ISSN PRINT 2319 1775 Online 2320 7876
Research paper UGC CARE Listed (Group -I) Journal Volume 10, Iss 1, 2021

A New Maximum Power Point Tracking Method Based on Power Electronics for Solar PV Applications

Dr T. Vijay Muni,

Department of Electrical and Electronics Engineering, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh, India.

vijaymuni@kluniversity.in

Abstract

False MPP was produced because the conductivity of the solar cell changed nonlinearly with different atmospheric variables.The proposed method is trained with a neural network to get arou nd this issue.Although incremental conductance can provide slightly superior overall performanc e in cases of rapidly changing atmospheric circumstances, the algorithm's accelerated complexit y will necessitate larger, more expensive hardware, giving it an edge over MPPT only in large P V arrays.

Lack of knowledge of the obligation cycle variation is a weakness of the fuzzy logic technique, which leads to a suitable accuracy level with poor dynamic properties.

The PWM approach is used to solve the issue, and the corresponding duty cycle is changed to ac tivate the inverter.

ISSN PRINT 2319 1775 Online 2320 7876

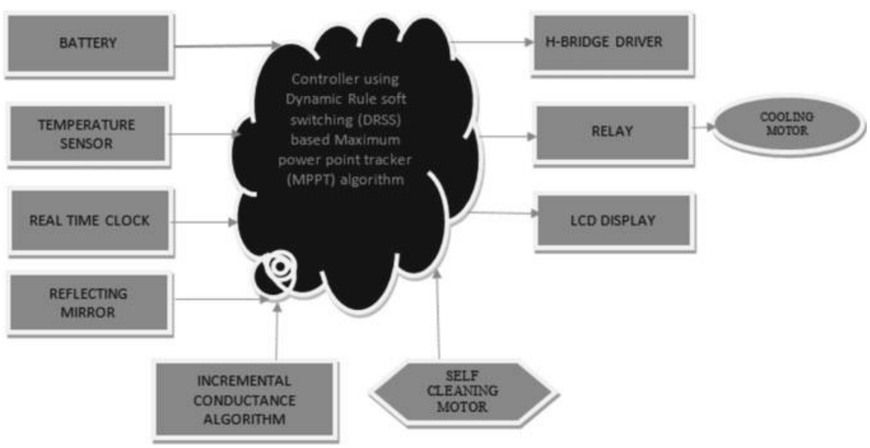
Research paper UGC CARE Listed (Group -I) Journal Volume 10, Iss 1, 2021

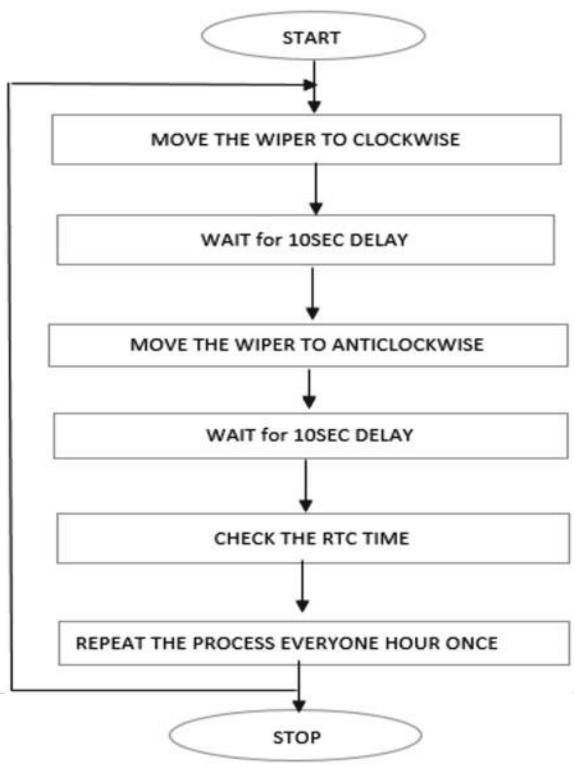
Introduction

A power electronic converter that is interfaced between a photovoltaic (PV) plant[1] and the distribution grid or load is largely responsible for the performance and efficiency of medium- and large-scale PV plants [2]. Due to multiple stages of power conversion, the power conversion technology employed in the existing solar PV (SPV) plant is expensive and inefficient [3].

