

SKY BUS WITH SOLAR CONTROL PANEL

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Abstract— The utilization of solar energy into the electrical energy is done by the solar panel. These panels are mounted on the upper side of the monorail track. And due to the panels the solar energy stored into battery through a charger. And the supply is given to the monorail with two way switch. One from the supply mains and the other from the battery. A monorail is a rail-based transportation system based on a single rail, which acts as its sole support and its guide-way. The term is also used variously to describe the beam of the system, or the vehicles traveling on such a beam or track. The term originates from joining mono (one) and rail (rail) which is also driven on solar energy with the help of solarised control panel.

Keywords— Monorail, solar panel, pm dc motor, power transformer, control panel.

I. INTRODUCTION

A unique mass transit system which can be put up in any congested and crowded city within two years for ease and safe transportation, without loss of time Provincial politicians since 1980 have forced Sky Train construction on the Expo Line, the Millennium Line, the Evergreen Line, and now a billion dollar plus extension in Surrey, yet very few people clearly understand what Sky Train is, or why Sky Train is built. [1]Even fewer know that Sky Train is a light-metro and able to give a definition of the transit mode. If the rest of the world builds with LRT, why then do we build with something different. In order to implement the government's new law to scan all containers proactively, it is time to introduce automated high speed freight movement which can be parallel to lines that haul passengers using the same support structure, signaling, and high performance monorail vehicles. [2]We cite as an example the Sea and Air Port connections suggested at Fort Lauderdale, in their ongoing studies. During high volume periods, nighttime transport of freight could use both lines justified by the sharing of costs. [3]The factors: Energy consumed, road wear, driver pay, and pollution (truck transport of containers) will be reduced by around 90%; transfer time to load the trains or trucks in double stacked fashion reduced by a quarter. Saving millions over the duration the system can pay for itself. Sky Train can further abate some of the estimated costs that assessments for a passenger monorail have concluded. So, Sky Train's advantage is that it will save on the passenger aspect as well as offer parallel use with freight. [4]No other monorail organization has considered our depth of freight handling option in monorail development. [5]Mono rail's concepts stands out as a major innovation over other systems and should be supported and built. [6] solar energy is used to supply which is costless. Electrical energy is generated from non renewable energy sources like coal, gas, petroleum and by its products. They are going finished in nearly years.

II. METHODOLOGY

Fig.1 shows the idea about the operation of the traction system. Power comes from the mains transform by the step down transformer into 12V. A full wave bridge rectifier is use to convert a.c. power into d.c. power. A two way switch is provide for use solar energy power. This power is use to drive PMDC motors. Contactor switches are use to drive motors in both the direction. Safest traction as it overcomes on Metrorail problem of derailling.

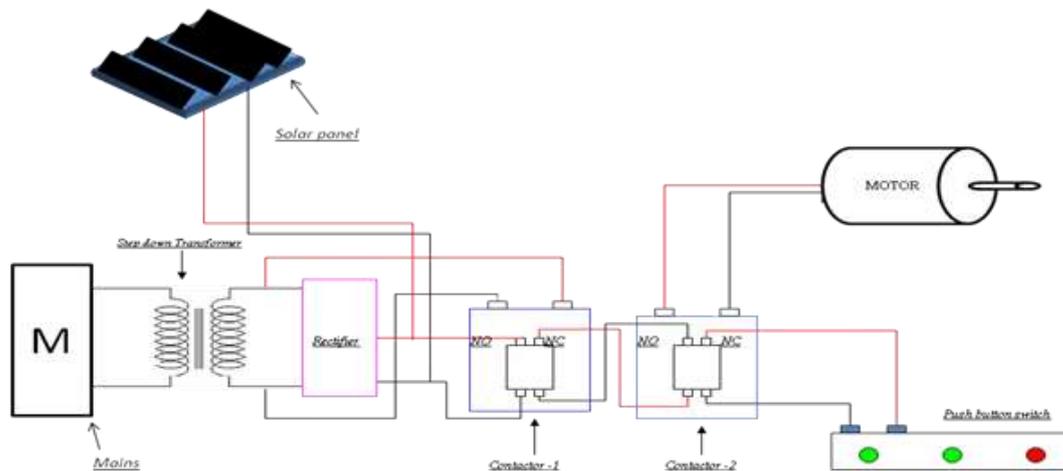


Figure.1 block diagram

Hardware Requirements

I. PMDC Motor



Figure.2 PMDC motor

Permanent magnet DC brushed motors (PMDC motors) consist of permanent magnets, located in the stator, and windings, located in the rotor. The ends of the winding coils are connected to commutator segments that make slipping contact with the stationary brushes. Brushes are connected to DC voltage supply across motor terminals. Change of direction of rotation can be achieved by reversal of voltage polarity. The current flow through the coils creates magnetic poles in the rotor that interact the permanent magnet poles. In order to keep the torque generation in same direction, the current flow must be reversed when the rotor north pole passes the stator south pole. For this the slipping contacts are segmented. This segmented slip ring is called commutator.

