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## Patent Search

Invention Title	Power quality enhancement of solar based microgrids using machine learning & Artificial intelligence Techniques.
Publication Number	41/2022
Publication Date	14/10/2022
Publication Type	INA
Application Number	202241056665
Application Filing Date	03/10/2022
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	COMPUTER SCIENCE
Classification (IPC)	G06N0020000000, H02J0013000000, H02J0003380000, H02J0003060000, H02J0003010000

### Inventor

Name	Address	Country	Nat
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### Applicant

Name	Address	Country	Nat
Dr P Ashok Babu	Professor and Head, Department of Electronics and Communication Engineering, Institute of Aeronautical Engineering, Dundigal, Hyderabad p.ashokbabu@iare.ac.in	India	Indi

### Abstract:

ABSTRACT [1] Our Invention "Power quality enhancement of solar based microgrids using machine learning artificial intelligence techniques." has been claimed. Traditional systems are very complex, and their analysis and control primarily depend on physical modeling and numerical calculations. With the development of smart grids with the penetration of environmentally friendly renewable energy and micro grids, the transition of the traditional power grid to smart grid systems exposed more uncertainties a problems of the complex environment. Meanwhile, the current power system uses old infrastructure, which adds more uncertainties to the modern smart grid systems. B the communication network builds on power systems, very large volumes of data with high variability must be handled; this is still a challenge of smart grids. Additionally, innovationners are still working on the robustness, adaptiveness, and online processing of AI algorithms. Although numerous data-driven methods have been proposed to with the problems of smart grids, there are still many severe challenges, including the following The Smart Grid (SG) is treated as the next level of modern power system w uses the bilateral flow of power and information. The ability of the smart grid for two-way communication amid the utility and consumers makes the grid smart. For prope functioning, all the elements and parameters associated with it should work effectively and efficiently. Power Quality (PQ) is an important issue related to a modern power system. In this paper, more focus is given on PQ improvement in the microgrid (MG) system (which is a part of SG) using shunt hybrid filters (SHF). Converter-based loads i increasing due to their numerous advantages such as easy control, modularity and reduced cost. Converters suffer from reactive power consumption and generate harmc that are injected into the system. A solar energy conversion system has been used in this study for the compensation of both load harmonics and load reactive power alor injection of the power generated. Machine Learning model are carried out for the testing and validation of the same. Results depict the successful operation of the solar e conversion system with grid support and enhancement of power quality using machine learning artificial intelligence techniques.

## Complete Specification

Description:FIELD OF THE INVENTION

[2] Our Invention is related to power quality enhancement of solar based micro grids using machine learning artificial intelligence techniques.

BACKGROUND OF THE INVENTION

[2] The concept of the smart grid is transitioning the traditional electric power grid from an electromechanically controlled system to an electronically controlled network. These smart grid technologies have changed the conventional grid planning and operation problems in at least three main areas, primarily in the ability to (a) monitor or measure processes, communicate data back to operation centers, and often respond automatically to adjust a process; (b) share data among devices and systems; and (c) process, analyze, and help operators access and apply the data coming from digital technologies throughout the grid.

[3] AI and the term ML is sometimes used interchangeably with AI. However, ML is just one way to achieve AI systems. Other broader ways to achieve AI systems are neural networks, robotics, expert systems (ES), fuzzy logic (FL), and natural language processing. Overall, AI techniques enable decision making with speed and accuracy. In smart grid applications, AI can be defined as the mimicking of grid operators' cognitive functions by computers to achieve self-healing capabilities. However, AI might not be able to replace grid operators in some cases.