SELF CLEANING

Block diagram of the proposed system





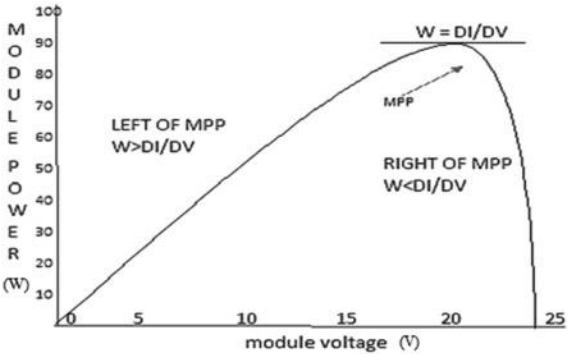
ISSN PRINT 2319 1775 Online 2320 7876

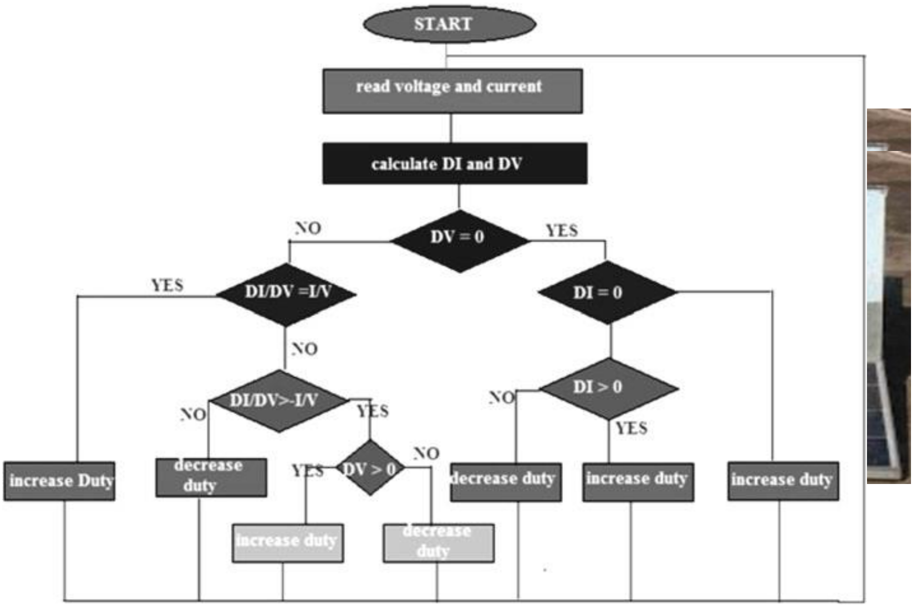
Research paper © 2012 IJFANS. All Rights Reserved, UGC CARE Listed (Group -I) Journal Volume 10, Iss 1, 2021

