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Conservation of Solar Energy from Ecofriendly Concrete Blocks

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***Abstract*: Less consumption reduces dependence on complex technology, transportation systems and trade agreements. If people conserve fuel, shortages are less likely to happen when natural disasters, accidents or military conflicts occur. Conservation makes it more feasible to rely on local and regional energy supplies. Use of solar energy is sustainable because it is a clean source of energy. Solar power generation does not release greenhouse gases into the air and water. Secondly, it is harnessed from the sun and not mined from limited land resources.**

***Keywords*: Solar energy, Solar panel, Concrete blocks.**

1. Introduction

Solar energy can be converted directly or indirectly in the other forms of energy. It is inexhaustible source of useful energy. Major drawbacks to the extensive application of solar energy is the intermediate and variable manner in which it arrives at the earth's surface and the large area required to collect the energy at useful rate. Most people want to protect the planet, which means more of us want to use renewable sources of energy like solar power. With an average annual growth rate of 50%, solar energy is experiencing a major surge in popularity in green circles. It is mainly the practice of using windows, walls, trees, building placement and other simple techniques to capture or deflect the sun for use. Passive solar heating is a great way to conserve energy and maximizing utilization. Waste electrical and equipment is changing into major thread to the total world. Its toxic emissions mixed with virgin soil and air and inflicting harmful effects to the complete biology either directly or indirectly. There's a necessity to encourage utilization of all helpful and valuable material from E-waste to preserve the natural resources. The most effective way of the disposal of e-waste is through landfill and this method require large land mass which is very difficult to find in these days. So this is a very good concept of using e-waste as an ingredient in concrete by partial replacement of aggregate. Using e-waste as building material seems right when we look at the amount of aggregate required for making concrete and if we are able to reduce that amount it will be very beneficiary as it reduces the load from the natural resources. Solar energy has taken a central place in India's National Action Plan on Climate Change with National Solar Mission as one of the key Missions. India's intended Nationally Determined Contributions (INDCs). Target to achieve about 40 percent cumulative electric power installed capacity from non-fossil fuel based energy resources and to reduce the emission intensity of its GDP by 33 to 35 percent from 2005 level by 2030.

2. Scope/Objectives

1. To Conserve the Solar Energy.
2. To Check Feasibility of conserving solar energy in concrete blocks without losing the strength.
3. To check quantity of solar energy harvested in a prototype masonry wall.
4. To use Waste materials in developing eco-friendly blocks.
5. To use E-waste in concrete blocks as partial replacement to recycle the e-waste, to reduce the land used for dumping of e-waste.
6. To encourage ecofriendly building construction.
7. Bricks are lightweight and thus helpful to reduce the total cost of construction due to be reduction in total dead load of the structure.
8. To promote the use of sustainability, economic and least cost electrification solutions.
9. To alleviate rural poverty in the un- energized area.
10. Economical than traditional bricks or blocks.

3. Methodology

In our research work we have partially replaced the aggregate with e-waste. The E-waste is collected from the sources and is crushed to the small size pieces. In a proper ratio's of 0%, 10% and 15%, E-waste is partially replaced with coarse aggregate and concrete cubes are casted and compare the compressive strength of M25 grade concrete with conventional concrete cubes of M25. The e-waste electronic and electrical instrumentation that contains risky parts, remains handled in Associate in nursing environmentally unfriendly manner primarily in developing nations. The concrete blocks are then left for curing. After curing, the necessary tests are carried out in laboratory as per the IS specifications.

As per the size, the solar panel is placed on the concrete blocks which act as solar energy collectors. In our project we took solar panel of size 70*70*3mm 6V-100mAh. When the blocks are kept for sun light with required time span the energy

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is collected and transferred to the battery. The same procedure is followed to the prototype masonry wall.

4. Conclusion

The strength of concrete is increased by 17.8% at the inclusion of 10% of e-waste. The study concludes that the electronic waste can replace coarse aggregate up to 15%. It provides an effective way to dispose the e-waste. Makes the concrete light weight and thus the weight of structure is reduced. Makes the concrete more flexible hence can easily bear the seismic loads. It reduces the stress on the natural resources and it increases the workability of concrete. Saves the land which is used to dispose the e-waste. It reduces the risk due to the harmful materials of e-waste.

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