

BIO-DATA

- 1. Name of the Applicant** : Dr. Monalisa Pattnaik
Full correspondence address : **Associate Professor**
Department of Electrical Engineering
National Institute of Technology Rourkela,
Rourkela, Odisha, Pin: 769008.
- 2. Email(s) and contact number(s)** : pattnaikm@nitrkl.ac.in, monalisa.pattnaik@gmail.com
0661-2462423(O), 08895381976 (M)
- 3. Institution** : National Institute of Technology Rourkela
- 4. Date of Birth** : 23-08-1977
- 5. Gender (M/F/T)** : F
- 6. Category (Gen/SC/ST/OBC)** : Gen
- 7. Whether differently abled (Yes/No)** : No

8. Educational Qualifications (Undergraduate Onwards):

Degree	Year	Subject	Institution / University	% of Marks
B. Tech.	1999	Electrical Engineering	CET, Bhubaneswar	74.8 %
M. Tech.	2006	Electrical Engineering (Machine Drives and Power Electronics)	IIT Kharagpur	8.6/10 (CGPA)
Ph. D.	2013	Electrical Engineering	IIT Kharagpur	NA

9. Ph.D thesis title, Guide's Name, Institute/Organization/University, Year of Award

Ph. D. Thesis Title	Name of Supervisor	Institute	Year of Award
Speed Sensorless Control of a Stand-alone Variable Speed Constant Frequency Double Output Induction Generator with Nonlinear and Unbalanced Loads	Prof. D. Kastha	Indian Institute of Technology Kharagpur	2013

10. Details of employment (in chronological order)

Sl. No.	Position held	Name of the Institute	From	To
1	Lecturer (Part Time)	CET, Bhubaneswar	Oct. 1999	Nov. 2000
2	Lecturer	ITB, Bhubaneswar	Nov., 2000	Feb. 2002
3	Lecturer	COEB, Bhubaneswar	Feb. 2002	June 2002
4	Lecturer	ITER, Bhubaneswar	June 2002	July 2006
5	Sr. Lecturer	ITER, Bhubaneswar	July 2006	April 2007
6	Asst. Professor	ITER, Bhubaneswar	April 2007	July 2008
7	Asst. Professor (AGP:6000)	NIT Rourkela	July 2012	May 2013
8	Asst. Professor (AGP:7000)	NIT Rourkela	May 2013	Feb. 2018
9	Asst. Professor Grade-I	NIT Rourkela	Feb. 2018	Mar. 2023
10	Associate Professor	NIT Rourkela	Mar. 2023	Continuing

11. Professional Recognition/ Award/ Prize/ Certificate, Fellowship received

Sl. No.	Name of Award	Awarding Agency	Year
1.	POSOCO Power System Award	POSOCO & FITT, IIT Delhi	2013
2.	Fellowship during Ph. D. program	MHRD Govt. of India	2008-2012
3.	Elevated to Senior Member IEEE	IEEE	2019
4.	Best Oral Paper Presentation Award for student paper at IEEE Conference IEMRE - 2022	IEMRE - 2022	2022

12. Publications (List of papers published in SCI/Scopus Journals, in year wise descending order)

Sl.No	Author(s)	Title	Name of Journal	Vol., No.	Page	Year
1.	B. Mendi, M. Pattnaik and S. Gopalakrishna	Design, Analysis and Adaptive MPPT Control of Small Scale Wind Turbine System	International Journal of Circuit Theory and Applications, Willey	Early Access	1-15	2023
2.	J. Mishra, P.K. Behera, M. Pattnaik , and B. Chitti Babu	A Multi-agent Petri Net Model Power Management Strategy for Wind-Solar-Battery driven DC Microgrid	Sustainable Energy Technologies and	55	102859	2023

			Assessments, Elsevier			
3.	J. Mishra and M. Pattnaik	On-line Assessment of Wind Turbine Emulator with Pitch Control Mechanism	Energy Systems, Springer	Early Access	1-18	2022
4.	J. Mishra, P.K. Behera, M. Pattnaik , and S. Samanta	An Efficient Supervisory Power Management Scheme for a Wind-battery Assisted Hybrid Autonomous System	IEEE Systems Journal	17,1	768-779	2023
5.	A. Rath, S. Gopalakrishna and M. Pattnaik	An advanced virtual flux integrated multifold table-based direct power control with delay compensation for active front-end rectifiers	Inter. Trans. on Electrical Energy Systems	31,12	e13174	2021
6.	J. Mishra, S. Das, D. Kumar, and M. Pattnaik	A Novel Auto-tuned Adaptive Frequency and Adaptive Step-size Incremental Conductance MPPT Algorithm for Photovoltaic System	Inter. Trans. on Electrical Energy Systems	31, 10	e12813	2021
7.	A.Rath, A. Kumar, S. Gopalakrishna and M. Pattnaik	Power Quality Improvement using 18 sector Algorithm based Direct Power Control	Inter. Trans. on Electrical Energy Systems	31,10	e12784	2021
8.	P. K. Behera, M. Balaji, S. K. Sarangi, and M. Pattnaik	Robust wind turbine emulator design using sliding mode controller	Renewable Energy Focus, Elsevier	36	79-88	2021
9.	J. Mishra, M. Pattnaik , and S. Samanta	Drift Free Perturb and Observe MPPT Algorithm with Improved Performance for SEIG based Stand-alone Wind Energy Generation System	IEEE Trans. on Power Electronics	35,6	5842-5849	2019
10.	D. Verma, J.Mishra, and M. Pattnaik	Output voltage based adaptive step size MPPT controller with improved dynamics for stand-alone photovoltaic system	Journal of Renewable and Sustainable Energy-AIP	10,4	043505 - 1-13	2018
11.	M. Pattnaik , D. Kastha	Harmonic compensation with zero sequence load voltage control in a speed sensorless DFIG based stand-alone VSCF generating system	IEEE Trans. on Industrial Electronics	60,12	5506-5514	2013
12.	M. Pattnaik , D. Kastha	Unbalance and harmonic voltage compensation for a stand-alone variable speed constant frequency double-output induction generator supplying non-linear and unbalanced loads	IET Eclectic Power Applications	7,1	27 - 38	2013
13.	M. Pattnaik , D. Kastha	Adaptive speed observer for a stand-alone doubly fed induction generator feeding nonlinear and unbalanced loads	IEEE Trans. on Energy Conversion	27, 4	1018-1026	2012

