INDEX PAGE

3.3.2	**Number of research papers per teachers in the journals notified on International journal of aquatic science, IOP conference series website during the year 2023-2024**

S:No	Description	Page No.
1.	Certificate of head of the Institution	2
2.	Front page of the articles	5

ISO 9001:2015 Certified Institution

J.K.K.MUNIRAJAH
COLLEGE OF TECHNOLOGY
(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)
(AUTONOMOUS)

Accredited by NAAC
"A" GRADE

02485 260754 / 55
principal@jkkmct.edu.in
www.jkkmct.edu.in

Smt. VASANTHAKUMARI MUNIRAJAH
Chairman & Managing Trustee

Mrs. M.KASTHURIPRIYA MBA.,
Secretary

DR.K.SRIDHARAN Ph.D.,
Principal

DATE: 10 / 01 /2025

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the total number of research papers per teacher published during 2023-2024, the year wise details are given below:

ACADEMIC YEAR	2023-2024
NUMBER OF RESEARCH PAPERS	07

TOTAL	07

Principal
J.K.K.Munirajah College of Technology
(Autonomous)
T.N.Palayam, Gobi (Tk),
Erode (Dt) - 638 506.

3.3.2 Number of research papers per teachers in the journal notified on a year (2023-2024)

2023-2024

Title of paper	Name of the Authors	Department of the Teacher	Name of Journal	Year of Publication	ISSN Number	Link to the recognition in International journal of aquatic science, IOP conference series website /Digital Object Identifier (doi) number		
						Link to website of the journal	Link to article/paper/ abstract of the article	It is listed in --- care list/Scopus/web of science/other, intention
Drone for Weather Monitoring, Surveillance & Animal Repellent	Dr. N. Sanker	MECH	International Journal of Engineering Research & Technology (IJERT)	2024	2278-0181	https://www.ijert.org	https://www.ijert.org/research/drone-for-weather-monitoring-surveillance-animal-repellent-IJERTCONV12IS03052.pdf	Google scholar
Design and Development of an Affordable Ocean Waste Collecting Robot	Dr. N. Sanker	MECH	International Journal of Engineering Research & Technology (IJERT)	2024	2278-0181	https://www.ijert.org	https://www.ijert.org/design-and-development-of-an-affordable-ocean-waste-collecting-robot	Google scholar
Enhancing Distribution Network Efficiency with Andean Condor Algorithm-Driven Optimal Placement of Distributed Generation and Network Reconfiguration approach	Dr.C.Saravanan	EEE	Taylor & Francis	2024	1532-5008	https://www.tandfonline.com/doi/full/10.1080/15325008.2024.2343403	https://www.tandfonline.com/doi/full/10.1080/15325008.2024.2343403	Scopus

Wind power system using MPPT and sliding mode technique	Dr.C.Saravanan	EEE	International Journal of Advances in Electrical Engineering	2024	2708-4574	https://www.electricaltechjournal.com/archives/2024.v5.i2.B.77	https://www.electricaltechjournal.com/archives/2024.v5.i2.B.77	Google scholar
Single-Phase Transformer less Photovoltaic Inverter for Grid Connected System	Dr.C.Saravanan	EEE	International Journal of Innovative Research in Science, Engineering and Technology	2024	2319-8753	https://www.ijirset.com/volume-13-issue-2.html	https://www.ijirset.com/upload/2024/February/22_Single.pdf	Google scholar
An investigation of the effects of a high valence state dopant (Zr4+) and the experimental insertion of two Na+ ions in the NaVOPO4 matrix	Ms.A.M.Neelaveni	S& H (Physics)	Science direct	2023	1872-6291	https://www.sciencedirect.com/science/article/abs/pii/S156717392300192X	https://www.sciencedirect.com/science/article/abs/pii/S1567173923001 92X	Scopus
An investigation on conductivity and dielectric behaviour of neem gum blended PVA biopolymer electrolytes	Ms.A.M.Neelaveni	S& H (Physics)	Taylor & Francis	2023	2229-7928	https://www.tandfonline.com/doi/full/10.1080/15325008.2024.2343403	ttps://www.tandfonline.com/doi/abs/10.1080/22297928.2023.2263015	Scopus

