

SOLAR TRACKING TRAIN IMPLEMENTATION USING BY MATLAB

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Abstract

The main design consolidation of work is the outfit with the sun situated energy is certainly not a fundamental endeavor yet we think about it to make up. In spite of the way that there are relatively few existing sun arranged controlled trains yet they have all the earmarks of being confined and not absolutely explicit.. The sun based sheets are open with the assorted size, shape, versatile and more power yield. Using theTrack-Break available sun situated sheets the chance of daylight based train can be executed. major

Keywords: ;Track-Break,Train

1. INTRODUCTION

For the immense measure of force needs for the trains to run can likewise be made conceivable with the sunlight based energy instead of utilizing the current diesel.. Considering the train to furnish with the sun powered energy is certainly not a basic errand yet we consider it to make up. Despite the fact that there are not many existing sunlight based controlled trains yet they appear to be restricted and not totally particular [1]. The wellbeing highlight will be the best execution for this thought that is the track-break recognition. This element will help a great deal for the wellbeing and will dodge the significant mishaps of trains. The sunlight based boards are accessible with the diverse size, shape, adaptable and more force yield.

Utilizing the accessible sun powered boards the possibility of sunlight based train can be executed. The downside which emerges is the hefty force which should be given consistent capacity to the driving force of the train to pull around 21 compartments appended with it or significantly more. So there is a need of consistent ability to be furnished with paying little mind to the climate, accessibility of force or power of the sunlight based energy. The usage of this thought for another train makes the thought an exorbitant one and it slacks monetarily [2]. Hence actualizing this thought for the current trains will not difficulty the speculation. Despite the fact that there is a tremendous venture yet there are enormous returns and reserve funds as well. The major and significant note is that it makes the train an eco-accommodating and even this will assist us with diminishing the shortage of the fuel accessible. Sun oriented trains are a cutting edge path way to deal with make individuals to acquire information about the sun based energy alongside the eco-accommodating force age framework

Sunlight based photovoltaic (PV) organization on existing train's housetops has demonstrated to be perhaps the most suitable huge scope assets of supportable energy for metropolitan trains.. This is the first run through in quite a while that sunlight based boards are being utilized as framework in rail routes. The train has a force back-up and can run on battery for in any event 72 hours. The sun oriented

boards create around 17 units of force in a day which empowers the lighting framework in the mentor. Right now Railways will introduce sunlight based boards on non-AC mentors as it were. The rail routes are wanting to present almost 50 all the more such mentors in the coming days. Sun oriented force would be presented first in quite a while and later in significant distance prepares also.

II The Concept

we are encountering a lead deficiency in an electrical energy. The non sustainable sources that are we going to utilized get depleted and the environmentally friendly power is fundamental for future. We are additionally encountering lack of batteries in stamped and climb in fuel cost. The train is the principle wellspring of public transportation. Train requires most extreme electric energy however now and again all prerequisites of train are not get satisfied by open electrical energy. Thus we are propose utilization of sunlight based energy in the train to alter the use of ordinary train. The sunlight based train innovation is as yet in creating stage. The rule of the sun oriented train is utilized to store energy in the battery during and subsequent to charging it from sun powered board. This thought will assist with ensuring fuel extenuation.

There are unit a spread of favorable circumstances to embracing a star home framework. Other than families, star home frameworks may offer force for resources, facilities, or little organizations. Having this splendid stockpile of daylight for the duration of the night may likewise deflect wild creatures that territory unit perilous or eat their harvests. They supplant fuel lights and candles verifiably utilized for lighting. Purchasing fuel or potentially candles might be an every day cost that might be disposed of with a SHS. Besides, exhaust created from customary lighting techniques are harmful and lead to ongoing lung issues, particularly when kids are uncovered. By and large, a family can utilize with respect to three liters of fuel each month. Utilizing these rheostat wellsprings of daylight for discovering or handiwork creation will strain the eyes and cause long vision issues. Having a framework can allow adolescents to check and little

organizations to proceed with creation later into the evening. This will expand the populace's capacity to be free, raises their earnings, and permits them to start to lift themselves out of destitution. The proposed framework chiefly comprise of sunlight based board, battery, what's more, the charge regulator. As the interest of power expanding step by step so for and the age of power is deficient to fulfill the fast development of power interest. So by utilizing this PV innovation we will make splendid the places of destitute individuals for their turn of events. The proposed framework utilizes a sunlight based board since it is more effective, so when light strikes the outside of the board at that point we get 12V yield which can be convert into 5V by transformer IC related this 5V is taken care of as a contribution to the charge regulator. The battery is charged utilizing a electrical gadget with a charge regulator in the middle of them. The charge regulator is utilized to shield the battery from cheating and profound releasing. When the battery is charged, a DC burden could be straightforwardly associated with the battery

