

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :18/02/2021

(21) Application No.202141006879 A

(43) Publication Date : 26/02/2021

(54) Title of the invention : AN EFFECTIVE AND RELIABLE GRID CONNECTED PV SYSTEM WITH BATTERY FOR UNINTERRUPTED SUPPLY TO LOADS

(51) International classification :H02J0009060000,
H02J0003380000,
H02J0007350000,
H02J0003460000,
E01C0009000000

(31) Priority Document No :NA
(32) Priority Date :NA
(33) Name of priority country :NA
(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. M.Mohammadha Hussaini

Address of Applicant :Associate Professor, Department of Electrical and Electronics Engineering, Institute of Road and Transport Technology, Erode, Tamil Nadu, India. Pin Code: 638316 Tamil Nadu India

2)Dr. Reddappa Hosur Nanji Reddy

3)Dr.M.Premkumar

4)Mrs.A.Manjula

5)Dr.N.Padmaja

6)Mr.Praveen Math

7)Dr.Vinjamuri Venkata Hari Babu

8)Mrs.Manmeet Anup Bhange

9)Mrs.M.Sarojini Devi

10)Dr.Ramu Inala

(72)Name of Inventor :

1)Dr. M.Mohammadha Hussaini

2)Dr. Reddappa Hosur Nanji Reddy

3)Dr.M.Premkumar

4)Mrs.A.Manjula

5)Dr.N.Padmaja

6)Mr.Praveen Math

7)Dr.Vinjamuri Venkata Hari Babu

8)Mrs.Manmeet Anup Bhange

9)Mrs.M.Sarojini Devi

10)Dr.Ramu Inala

(57) Abstract :

The rapid growth in the population, technology, and industrialization warning the world about global warming due to the increasing electricity usage, and decreasing the usage of non-renewable energy sources. The Photovoltaic (PV) generating system is a non-conventional, Renewable Energy Source for generating electricity at present and is electricity generating grid connected solar power system. The uninterrupted electricity supply is the challenge while using the critical loads such as operation theaters in hospitals, radar equipment for airports, and emergency lighting systems etc. The present invention disclosed herein is an Effective and Reliable Grid Connected PV System with Battery for Uninterrupted Supply to Loads comprising of: PV Source (201); DC Regulator (202); Inverter (203); Dual Converter (204); Grid (205); Battery (206); Inverter/Rectifier (207); Critical Load (208); can supply the uninterrupted electricity effectively to the critical loads. The present invention uses a Zero Crossing Detector along with the Phase Locked Loop (ZCD-PLL) for synchronization between the PV System and Grid to reduce the electricity loss during the transition between the sources of electricity. The present invention disclosed herein uses the electricity transitions between PV System, Grid, and Battery to the critical loads. The present invention disclosed herein is implemented and tested in Matlab/Simulink environment by modeling a 290V PV System.

No. of Pages : 15 No. of Claims : 9

Home (<http://ipindia.nic.in/index.htm>) About Us (<http://ipindia.nic.in/about-us.htm>) Who's Who (<http://ipindia.nic.in/whos-who-page.htm>)
 Policy & Programs (<http://ipindia.nic.in/policy-pages.htm>) Achievements (<http://ipindia.nic.in/achievements-page.htm>)
 RTI (<http://ipindia.nic.in/right-to-information.htm>) Feedback (<https://ipindiaonline.gov.in/feedback>) Sitemap (<http://ipindia.nic.in/itemap.htm>)
 Contact Us (<http://ipindia.nic.in/contact-us.htm>) Help Line (<http://ipindia.nic.in/helpline-page.htm>)

Skip to Main Content Screen Reader Access (<screen-reader-access.htm>)



(<http://ipindia.nic.in/index.htm>)



(<http://ipindia.nic.in/inc>)

Patent Search

Invention Title	AN EFFECTIVE AND RELIABLE GRID CONNECTED PV SYSTEM WITH BATTERY FOR UNINTERRUPTED SUPPLY TO LOADS
Publication Number	09/2021
Publication Date	26/02/2021
Publication Type	INA
Application Number	202141006879
Application Filing Date	18/02/2021
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	ELECTRICAL
Classification (IPC)	H02J0009060000, H02J0003380000, H02J0007350000, H02J0003460000, E01C0009000000

