Solar Connector

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Abstract

India, a rapidly growing economy with more than 1 billion people, is facing a huge energy demand. The country stands fifth in the world in the production and consumption of electricity. The electricity production has expanded over the years but we cannot deny the fact that the population of the country is also expanding. The power produced in the country is mostly from coal (53%) and it is predicted that country's coal reserves won't last beyond 2040-50. More than 72% population living in villages and half of the villages remain without electricity. It's high time that our country should concentrate more on energy efficiency, conservation and renewable energy. To meet this surging demand, solar energy is the best form of energy to fulfill the energy needs of India and bridge the energy demand-supply gap.Usage of solar connector for interconnecting solar panels and inverters reduces the length and provides shortestroute between solar panels and electric components

KEYWORDS: Solar panel, Connector, Efficiency

INTRODUCTION

The main object of present research is to develop a solar connector for utilizing solar energy in an efficient manner[1]. As we know that solar energy is the most important source of renewable energy and large magnitude of availability of solar energy makes it highly appealing source of electricity. Solar connectors play a major role in harnessing solar energy, as solar panels need to be connected to each other and to inverters. The connection between solar panels and inventers is established using solar connectors[2]. These connectors attach solar components together to produce a successful flow of electricity. The solar connectors are installed in a solar panel array and provides shortest

possible route for interconnecting the solar panel and electric components[3]. Solar connector includes a receptacle member and a plug member which can be mounted with any of variety of orientations by engagement of peripheral groove in a receptacle member. The receptacle member has a profiled bore with an axis of the terminal surface[4]. It also include a male terminal with a mating tab portion lying in the bore and solder plate. The mating plug is in the shape of cross which help for sealed mating with receptacle. Both the member include a polarizing means which is the important part of connecting the solar panel array and electric components it is basically an energy transfer medium between the solar panel and a battery or other components[5]. The mating plug includes a housing profiled for sealed mating with the receptacle and carrying within an axial bore a high pressure terminal matable with the mating tab of the receptacle member and held in the plug member in a sealed and strain relieved fashion by a crimp ring. The micro-inverters are configured on the back of each solar panel[6]. Each micro-inverter converts DC power generated by its respective solar panel to grid-compliant AC power and are known to exhibit high conversion efficiency.The member can be disconnected by spreading the extensions sufficiently to free the lungs from the apertures and withdrawing the plug member from the receptacle member.

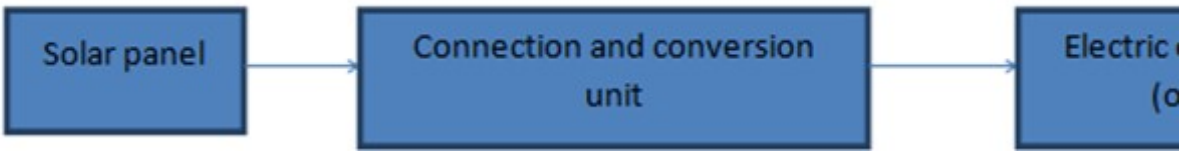

Fig. 1 Block Diagram of Solar connector

A solar cell connector is an interconnection between solar panels and other electric components of photovoltaic system. Solar connectors provides shortest possible route for the flow of electricity between two electrical components[7]. Usage of solar connectors ensures efficient energy transmission from one end of the energy grid to the other end of the energy grid.The solar connector mainly comprises two components i.e. a receptable member and a plug-in member[8]. These two members are connected to each other with the help of a locking lance and a conductor is placed in a bore provided in the plug-in

member for adjusting the electric coble in the connector.

CONCLUSION

The main objective of this paper is to develop a solar connector for interconnecting solar panels and other electric components that can be connecting easily and supports variety of orientations.A solar connecter with symmetrical longitudinal axis for providing shortest path for flow of electricity between the electrical components connected through connectors.

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