Drone for Weather Monitoring, Surveillance & Animal Repellent

*[1]Dr. N. Sankar, [2]M.Thirumurugan, [3]S.Kodeeswaran, and[4]D.Mahendran
[1]Assistant Professor, [2]UGStudent, [3]UGStudent, and [4]UGStudent,
[1,2,3,4.]J.K.K.MUNIRAJAH COLLEGE OF TECHNOLOGY
Department of Mechanical Engineering,
T.N.Palayam.Erode-638506
*Email: sankarn@jkkmct.edu.in

ABSTRACT

This study delves into the conceptualization and realization of an integrated drone system engineered to perform dual functions of surveillance and weather monitoring. It intricately examines the aerodynamic construction of the drone, highlighting the pivotal equilibrium achieved between flight steadiness, payload endurance, and resilience against adverse weather conditions. Elaboration is provided on the meticulous selection of sensors tailored for surveillance, namely the camera, and those dedicated to weather monitoring, encompassing temperature and humidity sensors. Further scrutiny is directed towards elucidating the mechanisms employed for seamless real-time data transmission, imperative for continuous monitoring operations. The culmination of the project encompasses a thorough examination of the intricate challenges associated with amalgamating these multifaceted functionalities into a cohesive unit, culminating in insightful proposals for prospective developmental avenues. Beyond its technical capabilities, the project ventures into the innovative utilization of a smart audio system, leveraging sound to deter wildlife interference, thereby showcasing a multifaceted approach to modern drone applications.

Keywords: Drone Platform Integration, Surveillance-Weather Hybrid, Sensor Synergy, Real-Time Monitoring and Smart Audio Defense.

1. INDRODUCTION

In today's technological landscape, drones have emerged as indispensable tools, showcasing remarkable versatility in applications ranging from surveillance to weather monitoring [1]. The design and development of such drones necessitate meticulous attention to detail, balancing diverse functionalities to meet the demands of these specialized tasks [2]. Central to this endeavor is the creation of a lightweight yet robust frame, a fundamental element that underpins the

Design and Development of an Affordable Ocean Waste Collecting Robot

*[1]Dr. N. Sankar, [2]M.Kumaravel, [3]S.Thirunavukkarasu, and[4]M.Palanikumar
[1]Assistant Professor, [2]UGStudent, [3]UGStudent, and [4]UG Student,
[1,2,3,4,]J.K.K.MUNIRAJAH COLLEGE OF TECHNOLOGY
Department of Mechanical Engineering,
T.N.Palayam.Erode-638506
*Email: sankarn@jkkmct.edu.in

ABSTRACT

This paper addresses the critical issue of plastic and oil pollution in oceans, a major threat to marine ecosystems. The annual influx of millions of tons of plastic waste into our waterways necessitates innovative solutions. To combat this problem, we present the design and development of a cost-effective robot specifically engineered for collecting floating trash and oil from the ocean surface.Featuring a conveyor belt system and separate storage tanks for plastic and oil, the robot boasts a 10kg waste capacity and can clean an area of 3,000 square centimetres on a single 4-hour battery charge.This project signifies the convergence of robotics and environmental science, offering a promising technological solution for protecting our oceans. The affordable design and functionality make this robot a viable tool for mitigating the detrimental effects of marine pollution.

Keywords:Pollution, Oceans, Robotics Innovation and Environmentalism.

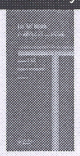
1. INTRODUCTION

Our oceans are facing an unprecedented challenge: plastic and oil pollution. Millions of tons of plastic waste enter the marine environment annually, causing devastating consequences for marine ecosystems and the health of our planet. This plastic debris entangles and suffocates wildlife, while oil spills disrupt entire food chains and contaminate vast areas. The need for innovative solutions to combat this crisis is paramount.

This paper presents the design and development of an affordable waste-collecting robot specifically engineered to tackle plastic and oil pollution in oceans. This project merges the fields of robotics and environmental science, offering a promising technological remedy for this critical issue.

