SRI VENKATESWARA

COLLEGE OF ENGINEERING AND TECHNOLOGY

Thirupachur-631203, Tiruvallur TK & DT

Approved by AICTE New Delhi & Affiliated to Anna University, Chennai

(A Telugu Minority Institution)

Date : 23.02.2022

To

Managing Director,
SPARK STABILIZERS & POWER PRODUCTS,
No - 5/528, Sathsangam Street,
Madipakkam,
Chennai- 600 091

Dear Sir,

Subject: Request for Financial Assistance of Funded Project -Reg

I am requesting to you on behalf of Sri Venkateswara College Of Engineering And Technology, specifically from the Department of Electrical and Electronics Engineering. Our institution is renowned for its dedication to excellence in engineering education and research. Our department is actively seeking opportunities to engage in funded projects that align with our academic goals and research interests. We are particularly interested in exploring projects that involve faculties and students. The funded project topic is on "**Artificial Intelligence Based Reduced Switch Multilevel Inverter For Grid Connected PV Applications**". We are looking forward to the possibility of collaborating with you and your team.

PROJECT ANALYZER – Dr. M.SIVASUBRAMANIAN / AP/EEE

Thanking you

PRINCIPAL
Sri Venkateswara College of
Engineering and Technology,
Thirupachur, Thiruvallur - 631 203

Warm regards,

PRINCIPAL
PRINCIPAL
Sri Venkateswara College of
and Technology.

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Thirupachur. Thiruvallur - 631 203

/Spark

AN ISO 9001 2015 COMPANY
SPARK STABILIZERS &POWER PRODUCTS SINCE 1998
Manufacturers of Automatic/Servo Stabilizers upto 500KvA, UPS,Inverter,step-down transformers,Inverters
Regd.office : No.5/528, Sathsangam Street, Madipakkam,Chennai 600091.
Branch/Works : Plot No. 77,VENKATESA PERUMAL 1st St., Madipakkam, Chennai 600091.
Contact Numbers : 044-42123896 / 98414 52031 / 9952023948
e-mail : sparkstabilizers@gmail.com GST : 33BHBPS3142J1ZG

Date: 25.02.2022

To,

Dr. M.SIVASUBRAMANIAN/ AP
Electrical Electronics and Engineering,
Sri Venkateswara College of Engineering and Technology,
Tiruvallur – 631 203

Respected Sir,

Sub : Acceptance of Financial Assistance for your Funded Project –Regarding

We are interested in exploring a potential collaboration with your esteemed institution on a funded project that leverages the collective expertise of us.

We are pleased to report that our company has authorized and sanctioned the amount for the project work proposal titled "Artificial **Intelligence Based Reduced Switch Multilevel Inverter For Grid Connected PV Applications** ". We provide Sum of Rupees 4, 50,000 (Four Lakhs Fifty Thousand through online payment. We anticipate doing this project in the prescribed time.

S.NO	PROJECT CO-ORDINATOR	Duration
1	Dr. M.SIVASUBRAMANIAN /AP	8 Months

Thanking you

Proprietor

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Thirupachur, Thiruvallur - 631 203

PRINCIPAL
Sri Venkateswara College of Engineering and Technology,
Thirupachur, Thiruvallur - 631 203

Name	: SIVASUBRAMANIAN M	Branch Name	: Thiruvallur
Communication Address	: 2/10, S-2, BALASUBRAMANIAN APPARTMENT,1ST CR, OSS,4TH STREET,SHANTHIPURAM,,, , TAMIL NADU, INDIA-600062	Branch sol ID	: 1838
Address Last Updated On	: 09/06/2022	Account Number	: 18380100064514
Regd. Mobile Number	: 918610826198	Customer ID	: 138762411
Email ID	: null	Account Open Date	: 09/06/2022
Type of Account	: Savings Account	Account Status	: ACTIVE
Scheme	: SB FEDSALARY	Mode of Operation	: SINGLE
IFSC	: FDRL0001838	Joint Holders	: NIL
MICR Code	: 600049025	Nomination	: REGISTERED
SWIFT Code	: FDRLINBBIBD	Currency	: INR
Effective Available Balance	: 38753.05	Date of Issue	: 21/07/2022