Inventor

Name	Address	Country	Nat
Dr. M.Mohammadha Hussaini	Associate Professor, Department of Electrical and Electronics Engineering, Institute of Road and Transport Technology, Erode, Tamil Nadu, India. Pin Code: 638316	India	Indi
Dr. Reddappa Hosur Nanji Reddy	Associate Professor, Department of Mechanical Engineering, Bangalore Institute of Technology, K. R. Road, V. V. Pura, Bengaluru, Karnataka, India. Pin Code:560 004	India	Indi
Dr.M.Premkumar	Assistant Professor, Department of Electrical and Electronics Engineering, GMR Institute of Technology, Rajam, Srikakulam, Andhra Pradesh, India. Pin Code:532127	India	Indi
Mrs.A.Manjula	Associate Professor, Department of EEE, Mohamed Sathak Engineering College, Sathak Nagar, Kilakarai, Tamil Nadu, India. Pin Code:623806	India	Indi
Dr.N.Padmaja	Professor, Department of ECE, Sree Vidyanikethan Engineering College, Rangampet, Tirupati, Andhra Pradesh, India. Pin Code:517102	India	Indi
Mr.Praveen Math	Assistant Professor, School of Mechanical Engineering, REVA University, Bengaluru, Karnataka, India. Pin Code:560064	India	Indi
Dr.Vinjamuri Venkata Hari Babu	Assistant Professor, Department of Physics, Bapatla Engineering College, Bapatla, Guntur (District), Andhra Pradesh, India. Pin Code : 522 102	India	Indi
Mrs.Manmeet Anup Bhange	PGT Physics, Aspire International School, Nagpur, Maharashtra, India. Pin Code: 441108	India	Indi
Mrs.M.Sarojini Devi	Professor, Department of EEE, Mohamed Sathak Engineering College, Sathak Nagar, Kilakarai, Tamil Nadu, India. Pin Code:623806	India	Indi
Dr.Ramu Inala	Associate Professor, Department of Mechanical Engineering, Vishnu Institute of Technology, Bhimavaram, Andhra Pradesh, India. Pin Code: 534202	India	Indi

Applicant

Name	Address	Country	Nat
Dr. M.Mohammadha Hussaini	Associate Professor, Department of Electrical and Electronics Engineering, Institute of Road and Transport Technology, Erode, Tamil Nadu, India. Pin Code: 638316	India	Indi
Dr. Reddappa Hosur Nanji Reddy	Associate Professor, Department of Mechanical Engineering, Bangalore Institute of Technology, K. R. Road, V. V. Pura, Bengaluru, Karnataka, India. Pin Code:560 004	India	Indi
Dr.M.Premkumar	Assistant Professor, Department of Electrical and Electronics Engineering, GMR Institute of Technology, Rajam, Srikakulam, Andhra Pradesh, India. Pin Code:532127	India	Indi
Mrs.A.Manjula	Associate Professor, Department of EEE, Mohamed Sathak Engineering College, Sathak Nagar, Kilakarai, Tamil Nadu, India. Pin Code:623806	India	Indi
Dr.N.Padmaja	Professor, Department of ECE, Sree Vidyanikethan Engineering College, Rangampet, Tirupati, Andhra Pradesh, India. Pin Code:517102	India	Indi
Mr.Praveen Math	Assistant Professor, School of Mechanical Engineering, REVA University, Bengaluru, Karnataka, India. Pin Code:560064	India	Indi
Dr.Vinjamuri Venkata Hari Babu	Assistant Professor, Department of Physics, Bapatla Engineering College, Bapatla, Guntur (District), Andhra Pradesh, India. Pin Code : 522 102	India	Indi
Mrs.Manmeet Anup Bhange	PGT Physics, Aspire International School, Nagpur, Maharashtra, India. Pin Code: 441108	India	Indi
Mrs.M.Sarojini Devi	Professor, Department of EEE, Mohamed Sathak Engineering College, Sathak Nagar, Kilakarai, Tamil Nadu, India. Pin Code:623806	India	Indi
Dr.Ramu Inala	Associate Professor, Department of Mechanical Engineering, Vishnu Institute of Technology, Bhimavaram, Andhra Pradesh, India. Pin Code: 534202	India	Indi