1.1 The Gravity of Marine Pollution

Plastic pollution has become one of the most significant environmental threats of our time. An estimated 8 million tons of plastic enter the oceans each year, with



Electric Power Components and Systems ›
Latest Articles

Journal homepage

Research Article

Enhancing Distribution Network Efficiency with Andean Condor Algorithm-Driven Optimal Placement of Distributed Generation and Network Reconfiguration

C. Saravanan, N. Vengadachalam, P. Balakrishnan & T. K. S. Sathyanarayanan

Received 14 Aug 2023, Accepted 31 Mar 2024, Published online: 23 Apr 2024

Cite this article https://doi.org/10.1080/15325008.2024.2343403

Abstract

This research introduces an innovative methodology for optimizing placement of Distributed Generations (DGs) within distribution networks, with primary focus on reducing power losses and enhancing energy efficiency. The surge in electric power demand has necessitated integration of DGs into distribution networks, bolstering system security. However, this integration brings about structural changes and alters system parameters, such as power fluctuations, voltage profiles and fault current levels. To address these complexities, this research contributes comprehensive approach that integrates Andean Condor Algorithm (ACA) and Network Reconfiguration (NR) to optimize DG placement. The proposed methodology aims to minimize both active and reactive power losses in distribution networks. MATLAB simulations using the 69 and 33 bus distribution networks are used to thoroughly validate the system's efficacy. The suggested ACA achieves an active power loss of 120 KW and a reactive power loss of 28.66 KVAr for 33 bus system. In the same way, 69 bus system manages to achieve a 16 KVAr reactive power loss and a 92.3 KW active power loss. The results show that suggested methodology is both effective and better than popular CPSO method, which makes it valuable addition to the field of distributed generation optimization in power distribution networks.

Keywords: DG unit | ACA | CPSO | active power loss | network reconfiguration | reactive power loss

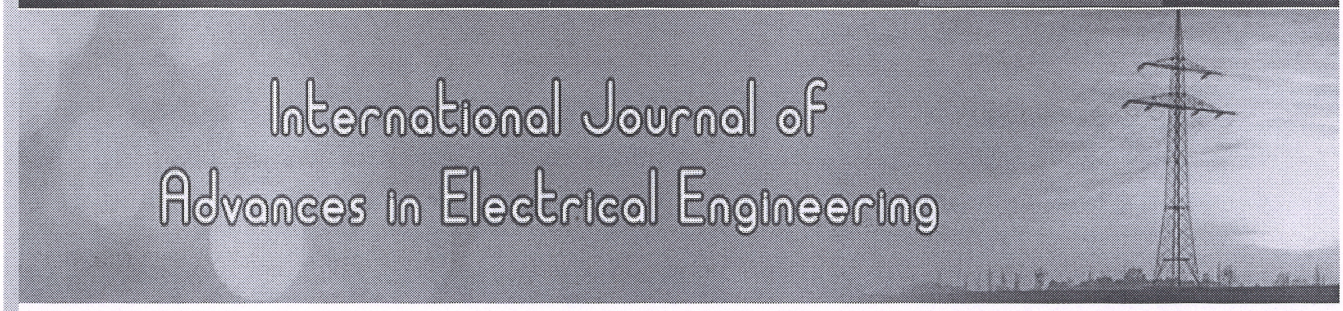
Disclosure Statement

No potential conflict of interest was reported by the author(s).

Related Research

- Printed Journal
- Refereed Journal
- Peer Reviewed Journal

P-ISSN: 2708-4574, E-ISSN: 2708-4582



International Journal of Advances in Electrical Engineering

2024, Vol. 5, Issue 2, Part B

Wind power system using MPPT and sliding mode technique

Author(s): N Mekala, C Saravanan and G Roopandurai

Abstract: Wind energy is recognized as one of the most advanced and promising renewable energy sources. To connect a Wind Energy Conversion System (WECS) to either a load or the utility grid, an essential power electronic interface is required. This interface comprises generator- and grid-side converters, and their control presents significant challenges. The primary objective of controlling the generator-side converter is to implement Maximum Power Point Tracking (MPPT). In this project, the conventional Hill Climbing Search MPPT algorithm has been refined using logic theory, which enhances its performance in both accuracy and speed. This modified algorithm enables the system to continually extract maximum energy from the wind by generating an optimal rotor speed reference. The Vienna rectifier is selected as the generator-side converter due to its substantial advantages in WECS applications. For effective speed control, a non-linear control scheme based on Sliding Mode Control (SMC) is employed, demonstrating notable benefits over traditional linear controllers. Simulation results validate the efficacy of both the control scheme and the modified MPPT algorithm. Furthermore, a comparative analysis between SMC and MPPT controllers is conducted, focusing on their speed control performance. Through innovative control strategies and algorithm enhancements, this project significantly contributes to the optimization of wind energy conversion systems, ensuring more efficient and reliable harnessing of wind power for sustainable energy generation.