Statement of Account for the period 2022-07-21 to 2022-07-29

Date	Value Date	Particulars	Tran Type	Tran ID	Cheque Details	Withdrawals	Deposits	Balance	DR /CR
		Opening Balance						70	Cr
21-JUL-2022	21-JUL-2022	UPI IN/220201841849 /shankarishiva2014-1@okhd/0000	TFR	S88661615			500.00	570.00	Cr
22-JUL-2022	22-JUL-2022	UPIOUT/220318073916 /svel5008@okaxis/UPI/0000	TFR	S96661149		400.00		170.00	Dr
22-JUL-2022	22-JUL-2022	NFT/SPARK AUTOMOTIVES/456258159325/AXIS BANK	TFR	S12074852			450000.00	450170.00	Cr
28-JUL-2022	28-JUL-2022	UPI IN/220933577921 /plramu1975@okaxis/UPI/0000	TFR	S45611246			100.00	450180.00	Cr
29-JUL-2022	29-JUL-2022	UPIOUT/221048046893/euronetgpay. pay@icici/UP/5411	TFR	S58787435		19.00		450161.00	Dr
		GRAND TOTAL				419.0	450600.0		

Abbreviations Used:

CASH	: Cash Transaction	TFR	: Transfer Transaction
FT	: Fund Transfer	CLG	: Clearing Transaction
SBINT	: Interest on SB Account	MB	: Mobile Banking

DISCLAIMER: This computer generated statement contains the particulars of the transaction(s) in the account that have been updated till the time of day end operations of the CBS system of the Bank on theprevious working day and the same will not reflect the transaction(s) that have occurred in the account, if any, subsequent thereto. The Federal Bank Ltd. shall not be liable/responsible for want of fullparticulars of the transaction(s) at the time of the generation of this statement.

This is a computer generated statement which need not normally be signed. Contents of this statement will be considered correct if no error is reported within 21 days of the statement date.

****END OF STATEMENT****

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2023 International Conference on Circuit Power and Computing Technologies (ICCPCT)

Artificial Intelligence Based Reduced Switch Multilevel Inverter For Grid Connected PV Applications

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2023 International Conference on Circuit Power and Computing Technologies (ICCPCT) | 979-8-3503-3324-4/23/$31.00 ©2023 IEEE | DOI: 10.1109/ICCPCT58313.2023.10245621

Abstract— **Due to the rise in computer power, tools, and data collection, artificial intelligence (AI) is becoming more and more prevalent in diverse photovoltaic (PV) system applications. The basics of grid-connected multilevel inverters for PV systems is provided, together with information on the drivers, characteristics, evaluation criteria, topologies, modulation schemes, and selection criteria for various applications. The results of a thorough reliability investigation of basic 15L multilevel inverter (MLI) are examined in this study. The inverter is the most crucial component of a grid-connected PV system. This study provides a survey of the system topologies and grid-connected PV inverters utilized for PV systems linked to the grid.**

Key words: MPPT – Maximum Power Point Tracker, PV – Photovoltaic, ANN – Artificial Neural Network, SEPIC – Single-ended primary-inductance converter.

I. INTRODUCTION

The worldwide population is significantly impacted by global warming and environmental harm caused by an overreliance on renewable energy sources like coal, oil, and gas. Photovoltaic sources of energy are by far the greatest among renewable energy sources when thinking of how they contribute to the world's power output [1]. The photovoltaic standalone system is becoming increasingly important, especially for rural applications like solar illumination, battery charging, and PV water pumping. Given the consequences of fossil fuels on the environment and their scarcity, a movement towards using a growing amount renewable energy has emerged [2]. This has led to the widespread use of solar panels installed on residential roofs and PV farms next to country highways. Over 99% of PV installed capacity is accounted for by grid-connected solar power plants, as opposed to individual panels, that require batteries. Since all of the electricity produced by the PV plant is uploaded to the grid for immediate transfer, distribution, and use, storage are not required in grid-connected PV systems. [3].

In order to set themselves apart from rivals and gain a competitive edge in the expanding PV converter industry, makers of exclusive technology have also been driving forces behind the creation of innovative PV converter designs. This has resulted in a variety of fresh and distinctive power converter designs that have been especially created for PV applications and will be discussed in this session [4]. When employing a grid-connected inverter, the power line receives and distributes the energy produced by a PV plant directly. Compared to a stand-alone system, the configuration takes up less room and needs less maintenance because batteries and other power storage options are no longer required [5]. Due to the growing importance of grid-connected PV uses, international and national committees continually maintain a number of standard standards and rules to ensure the safety and efficient transfer of electricity into the grid [6].

