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Material Handling System by Using Renewable Energy Source

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ABSTRACT – Solar Energy plays a very important role in helping the nature because the conventional energy sources are dissipating day by day. As the material handling systems absorbs large amount of electricity power so that power can be extracted from solar energy which is free of cost and can be used at a larger extent.

I. INTRODUCTION

Solar energy is radiant light and heat from the Sun that is harnessed using a range of technologies such as solar power to generate electricity, solar thermal energy (including solar water heating), and solar architecture. It is an essential source of renewable energy, and its technologies are broadly characterized as either passive solar or active solar depending on how they capture and distribute solar energy or convert it into solar power. Active solar techniques include the use of photovoltaic systems, concentrated solar power, and solar water heating to harness the energy. Passive solar techniques include orienting a building to the Sun, selecting materials with favorable thermal mass or light-dispersing properties, and designing spaces that naturally circulate air. The Earth receives 174 petawatts (PW) of incoming solar radiation (insolation) at the upper atmosphere. Approximately 30% is reflected back to space while the rest, 122 PW, is absorbed by clouds, oceans and land masses.

Solar radiation is absorbed by the Earth's land surface, oceans – which cover about 71% of the globe – and atmosphere. Warm air containing evaporated water from the oceans rises, causing atmospheric circulation or convection. When the air reaches a high altitude, where the temperature is low, water vapor condenses into clouds, which rain onto the Earth's surface, completing the water cycle. The latent heat of water condensation amplifies convection, producing atmospheric phenomena such as wind, cyclones and anticyclones. Sunlight absorbed by the oceans and land masses keeps the surface at an average temperature of 14 °C. By photosynthesis, green plants convert solar energy into chemically stored energy, which produces food, wood and the biomass from which fossil fuels are derived.

The total solar energy absorbed by Earth's atmosphere, oceans and land masses is approximately 122 PW·year = 3,850,000 exajoules (EJ) per year. In 2002 (2019), this was more energy in one hour (one hour and 25 minutes) than the world used in one year. Photosynthesis captures approximately 3,000 EJ per year in biomass.

The main reason to giving pressure on developing the renewable or non-conventional energy sources is to reduce the fossil fuel cost. The fossil fuels are like wood, crude oil, natural gases etc. The wood is a very consumable type of fuel in India hence reducing the jungle and trees. Due to this the pollution is increased and rains falling also reduced. Another fossil fuels are not fulfilling the needs of energy of India and the use is very vast in India due to the huge population. The cost of fuel like crude oil and natural gases are depends on the US currency hence the prices these fuels are always variable in the world markets we hear read and watch the prices of these fuels are increasing day by day. Our country is big and the use of fuel is also increasing day by day very large part of economy is spent on fuel in a year. Almost 35% price of total economy of India is spent on the food per year. Hence as we develop the utilization of natural sources like wood, water & sunrays. The price spent on fuel is decreased and it can participate the economic development of India definitely. The machine crane which is working on solar cell.

II. CONSTRUCTION & WORKING

We are making the material handling equipment that is working on solar. The main aim is to introduce the use of non-conventional energy sources to run the mechanical machines crane is well known to all for its application & need. It is a material handling equipment basically used to lift, move, rotate & place the material from one place to another place we know that except some rare cases any mechanical machines needs some power or drive through any type of energy. That means external sources is needed to work the machines. As like the crane is also work on diesel generator engine motor etc. The remaining all parts remains mechanical including structure, bodyframe, gear box & all other accessories. But we are making a new development in our machine. Instead of motor or engine, we are using a solar panel & 12v Battery.



Figure No.1 Sketch of Machine

III. RESULTS



Figure No.2 Photo of Machine



Figure No.3 Photo of Machine

IV. CONCLUSION

- 1) The material handling system can be used for lifting the jobs.
- 2) The material handling system can reduce human efforts.

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