Pages: 104-108 | Views: 111 | Downloads: 55

Download Full Article: Click Here

How to cite this article:

N Mekala, C Saravanan, G Roopandurai. Wind power system using MPPT and sliding mode technique. Int J Adv Electr Eng 2024;5(2):104-108.

International Journal of Innovative Research in Science, Engineering and Technology (IJIRSET)

|e-ISSN: 2319-8753, p-ISSN: 2347-6710| www.ijirset.com | Impact Factor: 8.423| A Monthly Peer Reviewed & Referred Journal |

|| Volume 13, Issue 2, February 2024 ||

| DOI:10.15680/IJIRSET.2024.1302022 |

Single-Phase Transformer less Photovoltaic Inverter for Grid Connected System

Dr.C.Saravanan.Ph.D., A.Vigneshkumar, Deivamani P

Head of Department, ME.Power Electronics and Drives, JKK Munirajah College of Technology,

Gobichettipalayam (TK), Erode (DT), India

Assistant professor, ME.Power Electronics and Drives, JKK Munirajah College of Technology,

Gobichettipalayam (TK), Erode (DT), India

ME.Power Electronics and Drives, JKK Munirajah College of Technology, Gobichettipalayam (TK),

Erode (DT), India

ABSTRACT: Single phase transformer less inverteris widely being adopted for grid connected PV systems due to their high efficiency, lower cost and high power density. However, leakage current is the main concern in these inverters which needs to be addressed carefully. Moreover, PV inverters should also be capable of injecting a definite amount of reactive power into the grid as prescribed by the international regulations. In this paper, an improved common mode voltage clamped topology with modified modulation strategy is proposed. The proposed topology offers low loss ac side decoupling, complete elimination of leakage current via clamping and reactive power generation capability. The proposed modulation technique facilitates the flow of current in order to generate zero voltage state during negative power flow.

KEYWORDS: Single-Phase Transforme, Photovoltaic Inverter, Grid Connected System

I. INTRODUCTION

The increasing power demand due to rising population along with depletion of conventional fuel sources has highlighted the importance and need of distributed power generation by renewable energy sources. Various benefits of solar photovoltaic (PV) system have led to diverse schemes for local generation of power. The main objective of a designer is to enhance the fidelity and efficiency, which is causing a tough competition among the power generating industries. Their supreme need is to supply uninterrupted power to the end users along with fast payback of the capital cost. The later issue is tackled by increasing the reliability of the system and optimizing peak power from the solar PV energy. Despite of non-linear characteristics of a solar PV array, researchers have tried to overcome the issue of extracting maximum power. Various techniques have been implemented by researchers which have been extensively reported in the literature. The most universally accepted perturb and observe (P&O)method involves continuous perturbation to the DC–DC converter till it reaches the peak power. The incremental conductance (I&C)method is another commonly used method which compares the instantaneous conductance of the array and provides continuous perturbation till MPP is reached.

II. LITERATURE SURVEY

1. PV STRING PER-MODULE MAXIMUM POWER POINT ENABLING CONVERTERS: G.R. Walker (2011): Many grid connected PV installations consist of a single series string of PV modules and a single DCAC inverter. This efficiency of this topology can be enhanced with additional low power, low cost per panel converter

Current Applied Physics 55 (2023) 64–74

Contents lists available at ScienceDirect

Current Applied Physics

journal homepage: www.elsevier.com/locate/cap

An investigation of the effects of a high valence state dopant (Zr^{4+}) and the experimental insertion of two Na^{+} ions in the $NaVOPO_4$ matrix

Neelaveni A [a], Senthil K [b], Kalaivani R [a], Nalini B [c,*], Sivakumar N [a,**]