II. Solar Panel

A solar panel is a set of solar photovoltaic modules electrically connected and mounted on a supporting structure. A photovoltaic module is a packaged, connected assembly of solar cells. The solar module can be used as a component of a larger photovoltaic system to generate and supply electricity in commercial and residential applications. Each module is rated by its DC output power under standard test conditions (STC), and typically ranges from 100 to 320 watts. Solar modules use light energy (photons) from the sun to generate electricity through the photovoltaic effect. The majority of modules use wafer-based crystalline silicon cells or thin-film cells based on cadmium telluride or silicon.

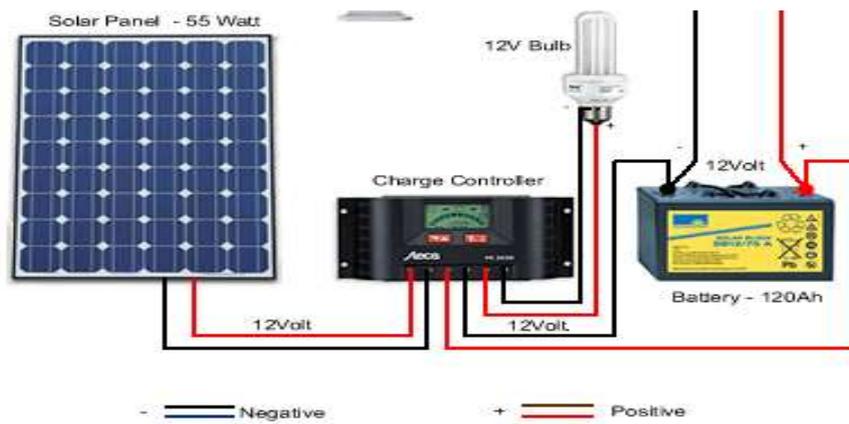


Figure.3 Solar Panel

III. EXPERIMENTAL SETUP

This concept lead towards the below Economical and Environmental advantages:

- As the population exceeds above 4bilions Government used MRTS system. In MRTS system traction can be done by metro rail by this concept the transportation of peoples done easily by monorail.
- Running cost of monorail is reduced due to use of solar energy and capital cost is also reduced because of using mono guide way.
- Fast transportation in city area.
- Safest traction as it overcomes on Metrorail problem of derailling.

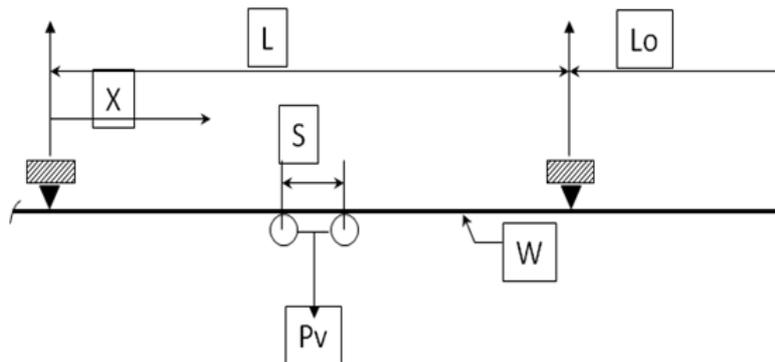


Figure.4 Basic Load System

$$P_v = P \cdot (1 + V_i/100) + W_t + W_h \text{ (vertical load)}$$

$$P_w = P_v / N_w \text{ (load per trolley wheel)}$$

$$P_h = HLF \cdot P \text{ (horizontal load)}$$

DESIGN PARAMETERS

- $P =$ Lifted Load = 5kg
- $W_t =$ Trolley Weight = 0.1422 kg

- W_h = Hoist Weight = 0.0355
- V_i = Vertical impact factor (15%)
- HLF = Horizontal Load factor (10%)
- N_w = Total No. Of wheels (4)
- S = Wheel spacing = 20cm
- Vertical load