MIRROR REFLECTION

1.1 INCREMENTAL CONDUCTANCE ALGORITHM

1 PROPOSED MPPT ALGORITHM



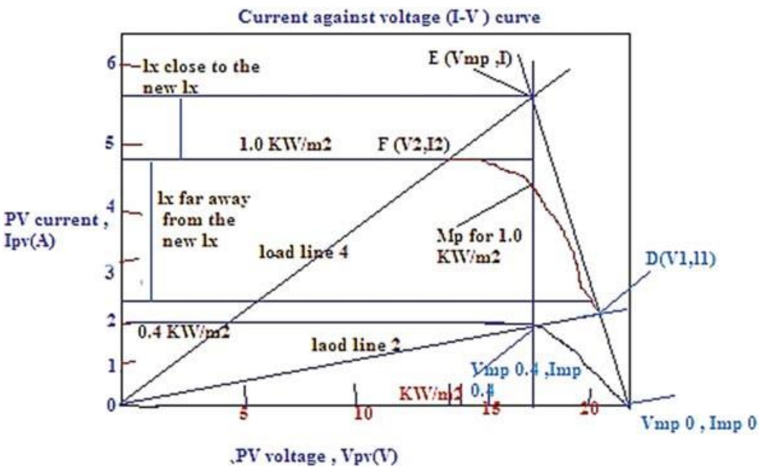


Flowchart of incremental conductance method

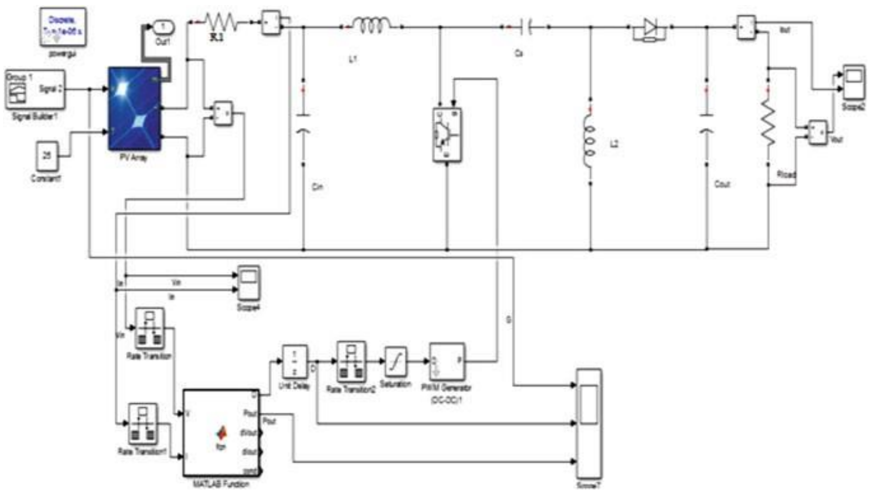
Increase the solar irradiation

ISSN PRINT 2319 1775 Online 2320 7876

Research paper **UGC CARE Listed (Group -I) Journal Volume 10, Iss 1, 2021**



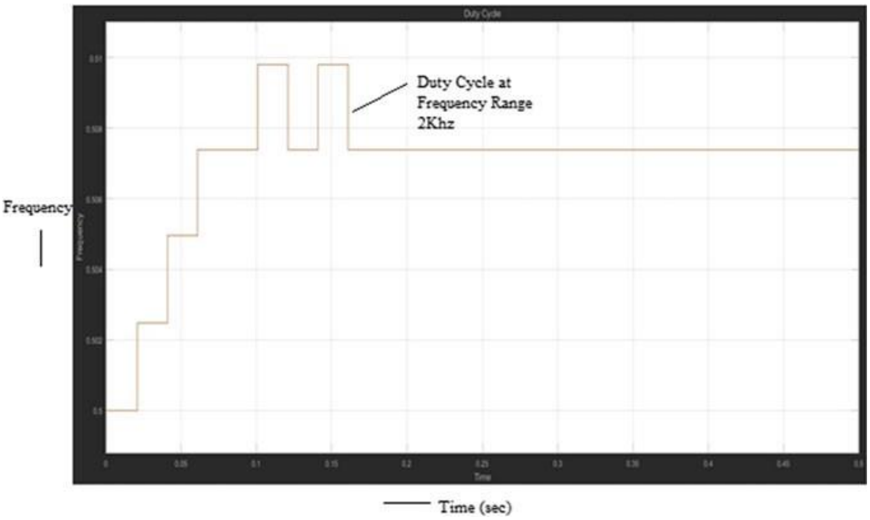
2 RESULTS AND DISCUSSION



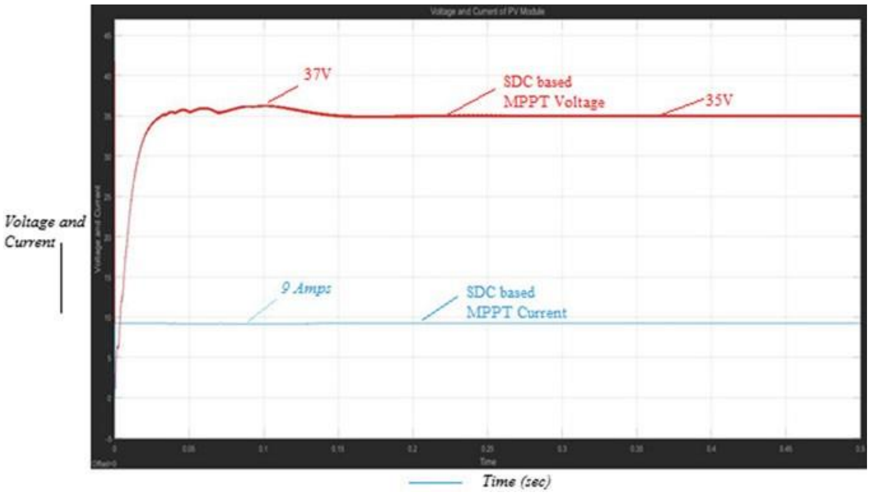
Simulink model

Duty cycle

ISSN PRINT 2319 1775 Online 2320 7876
Research paper UGC CARE Listed (Group -I) Journal Volume 10, Iss 1, 2021



Photovoltaic current and voltage



Conclusion

The suggested ICA is suitable for all brightness and temperature ranges.

The examination of PV panels using a number of characteristics aids in managing switching operations with environmental issues, hence displaying the highest level of power tracking dependability.

High impedance matching, MPPTs, and variable boosting coefficient were used to achieve high efficiency of 99%, output power of 0.98, switching losses of 4%, output energy of 100.2 Wh, and output voltage of 12 V. These results were also added as benefits for the suggested converter.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper **© 2012 IJFANS. All Rights Reserved, UGC CARE Listed (Group -I) Journal Volume 10, Iss 1, 2021**

References

1. Jyothi VM, Muni TV (2016) An optimal energy management system for PV/battery standalone system. Int J Electri Comput Eng 6(6):2538
2. Vijay Muni T, Priyanka D, Lalitha SVNL (2018) Fast Acting MPPT algorithm for soft switching interleaved boost converter for solar photovoltaic system. J Adv Res Dyn Control Syst 10, 09-Special Issue
3. Vijay Muni T, Lalitha SVNL, Krishna Suma B, Venkateswaramma B A new approach to achieve a fast acting MPPT technique for solar photovoltaic system under fast varying solar radiation. Int J Eng Technol 7(2.20):131–135