[a] PG and Research Department of Physics, Chikkaiah Naicker College, Erode 638004, Tamil Nadu, India
[b] Department of Physics, School of Advanced Sciences, Vellore Institute of Technology – AP, Amaravati 522237, Andhra Pradesh, India
[c] Department of Physics, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore 641043, Tamil Nadu, India

ARTICLE INFO

Keywords:
Cathode material
Na ion battery
Zr-dopant
$NaVOPO_4$/$Na2V(PO_4)_2$
Electrochemical properties

ABSTRACT

In this work, we attempt to incorporate two Na atoms into the $NaVOPO_4$ matrix, which transforms the matrix into Na_2VOPO_4. To achieve this, we adjusted the phase parameters and used a facile synthesis method like the sol-gel-assisted hydrothermal technique. However, at high temperatures, the oxygen environment around the V atom changes, introducing the new phase $Na_2V(PO_4)_2$ matrix into $NaVOPO_4$. High valence state ions are required to support the active sites, keep the oxygen environment around them at a high temperature, and function well as a dopant for the NVP matrix. As a result, the Zr^{4+} is incorporated into the NVP matrix and it significantly enhances the tetragonal phases by enhancing (101), (112) planes. By substituting Zr^{4+} ion, the specific capacity of NVP is raised from 0.8268 mAh/g to 4.214 mAh/g at the scan rate of 10 mV/s.

1. Introduction

The energy requirements to sustain the urbanisation lifestyle are increasing as a result of rapid industrial development and population growth. Electrochemical energy storage devices such as Li-ion batteries and high-power supercapacitors are important in protecting the environment from the pollution caused by fossil fuels. Furthermore, smart gadgets, medical equipment, and other everyday devices are widely used and have appealing characteristics such as long cyclic life, high power density, and low cost [1–4]. The scalable parameters of lithium-ion batteries (LIBs) are high energy density (volumetric and gravimetric), wide operating temperature, and long lifetime are showing much interest in the field of energy storage devices [5,6]. Nevertheless, the limited sources of lithium over the earth's crust spikes the limitations in wide-scale applications [7]. The alternate exploration is sodium ion batteries (SIBs) due to their analogous physicochemical properties with lithium and a similar mechanism of de-intercalation for ions with LIBs is Na ion batteries [8–10]. Outstanding kinetic properties and a big capacity are essential requirements for creating high-performance SIBs. The voltage window is an important consideration when designing the high energy density cathode materials (E = QV) for SIBs because the aforementioned results are all obtained by taking into account the voltage window [11]. The voltage window is a bifocal point effectively present in V – based compound, and it will be enhanced by introducing a strong electro-negative atom (X/XO_4) between the covalent bond V–O of the synthesized matrix. This yields the results of V–*O*-(X/XO_4) anion groups and a distinctive inductive action [12]. Furthermore, the inter linkage of O atoms in terms of the covalent bond between anionic compounds results in improved heat stability, ensuring good safety properties in large-scale applications. Along with other transition metals like Fe, Mn, Cr, Co, Ti, and Ni, V has an extra booster point called the VB group, which has the valance electron layer $3d^34s^2$. Multivalent V^{2+} to V^{5+} states emerge when all five valance electrons can participate in a bonding interaction. These valence states lead to have robust electrochemical reactivity with Na^+ ions despite having a high redox potential Na^+/Na (−2.71 V) [13]. Due to the high gravimetric capacities reached by the high voltage of the V^{4+}/V^{5+} couple, the polymorphs $VOPO_4$ that work on all V^{3+}, V^{4+}, and V^{5+} redox couples are particularly noteworthy [14]. [$VOPO_4$] is constructed with infinite chains of corner-sharing VO_6 octahedral interlinked through their corners by the O (1) oxygen sites. These chains run along c-the axis and are interconnected to each other by tetrahedral [PO_4] groups, and they are found in seven different crystallographic forms such as α_1(*P4/n*), α_2 (*P4/n*), δ (*P42/mbc*), ω (*P42/mmc*),γ (*Pbam*) and three-dimensional β(*Pnma*), ε (*Cc*) which are

* Corresponding author.
** Corresponding author.
E-mail addresses: jyothsnalalin99@gmail.com (N. B), nskdnp@gmail.com (S. N).