III SYSTEM ARCHITECTURE

Block Diagram

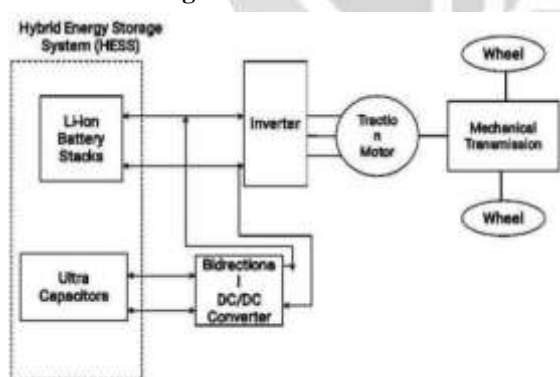


Fig.1 MATLAB Model of Electric System of Locomotive Engine

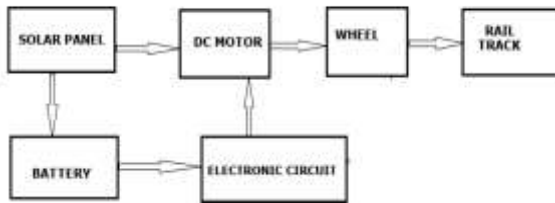


Fig 2 Block Diagram of Overall system

Where the whole rooftop top of the train compartments are being introduced with sunlight based boards with the best creation so it consumes the restricted space and give the more yield. Introducing the boards on rooftop isn't adequate for the necessary ability to run the train.

IV SYSTEM IMPLEMENTATION

Sun powered boards or a ton of actually electrical wonder (PV) boards are star home electrical framework convectional part. There is fluctuated kinds of electrical gadget anyway in the fundamental there are exclusively 3 kinds of electrical gadget for example monocrystalline, polycrystalline and nebulous slender film type solar board. Mono-glasslike cells are being cut out from ingot of unadulterated translucent. They are dark in shading and that they will retain most sunlight falling on a superficial level whenever set at right point. The effectiveness of mono-translucent cell is around 19-20%. Polycrystalline cells are being result of unadulterated component shorts. Dissimilar to mono-glasslike their cells are not completely adjusted one way and accordingly interconnection misfortunes may happen which lessens its productivity to 13-15%. Formless dainty film productivity is around 6-10%. The Panels are made of wafers or cells of semiconductor material that utilization daylight (photons) and the photovoltaic impact to create direct flow power. The entirely unexpected cell innovations are wont to address distinctive energy change efficiencies and creating procedures that are utilized in making an endeavor to downsize the cost of electrical wonder produced power. The electrical marvel innovation is ceaselessly developing step by step inside the heading of higher change intensity and lower cost. Each photovoltaic cell will create an arranged voltage and current underneath sure delivering and actual imperatives. An electrical gadget could be an arrangement and equal combinations of indistinguishable cells to come up with the predetermined force yield (current and voltage)

V Conclusion

The fundamental point of this paper is to created sun based force at rapid traveler rail framework. These paper is the exploration, present case to complete examination towards the turn of events and commercialization a light weight sun based rail line framework

REFERENCES

1. Prasanna Titarmare Komal Choudhary, Harshada Kawale, Sagar Navghare, Swapnil Bendre, "DUAL AXIS SUN TRACKING FOR SOLAR PV MODULES WITH AN AUTOMATED CLEANING SYSTEM", (JETIR), Volume 7, Issue 5, May 2020, ISSN 2349-5162.
2. Prasanna Titarmare Komal Choudhary, Harshada Kawale, Sagar Navghare, Swapnil Bendre, "Dual Axis Sun Tracking with an Automated Cleaning System for Pv Modules", IOSRJEN, Volume 6, Issue Dec 2019, 42-45.
3. Prof. Shital Yende, "Review on design and implementation of solar train using MATLAB", IJARIE, VOL-7 Issue-2-2021.
4. Prof. Shital Yende, "Photovoltaic solar modulation on MATLAB", IJARIE, VOL-7 Issue-2-2021.
5. R. Barrero, X. Tackoen and J. Van Mierlo, "Improving energy efficiency in public transport stationary supercapacitor based energy storage systems for a metro network", *IEEE Vehicle Power and Propulsion Conference (VPPC)*, 2008.
6. C. Nagode, M. Ahmadian and S. Taheri, "Motion-based energy harvesting devices for railroad applications", *Joint Rail Conference*, 2010

7. R. Faranda and S. Leva, "Energetic sustainable development of railway stations", *IEEE Power Engineering Society General Meeting (PES)*, 2007
8. Vijayan Sumathia, R. Jayapragash, Abhinav Bakshi, Praveen Kumar Akella,, "Solar tracking methods to maximize PV system output – A review of the methods adopted in recent decade" *74 (2017) 130–138*
9. Poulek V. Testing the new solar tracker with shape memory alloy actors. In: Proceedings of the IEEE first world conference on photovoltaic energy conversion, 1994; Conference record of the twenty fourth IEEE photovoltaic specialists conference-1994. Vol. 1. Waikoloa, HI; 1994, p. 1131–1133.
10. Chin CS, Babu A, McBride W. Design modeling and testing of a standalone single axis active solar tracker using MATLAB/Simulink. *Renew Energy* 2011;36(11):3075–90

