Solar Based Escalator for Generation of Electricity

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Abstract: - Energy is the basic need of human being. Human revealed the new path in sciences by using conventional energy sources and non-conventional energy sources. However, most of the innovation depends upon conventional energy sources get affected on environment and human health in running days. We are interested to turn science into green science by using non-conventional sources. Sun is clean source of energy which is inexhaustible .The aim is to take advantage of available renewable energy source i.e. sun to convert solar energy converted into electrical energy we use a clean source to generate energy for an escalator to run. By this, not only energy is generating without pollution but also at the same time, the energy is also saving by making this project. This is very economical for commercial complexes. Energy comes in different forms. Light is a form of energy. So is heat. So is electricity. Often, one form of energy can be turned into another. This fact is very important because it explains how we get electricity, which we use in so many ways. Electricity is used to light streets and buildings, to run computers and TVs, and to run many other machines and appliances at home, at school, and at work. One way to get electricity is to this method for making electricity is popular. But it has some problems. Our planet has only a limited supply of oil and coal .In this method details about Endless Energy, Solar Cells Galore, and Energy from sunshine, Understanding Electricity.

Key Words: — ***Renewable energy, Electricity, Solar energy, Escalator.***

I. INTRODUCTION

In our project we are using renewable source of energy that is solar. We are showing working of 'ESCALATOR' by using solar. Environmental pollution due to the conventional sources of energy and its limited quantity has shifted our focus towards non- conventional sources of energy, which are in plenty. Due to the rise in price of fossil fuel, its exhaustive nature and factors concerning energy security, the importance of renewable energy resources is increasing. Photovoltaic modules use light energy photons from the Sun to generate electricity through the photovoltaic effect. Most modules use wafer-based crystalline silicon cells or thin-film cells. The structural load-carrying member of a module can be either the top layer or the back layer. Cells must be protected from mechanical damage and moisture. Most modules are rigid, but semi-flexible ones based on thin-film cells are also available. The cells are usually connected electrically in series, one to another to the desired voltage, and then in parallel to increase current.

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The power (watts) of the module is the mathematical product of the voltage (volts) and the current (amps) of the module. The manufacture specifications on solar panels are obtained under standard condition which is not the real operating condition the solar panels are exposed to on the installation site. A PV junction box is attached to the back of the solar panel and functions as its output interface. External connections for most photovoltaic modules use MC4 connectors to facilitate easy Weatherproof connections to the rest of the system. A USB power interface can also be used Depending on construction; photovoltaic modules can produce electricity from a range of frequencies of light, but usually cannot cover the entire solar radiation range (specifically, ultraviolet, infrared and low or diffused light). Hence, much of the incident sunlight energy is wasted by solar modules, and they can give far higher efficiencies if illuminated with monochromatic light. Therefore, another design concept is to split the light into six to eight different wavelength ranges that will produce a different color of light, and direct the beams onto different cells tuned to those ranges. This has been projected to be capable of raising efficiency by 50%.

The main motivation behind this presentation is the combination of three renewable energy resources so that the

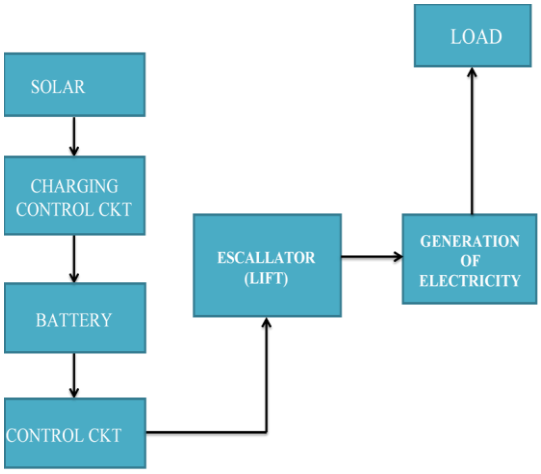
generation could be increased, be more efficient along with being quite cheap.