https://doi.org/10.1016/j.cap.2023.09.001
Received 5 March 2023; Received in revised form 29 June 2023; Accepted 6 September 2023
Available online 13 September 2023

Analytical Chemistry Letters
https://www.tandfonline.com/journals/tacl
DOI: 10.1080/22297928.2023.2263015

Taylor & Francis
Taylor & Francis Group

ISSN: 2229-7928 (Print); ISSN: 2230-7532 (Online)

Research Article

An investigation on conductivity and dielectric behaviour of neem gum blended PVA biopolymer electrolytes

A. Neelaveni [1], K. Senthil [2], K. Anbazhakan [3], S.V. Tharan prabu [4], T. Preethi [4], N. Sivakumar [1]*

[1] PG and Research Department of Physics, Chikkaiah Naicker College, Erode– 638004, Tamil Nadu, India
[2] Department of Physics, School of Advanced Sciences, VIT-AP University, Amaravati – 522237, Andhra Pradesh, India.
[3] Department of Physics, Gobi Arts and Science College, Gobichettipalayam-638453, Tamil Nadu, India.
[4] Department of Physics, Bannari Amman Institute of Technology, Sathyamangalam- 638401, Tamil Nadu, India.

Corresponding Author
N. Sivakumar
nskdnp@gmail.com

Received 06 August 2023
Revised 25 September 2023
Accepted 27 September 2023

Abstract
In this article, a neem gum-based polymer electrolyte is synthesised using the solution casting approach. XRD, FTIR, and AC impedance analysis are used to investigate the structural and electrical properties of bio-gel polymer electrolytes (BGPEs) that have been synthesized. According to XRD analysis, the film is more amorphous at 60 wt % PVA: 20 wt % NG: 20 wt % $NaCF_3SO_3$ (BP2). The observed amorphous nature is due to a greater number of Na^+ and $CF_3SF_3^-$ ions coordinated with the polymer side chains' COO^- and OH^- groups. The FTIR analysis revealed the disappearance of CH_2 wagging of pure Poly (vinyl alcohol) (PVA) and shifting of stretching vibration mode of (C – N) aromatic functional group of protein of pure neem gum (NG) due to complexation of blended polymer (PVA: NG) with Na ions. The conductivity of the produced films is analysed using the conductance spectra, and the film BP2 (60 wt % PVA: 20 wt % NG: 20 wt % $NaCF_3SO_3$) is found to have the highest ionic conductivity (≈ 5.328 x 10^{-4} Scm^{-1}) at 303 K. Flexibility, hopping mechanism are well enhanced in host polymer (PVA: NG) due to the addition of ionic salt $NaCF_3SO_3$, which is clearly observed in the dielectric spectra.

Keywords
Na ion battery, biopolymer electrolyte, Neem gum, solution casting technique.

Introduction

Gel polymer electrolytes (GPEs) for high energy density rechargeable batteries are receiving a lot of attention these days because of their excellent Na^+, K^+, L^+ ions conductivity, safety, affordable cost, and versatility in design [1]. Alkali metal salts (Na, Li, K, etc.) are dissolved in organic polymers, where the K^+, Li^+, and Na^+ cations of the salt interact with the host polymer matrix and increase the ionic conductivity. The applications of synthetic-based GPE are very limited due to their undesirable crystalline structure for attaining high ionic- conductivity. The poisonous, non-biodegradability nature of synthetic-based GPEs is more hazardous to the environment and thus dumping electronic waste from GPEs based devices on the earth's crust will lead to serious issues to soil health. As a result, to increase the rate of degradation, biopolymers are preferred to replace the synthetic polymers on GPE. Recently, biopolymer-based GPEs have emerged as potential materials for electrochemical devices such as supercapacitors, dye-sensitized solar cells (DSSCs), and batteries [2,3]. Additionally, biopolymer materials are non-toxic, abundant in nature, renewable, biodegradable, economical, environmentally friendly, and easy to extract from natural sources [4,5]. Moreover, cations and anions of the dissociated ionic dopant present in the polymer electrolyte interact more with electron donor atoms like O, N, etc. in biopolymers, which is advantageous for ionic conductivity. The polymer is blended with