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Solar Based DC-DC Converter for Shunt Motor Application.

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ABSTRACT

This paper has presented about solar based DC-DC converter for shunt motor application. The Solar Cell is connected in the input side as well as this solar cell is acts as like PN junction diode. The Changes of solar radiations are getting some DC voltage from solar cell and it will move to the inverter circuit. Here Centre tapped transformers, converters, PI filters and shunt motors are connected at load side. Finally Speed, Torque and Armature current of shunt motor are measured.

Keywords: Solar cell, converter, PI filter, Shunt Motor.

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INTRODUCTION

New Random PWM Technique for a Full-Bridge DC/DC Converter [1] Closed loop controlled series resonant PFC DC to DC converter [2] Soft switched non-isolated bidirectional ZVS-PWM active clamped DC-DC converters[3] are using in this circuit diagram. A new approach for voltage control is IPFC and UPFC power flow management [4] because of boost the voltage levels. The Solar based closed loop of DC-DC converter using PID and fuzzy logic control for separately excited motor drives to controls the motor [5]. As well as to Power reliability improvement is to be using the inverter with Photovoltaic systems [6]. PIC Based Implementation of ZV ZCS Interleaved Boost Converters [7], Dual Converters of Multi motor Drives [8], Comparison of solar based closed loop DC-DC converters [9] are using this shunt motor. The solar based DC-DC Converter for shunt motor application purpose has discussed in this paper.

PROPOSED BLOCK DIAGRAM

The Solar Based DC-DC Converter for Shunt Motor Application block diagram shown in below. In this solar panel is connected to the input side. In this paper different kinds of components are using for produce exact Speed and Voltages. Because in this situation without getting exact Output (Speed, Voltages, etc.,) can't able to achieve anything. For this condition going for Asymmetrical triggering method inverters, center-tapped transformers, converters, PI filters and shunt motors are connected.

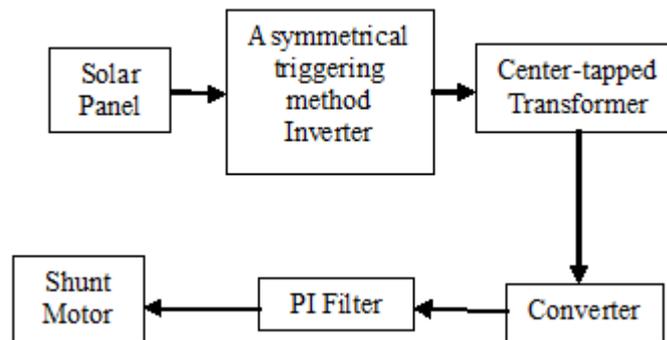


Fig. 1. Solar Based DC-DC Converter for Shunt Motor Application

PROPOSED CIRCUIT CONFIGURATION AND SIMULATION WAVEFORM

Here this paper has showing about configuration of solar cell. In this Solar panel is connected in the input side. From the panel some voltages are produced to the remaining balance components to retrieve the system. The inverter is worked always with AC supply. Then this supply is applied to the step-up transformers, converters, PI filters and shunt motors.

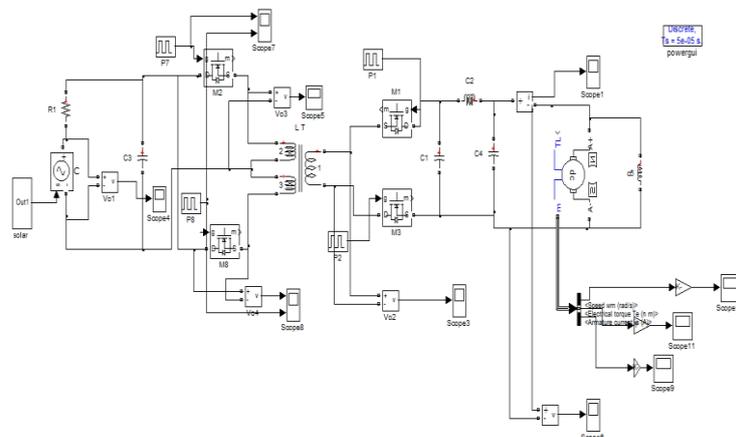


Fig. 2. Simulation circuit of Solar Based DC-DC Converter for Shunt Motor Application

The fig 3 & 4 Solar panel output and speed of shunt motor is shown in below & based on triggering angle different voltage measured.

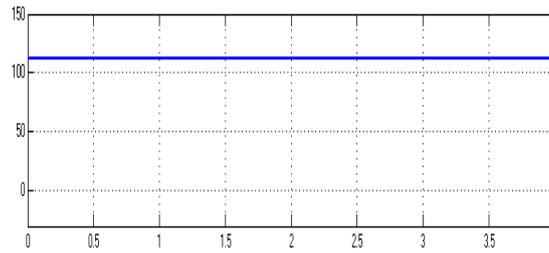


Fig. 3. Solar panel output

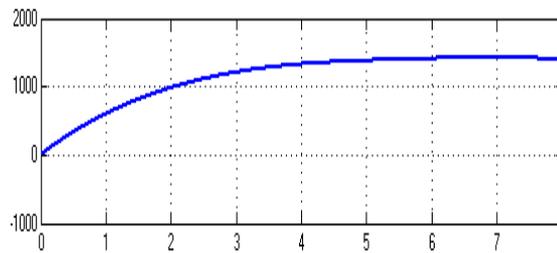


Fig. 4. Speed of Shunt Motor

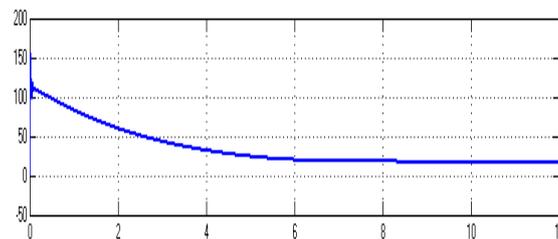


Fig. 5. Torque of Shunt Motor

Fig 5 and 6 shown torque and armature current shunt motor.

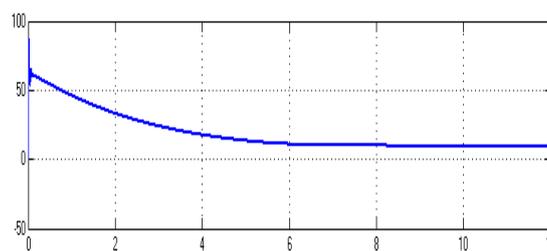


Fig. 6. Armature Current of Shunt Motor

CONCLUSION

Solar based DC-DC converter for shunt motor application has implemented. From this graph 3 even though if increased the angles the voltages are maintaining same due to controlling motor. Similarly the speed is to be increasing at certain point after that is maintaining constant. The graphs 5 & 6 are decreasing depends upon the time interval. This situation has happened at Torque and Armature Current of the shunt motor.

Finally Speed, Torque and Armature current of shunt motor are measured from the various simulation circuits.



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