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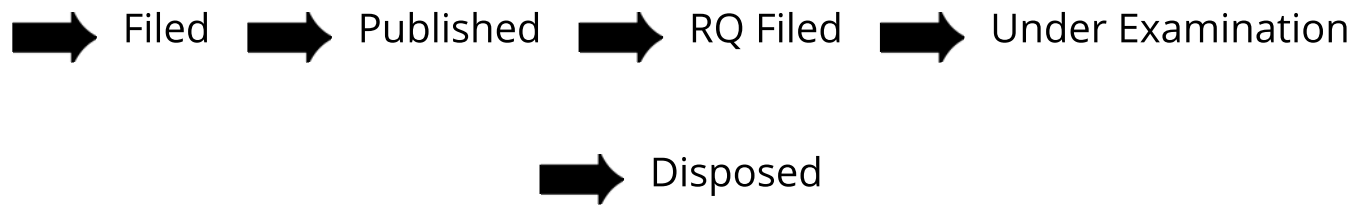
#### Application Details

APPLICATION NUMBER	202241056665
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	03/10/2022
APPLICANT NAME	<b>Dr P Ashok Babu</b>
TITLE OF INVENTION	Power quality enhancement of solar based microgrids using machine learning & Artificial intelligence Techniques.
FIELD OF INVENTION	COMPUTER SCIENCE
E-MAIL (As Per Record)	dr.bksarkar2003@yahoo.in
ADDITIONAL-EMAIL (As Per Record)	p.ashokbabu@iare.ac.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	14/10/2022

#### Application Status

APPLICATION STATUS	<b>Awaiting Request for Examination</b>
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<b>FORM 1</b> THE PATENTS ACT 1970(39 of 1970) & The Patents Rules, 2003 APPLICATION FOR GRANT OF PATENT (See sections 7, 54 & 135 and rule 20(1))	<b><u>(FOR OFFICE USE ONLY)</u></b> Application No: Filing Date Amount of Fees Paid: CBR NO: Signature:
1. APPLICANTS REFERENCE / IDENTIFICATION NO. (AS ALLOTTED BY OFFICE)	

**2. TYPE OF APPLICATION [Please tick (✓) at the appropriate category]**

<b>Ordinary (✓)</b>		Convention ( )		PCT-NP ( )	
Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )

**3A. APPLICANT(S):**

Name	Nationality	Address
Dr P Ashok Babu	AN INDIAN NATIONAL	Professor and Head, Department of Electronics and Communication Engineering, Institute of Aeronautical Engineering, Dundigal, Hyderabad p.ashokbabu@iare.ac.in

**3B. CATEGORY OF APPLICANT [Please tick (✓) at the appropriate category]**

<b>Natural Person (✓)</b>	Other than Natural Person ( )		
	Small Entity ( )	Startup ( )	Others ( )

**4. INVENTOR(S): [Please tick (✓) at the appropriate category]**

<b>Are all the inventor(s) same as the applicant(s) named above?</b>	<b>Yes (✓)</b>	<b>No ( )</b>
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If "No", furnish the details of the inventor(s) N.A

Name	Nationality	Country of Residence	Address
NA	NA	NA	NA

**5. TITLE OF THE INVENTION:**

**Power quality enhancement of solar based microgrids using machine learning & Artificial intelligence Techniques.**

<b>6. AUTHORISED REGISTERED PATENT AGENT(S)</b>		NA
<b>ADDITIONAL PATENT AGENTS</b>	NA	

<b>7. ADDRESS FOR SERVICE OF APPLICANT/ PATENT AGENT(S) IN INDIA</b> Dr P Ashok Babu Address Professor and Head, Department of Electronics and Communication Engineering, Institute of Aeronautical Engineering, Dundigal, Hyderabad p.ashokbabu@iare.ac.in	Mobile No.: 8059794469 E-mail: <a href="mailto:dr.bksarkar2003@yahoo.in">dr.bksarkar2003@yahoo.in</a>  p.ashokbabu@iare.ac.in
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**8. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN CONVENTION COUNTRY, PARTICULARS OF CONVENTION APPLICATION: N.A**

Country	App. Number	Filing Date	Name of the Applicant	Title of the Invention	IPC (as classified in the convention country)
NA	NA	NA	NA	NA	NA

**9. IN CASE OF PCT NATIONAL PHASE APPLICATION, PARTICULARS OF INTERNATIONAL APPLICATION FILED UNDER PATENT CO-OPERATION TREATY (PCT):**

International application number	International filing date as allotted by the receiving office.
NA	NA

**10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS OF ORIGINAL (FIRST) APPLICATION: N.A**

Original (first) application number	Date of filing of Original (first) application
N.A.	N.A.