The increased usage of PV inverters in residential and commercial settings has driven down losses and increased efficiency. With the intention of decreasing the size and cost, several companies have developed transformer less inverters with effective topologies and control strategies that do not detect zero crossing. This non-isolated set of converters consists of five basic kinds, commonly mentioned to as the boost, buck, buck-boost, Sepic, Cuk and zeta converters. In contrast to the boost converter, which is used for voltage step-up, the buck converter is applied for voltage step-down [7]. The buck converter's disadvantage is its slow response to fast load steps. It is necessary to compensate for error amplifiers has to take slope into consideration. The buck boost converter is employed to enhance this mistake. A more effective option is provided by buck-boost converters, which have fewer, shorter external elements. The 'Cuk converter, which has the benefit of low wave current at both the effort and the output, is similar to a buck-boost converter in that the voltages of the input and output are inverted [8].

According to the findings of earlier research, the Sepic Converter performs with an efficiency of at least 88%.Right-half plane zero, non-isolated topology, a complicated control

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Abstract

Due to the rise in computer power, tools, and data collection, artificial intelligence (AI) is becoming more and more prevalent in diverse photovoltaic (PV) system applications. The basics of grid-connected multilevel inverters for PV systems is provided, together with information on the drivers, characteristics, evaluation criteria, topologies, modulation schemes, and selection criteria for various applications. The results of a thorough reliability investigation of basic 15L multilevel inverter (MLI) are examined in this study. The inverter is the most crucial component of a grid-connected PV system. This study provides a survey of the system topologies and grid-connected PV inverters utilized for PV systems linked to the grid.

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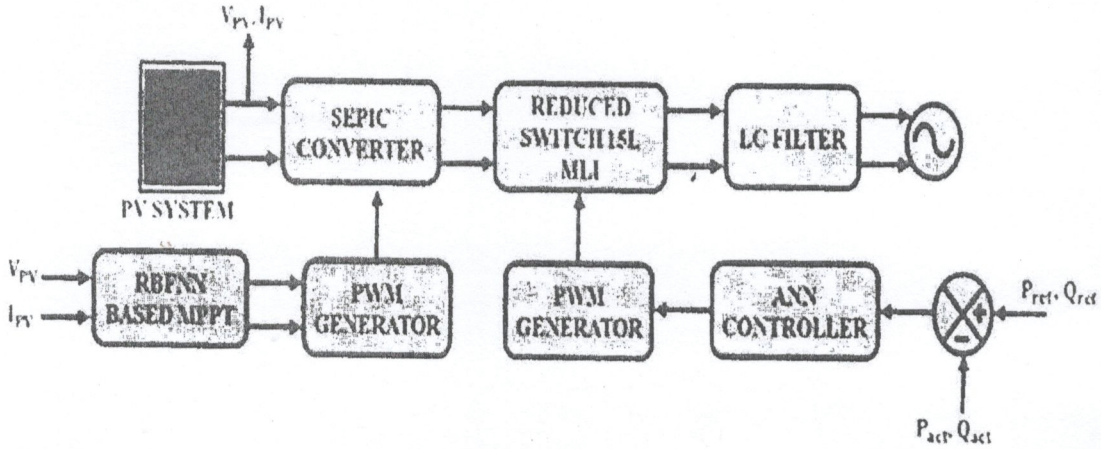
PROPOSAL LAYOUT



The PV system used for power adaptation is made up of numerous systems and similar arrangements of PV modules, a subsequent controller, and power converters like a DC-DC converter and inverter. As a result, the DC voltage produced may be improved using a DC to DC converter and converted to AC using an inverter. The Photovoltaic panel should be certain originated on the weight rating.

CONCLUSION

This project leads to the conclusion that there are many published research articles employing various AI approaches for various goals at the system level in the solar PV value chain. The most popular AI approaches are ANNs and their sub-architectures. Multilevel inverters have been briefly described in the present review to highlight the importance of grid-connected PV systems. The THD value of Sepic converter is 2.35% are simulated.

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