road system applying solar panels to road pavement block.
4. Xudong Zha (2022) Invention on performance study of solar pavement panel based on transparent Resin.
5. Biao Liu (2021) invented Research and Exploration of Phase Change Materials on Solar Pavement and Asphalt Pavement.
6. F Kehagia, (2019) Solar Collector Pavements mesh creating operational and efficient sources of energy for different applications.
7. Wenbo Gu (2019) Development of walkable photovoltaic floor tiles used for pavement Solar road panel.