**11. IN CASE OF PATENT OF ADDITION FILED UNDER SECTION 54, PARTICULARS OF MAIN APPLICATION OR PATENT: N.A**

Main application / patent Number	Date of filing of main application
N.A.	N.A.

**12. DECLARATIONS:**

**(i) Declaration by the Inventor:**

**(In case the applicant is an assignee:** the inventor(s) may sign herein below or the applicant may upload the assignment or enclose the assignment

with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period).

We, the above named inventor is the true & first inventor for this invention and declare that the applicant herein is my assignee or legal representative:

**NA**

**(ii) Declaration by the applicant/s in the convention country:**  
**(In case the applicant in India is different than the applicant in the convention country:** the applicant in the convention country may sign herein below or applicant in India may upload the assignment from the applicant in the convention country or enclose the said assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period)

I/~~We~~, the applicant(s) in the convention country declare that the applicant(s) herein is/~~are~~ my/~~our~~ assignee or legal representative. : **N.A.**

**(iii) Declaration by the applicants:**

We, the applicants hereby declare that: -

1. We are in possession of the above-mentioned invention.
2. The **Complete Specification** relating to the invention is filed with this application.
3. The invention as disclosed in the specification uses the biological material from India and the necessary permission from the competent authority shall be submitted by us before the grant of patent to us: **N.A.**
4. There is no lawful ground of objection to the grant of the patent to me/ us.
5. We are the assignees or legal representatives of true and first inventors:
6. The application or each of the applications, particulars of which are given in Para - 8 was the first application in convention country/countries in respect of our invention: **N.A.**
7. We claim the priority from the above mentioned application filed in convention country/countries and state that no application for protection in respect of the invention had been made in a convention country before that date by us or by any person from which we derive the title: **YES**
8. Our application in India is based on international application under Patent Cooperation Treaty (PCT) as mentioned in Para-9: **N.A.**
9. The application is divided out of our application particulars of which is given in Para-10 and prays that this application may be treated as deemed to have been filed on N.A. Under sec.16 of the Act: **N.A.**
10. The said invention is an improvement in or modification of the invention particulars of which are given in Para-11: **N.A.**

**FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION**

**(a) Form 2**

Item	Details	Fee	Remarks
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Complete specification) #	No. of pages:		
Claim(s)	No. of claims: No. of pages:		
Abstract	No. of pages:		
Drawing(s)	No. of drawings: No. of pages:		

# In case of a complete specification, if the applicant desires to adopt the drawings filed with his provisional specification as the drawings or part of the drawings for the complete specification under rule 13(4), the number of such pages filed with the provisional specification are required to be mentioned here.

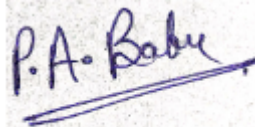
1. Complete specification (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies) **N.A**
2. Sequence listing in electronic form **N.A**
3. Drawings (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies) **N.A**

total fee Rs ..... /- in **€ash/ Banker's Cheque /Bank Draft bearing No.....**

**Date.....on..... Bank.**

We hereby declare that to the best of my knowledge, information and belief the facts and matters stated herein are correct and I request that a patent may be granted to me for the said invention.

Dated this on 3<sup>rd</sup> Day of October , 2022

  
**Dr P Ashok Babu**

To,  
The Controller of Patent,  
The Patent Office,  
DELHI/MUMBAI/CHENNAI/KOLKATA