II. LITERATURE SURVEY

Solar thermal technologies use the sun's heat energy to heat substances such as water or air for applications such as space heating, pool heating and water heating for homes and businesses. There are varieties of products on the market that utilize thermal energy. Often the products used for this application are called solar thermal collectors and can be mounted on the roof of a building or in some other sunny location. The sun's heat can also be used to produce electricity on a large utility-scale by converting the sun's heat energy into mechanical energy. Solar power is the conversion of energy from sunlight into electricity, either directly using photovoltaic (PV), indirectly using concentrated solar power, or a combination. Concentrated solar power systems. Use lenses or mirrors and tracking systems to focus a large area of sunlight into a small beam. Photovoltaic cells convert light into an electric current using the effect. After converting light energy into electrical DC gear motor starts and Escalator start operating IR sensors are assembled for sensing the person present on the Escalator.

As soon as the IR sensor sensed the person on the Escalator, it sends command to control circuit and escalator starts moving upwards and downwards respectively. The timer circuit is used to save electricity if there is no people using the escalator, the escalator automatically stop and operates whenever necessary this action save electricity.

III. BLOCK DIAGRAM



IV. WORKING

In this project, we use 12-volt solar panel for the generation of electricity for the operation of escalator. The solar panel photovoltaic will convert light energy of sun into electrical energy by photovoltaic effect. Then this energy goes into control circuit. Where the energy is controlled and goes to storage battery which are of 12 volt at the end of the escalator there are IR sensor are used. These IR sensors sense the person on the escalator and starts operation in upward and downward direction respectively.

This IR sensor i.e. infrared sensor circuit is one of the popular sensor module in an electronic device we used LM358 IC IR transmitter and receiver We also introduced a timer circuit to save the energy means if the people are not going upward and downward the escalator automatically stops and energy is saved. This timer circuit used in based on the operation of timer IC555 this circuit consists of 2 switches one is for starting and another is for reset the circuit.

The circuits also have potentiometer to adjust the time delay the escalator is made up of conveyer belts. We use a belt which is a roof of flexible material use of mechanically link two or more rotating shafts. This belt may be used as a source of motion to transmit power efficiently or to track relative movement. We used here the conveyer belt as a track relative movement for the rotation of conveyer belt.

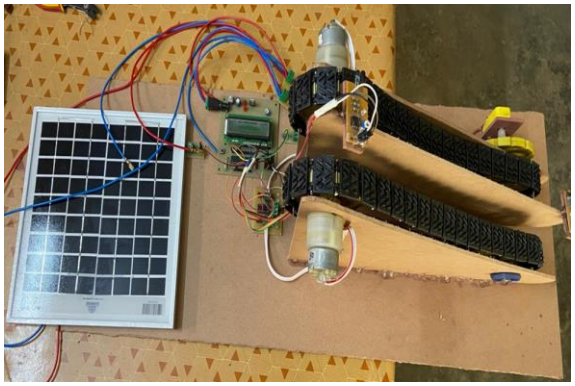
We use a wheel, which rotates the belt through the dc-gear motor. A DC-gear motor, which is present at the down for the upward direction and one, is at top of the escalator for the downward direction.

The shaft of the DC-gear motor is mounted on the pulley as per the relation of the shaft the escalator rotate respectively. By the action of the escalator, energy is generated. This energy is then store in battery, which is, then use for lighting or other purposes of that commercial building.

Advantage:

- Renewable Energy Source
- Reduces Electricity Bills
- Diverse Applications
- Low Maintenance Costs
- Technology Development

V. SYSTEM DIAGRAM



VI. CONCLUSION

The sun is a powerful source that can help our planet by giving us clean, reusable energy to power our world. The use of this energy is free, does not create pollution, and if used wisely can help us become less dependent on other more costly and damaging forms of power. After participating in this Web Quest I hope you are able to see the benefits of this valuable resource and help change the future for energy use.

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