$$P_v = P * (1 + V_i / 100) + W_t + W_h$$

$$= 5 * (1 + 15/100) + 0.1422 + 0.0355$$

$$= 5.92 \text{ kg (app. 6 kg)}$$

- Load per Trolley wheel

$$P_w = P_v / N_w = 6/4 = 1.5 \text{ kg}$$

- Horizontal load

$$P_h = HLF * P_w = 0.10 * 1.5 = 0.15 \text{ kg}$$

1. Dimension of Coach

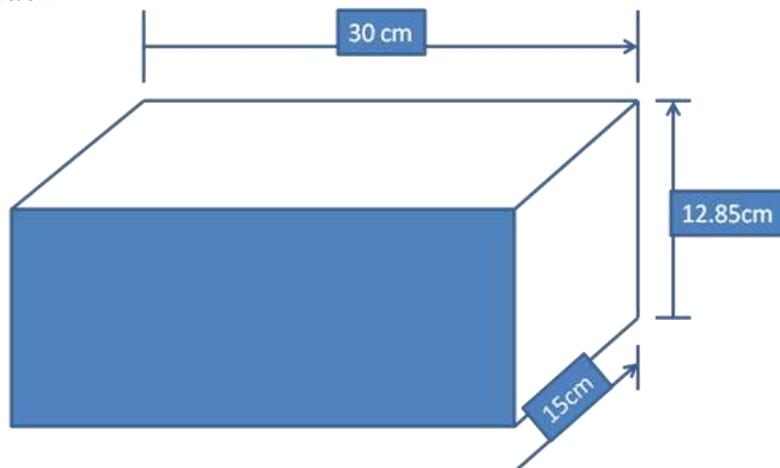


Figure.5 Coach Dimensions

2. Dimension of Track

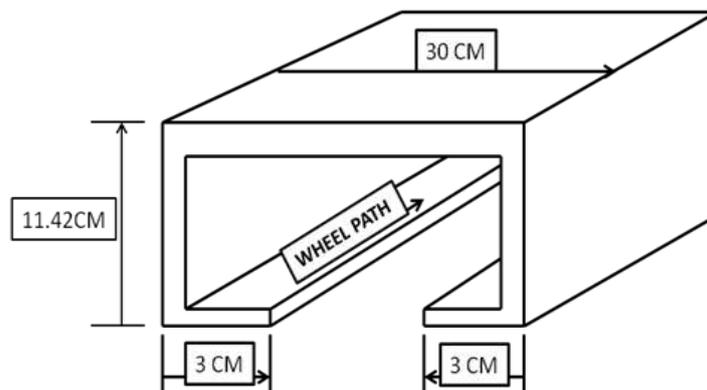


Figure. 6 Track Dimensions

3. Design of Monorail Track

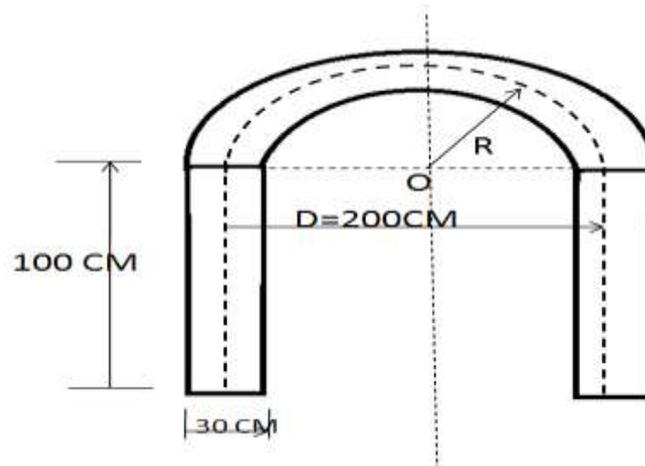


Figure. 7 Design of Monorail Track

IV. EXPERIMENTAL RESULTS

This concept lead towards the below Economical and Environmental advantages:

- As the population exceeds above 4bilions Government used MRTS system. In MRTS system traction can be done by metro rail by this concept the transportation of peoples done easily by monorail.
- Running cost of monorail is reduced due to use of solar energy and capital cost is also reduced because of using mono guide way.
- Fast transportation in city area.
- Safest traction as it overcomes on Metrorail problem of derailing.

V. CONCLUSION

- Mono Rail is very use useful in city area than fast transportation is possiable but initial cost is very high. Also more construction time required because their use only steel work as compaire to normal traction systems. Avition and Shipping ports using increasing expansive carrier, for which demand for service is ever increasing by volume, requier cargo equipment costing many million of rupees.
- It can maintain system power after catastrophic failure, allowing trains to respond to a programmed sequence, completing missions and reaching station stops Continue full operations for short periods of power outages.
- The Sky Train Monorail (picture) is the answer to these challenges by being comparatively inexpensive, quick to build, able to move Cargo Container handling in a far more efficient manner saving billion annually.

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