(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :26/03/2024

(21) Application No.202441023696 A
(43) Publication Date : 05/04/2024

(54) Title of the invention : AN INTELLIGENT AUTONOMOUS POWER MANAGEMENT FOR INTERLINKED AC-DC MICROGRIDS.

(51) International classification	:H02J3/00, H02J3/38
(86) International Application No	:NA
Filing Date	:NA
(87) International Publication No	: NA
(61) Patent of Addition to Application Number	:NA
Filing Date	:NA
(62) Divisional to Application Number	:NA
Filing Date	:NA

(71)**Name of Applicant :**
1)Dr P V Narendra Kumar
Address of Applicant :Chalapathi Institute of Engineering & Technology (Autonomous), A.R. Nagar, Mothadaka, Guntur, Andhra Pradesh,522034, India. ---------- ----------
2)Mr.S.Karthik
3)Mrs. Suma Deepthi Veeraganti
4)Mrs. Nagalla Sowjanya
5)Ms. Urlana. Meghana
6)Mr. Lanka Eshwar Sai Pavan
7)Mr. Vadla Shashidhar
8)Ms. Kallem Shravani
9)Mrs. Kunduru Anusha
Name of Applicant : NA
Address of Applicant : NA
(72)**Name of Inventor :**
1)Dr P V Narendra Kumar
Address of Applicant :Chalapathi Institute of Engineering & Technology (Autonomous), A.R. Nagar, Mothadaka, Guntur, Andhra Pradesh,522034, India. ---------- ----------
2)Mr.S.Karthik
Address of Applicant :St. Martin's Engineering College,Dhulapally, Kompally, Secunderabad,Telangana, 500100,India.. ---------- ----------
3)Mrs. Suma Deepthi Veeraganti
Address of Applicant :G.Narayanamma Institute of technology and science for women, Shaikpet , Hyderabad, Telangana,500104,India. ---------- ----------
4)Mrs. Nagalla Sowjanya
Address of Applicant :Aditya Institute of Technology and Management, K Kotturu,Tekkali,Srikakulam, Andra Pradesh, 532201, India. ---------- ----------
5)Ms. Urlana. Meghana
Address of Applicant :St. Martin's Engineering College,Dhulapally, Kompally, Secunderabad,Telangana, 500100,India.. ---------- ----------
6)Mr. Lanka Eshwar Sai Pavan
Address of Applicant :St. Martin's Engineering College,Dhulapally, Kompally, Secunderabad,Telangana, 500100,India. ---------- ----------
7)Mr. Vadla Shashidhar
Address of Applicant :St. Martin's Engineering College,Dhulapally, Kompally, Secunderabad,Telangana, 500100,India. ---------- ----------
8)Ms. Kallem Shravani
Address of Applicant :St. Martin's Engineering College,Dhulapally, Kompally, Secunderabad,Telangana, 500100,India. ---------- ----------
9)Mrs. Kunduru Anusha
Address of Applicant :St. Martin's Engineering College,Dhulapally, Kompally, Secunderabad,Telangana, 500100,India. ---------- ----------

(57) Abstract :
The transition towards sustainable transportation infrastructure has spurred the development of innovative solutions to integrate renewable energy sources with electric vehicle (EV) charging operations. In this idea, we propose a novel three-phase hybrid converter system designed specifically for PV electric vehicle charging stations. This system aims to optimize the utilization of solar energy for EV charging while ensuring grid stability, reliability, and cost-effectiveness. Key features of the proposed system include advanced power electronics, sophisticated control algorithms, and intelligent energy management strategies. The system enables bidirectional power flow between the PV array, the electric grid, and the EV battery, allowing for efficient energy conversion and grid interaction. Through dynamic load balancing, maximum power point tracking (MPPT), and grid interaction control, the system optimizes energy utilization, minimizes environmental impact, and reduces overall operational costs. Furthermore, the system offers scalability, adaptability, and interoperability, facilitating easy integration into existing charging infrastructure and future expansion to meet growing demand. The proposed three-phase hybrid converter system represents a significant advancement in sustainable transportation infrastructure, paving the way for a cleaner, greener, and more resilient future of electric transportation. This invention presents an intelligent autonomous power management system tailored for interlinked AC-DC microgrids, designed to revolutionize the management and distribution of energy resources. Integrating cutting-edge control algorithms and real-time monitoring capabilities, the system dynamically orchestrates the operation of various distributed energy resources (DERs) including solar panels, wind turbines, batteries, and electric vehicles (EVs). By forecasting energy demand, predicting renewable energy generation, and optimizing the scheduling of DERs, it ensures efficient energy utilization while seamlessly interacting with the main power grid to enhance stability and resilience. Its scalable and adaptable architecture allows for easy integration of new DERs and expansion to additional microgrids, ensuring flexibility and responsiveness to evolving grid dynamics. With its focus on cost optimization and renewable energy utilization, this innovative system represents a significant step towards a sustainable and decentralized energy infrastructure.

No. of Pages : 10 No. of Claims : 5