Abstract:

The rapid growth in the population, technology, and industrialization warning the world about global warming due to the increasing electricity usage, and decreasing the non-renewable energy sources. The Photovoltaic (PV) generating system is a non-conventional, Renewable Energy Source for generating electricity at present and is electricity generating grid connected solar power system. The uninterrupted electricity supply is the challenge while using the critical loads such as operation theaters in hospitals, radar equipment for airports, and emergency lighting systems etc. The present invention disclosed herein is an Effective and Reliable Grid Connected PV System with Battery for Uninterrupted Supply to Loads comprising of: PV Source (201); DC Regulator (202); Inverter (203); Dual Converter (204); Grid (205); Battery (206); Inverter/Rectifier (207); Critical Load (208); can supply the uninterrupted electricity effectively to the critical loads. The present invention uses a Zero Crossing Detector along with the Phase Locked Loop PLL for synchronization between the PV System and Grid to reduce the electricity loss during the transition between the sources of electricity. The present invention disclosed herein uses the electricity transitions between PV System, Grid, and Battery to the critical loads. The present invention disclosed herein is implemented and tested in Matlab/Simulink environment by modeling a 290V PV System.

Complete Specification

- Claims:1. An Effective and Reliable Grid Connected PV System with Battery for Uninterrupted Supply to Loads comprising of: PV Source (201); DC Regulator (202); Inverter (203); Dual Converter (204); Grid (205); Battery (206); Inverter/Rectifier (207); Critical Load (208); can supply the uninterrupted electricity effectively to the critical loads.
2. An Effective and Reliable Grid Connected PV System with Battery for Uninterrupted Supply to Loads as claimed in claim 1, wherein it uses Photovoltaic cells in PV Array which are connected in parallel and as well as in series. The parallel connected PV cells are responsible for the current in the module and series connected PV cells are responsible for voltage generation in the module.
3. An Effective and Reliable Grid Connected PV System with Battery for Uninterrupted Supply to Loads as claimed in claim 1, wherein it uses the DC-DC conversion of the PV array is used to generate the output voltage at the desired level to track the Control Unit.
4. An Effective and Reliable Grid Connected PV System with Battery for Uninterrupted Supply to Loads as claimed in claim 1, wherein it uses Dual Converter (204) is a bidirectional converter used to drive the power from the PV system to the Grid (205) and from the Grid (205) to the Critical Load (208).
5. An Effective and Reliable Grid Connected PV System with Battery for Uninterrupted Supply to Loads as claimed in claim 1, wherein it uses Zero Crossing Detector along with the Phase Locked Loop (ZCD-PLL) for synchronization between the PV System and Grid to reduce the electricity loss during the transition between the sources of electricity.
6. An Effective and Reliable Grid Connected PV System with Battery for Uninterrupted Supply to Loads as claimed in claim 1, wherein when there is sufficient solar radiation to the PV system and then PV System can drive the Critical Loads such as operation theaters in hospitals, radar equipment for airports, and emergency lighting systems.

[View Application Status](#)



Terms & conditions (<http://ipindia.gov.in/terms-conditions.htm>) Privacy Policy (<http://ipindia.gov.in/privacy-policy.htm>)

Copyright (<http://ipindia.gov.in/copyright.htm>) Hyperlinking Policy (<http://ipindia.gov.in/hyperlinking-policy.htm>)

Accessibility (<http://ipindia.gov.in/accessibility.htm>) Archive (<http://ipindia.gov.in/archive.htm>) Contact Us (<http://ipindia.gov.in/contact-us.htm>)

Help (<http://ipindia.gov.in/help.htm>)

Content Owned, updated and maintained by Intellectual Property India, All Rights Reserved.