13. Detail of patents: N.A.

14. Books/Reports/Chapters/General articles etc.:

➤ Book Chapters:

Sl. No.	Title	Author's Name	Publisher	Year of Publication
1.	Design and Control of DC–DC Converters in a PV-Based LVDC Microgrid	P.K. Behera, M. Pattnaik	Springer, Singapore	2022
2.	Design and Analysis of DC–DC Buck Converter with Drift-Free MPPT Algorithm for a SEIG-Based Wind Energy Generation System	J. Mishra, M. Pattnaik	Springer, Singapore	2022
3.	Modeling and MPPT Control of a PMSG-Based Wind Turbine System	Mendi Balaji, Monalisa Pattnaik , and Gopalakrishna Srungavarapu	CRC PRESS, Taylor & Francis Group	2023

15. List of Projects Submitted:

Sl. No	Title	Cost in Lakh	Date of submission	Role as PI/Co-PI	Agency
1	Hierarchical Power Flow Control in a PV-Fuel cell fed Grid Interactive LVDC Microgrid for E-mobility and Domestic Load	35.034 Lakhs	Dec. 2022	PI	CPRI
2	Design and Development of Green Hydrogen based DC Microgrid for EV Charging Station and Community Loads	87.14 Lakhs	July, 2022	Co-PI	MNRE

15.1 List of Projects under implementation as PI (Dr. Monalisa Pattnaik):

Sl. No	Title	Cost in Lakh	Start Date	End Date	Role as PI/Co-PI	Agency
1	Design and Development of a Low Power Hybrid PV-Wind Energy System	24.54 Lakhs	Oct. 2021	Oct. 2024	PI	DST (Indo-Sri Lanka Joint Research Program)
2	Droop based Co-ordinated Control of a Triple Active Bridge Interlinking Converter for Hybrid Microgrid with EV Charging Facility	38.94 Lakhs	Dec, 2022	Dec, 2025	PI	SERB, DST (CRG Scheme)

16. Details of Ph.D. Thesis guided as Main Supervisor:

Ph.D Thesis Title	Student	Year of Award
Design and Development of a Wind-Solar-Battery Hybrid Autonomous System	Jyotismita Mishra	2019

➤ Any other Information

➤ International Conference Publications

- [1] D. C. Pandey, P. K. Behera, and **M. Pattnaik**, “Steady-State Analysis of Dual Active Bridge Converter with Single Phase Shift and Dual Phase Shift Modulation”, *2023 IEEE International Students' Conference on Electrical, Electronics and Computer Science (SCEECS)*, pp.1-6, 2023.
- [2] R. Kumar, P. K. Behera, and **M. Pattnaik**, “A Comparative Analysis of Two-phase and Three-phase Interleaved Bidirectional DC-DC Converter”, *2023 IEEE International Students' Conference on Electrical, Electronics and Computer Science (SCEECS)*, pp.1-5, 2023.
- [3] Vaishnavi Gullipall, P. K. Behera, and **M. Pattnaik**, “PV-Grid Assisted Uninterruptible Power Supply System for a BLDC Motor Drive”, *International Conference on Power Electronics and Energy (ICPEE-2023)*, pp.1-6, 2023.
- [4] P. K. Behera, Prince Kumar Piyush and **M. Pattnaik**, “Design, Sizing and Implementation of a Parallel Active Battery-Supercapacitor based Hybrid Energy Storage System”, *“International Conference on Power Electronics and Energy (ICPEE-2023)”*, pp.1-5, 2023.
- [5] P. K. Mishra, P. K. Behera, and **M. Pattnaik**, “Comparative Evaluation and Analysis of Different Switching Schemes for a Three-Phase Symmetrical Multilevel Inverter with Reduced Switch Count”, *9th IEEE UP Section International Conference on Electrical, Electronics and Computer Engineering (UPCON-2022)*, pp.1-6, 2022.
- [6] B. Mishra, R. Pradhan, and **M. Pattnaik**, “A Simple and Novel Tuning Technique for Load Frequency Control in a Multi-Area Microgrid System”, Accepted in *IEEE International Symposium on Sustainable Energy, Signal Processing and Cyber Security, (ICPEE-2022)* pp.1-5, 2022.
- [7] P. K. Behera, and **M. Pattnaik**, “Power Management of a Laboratory Scale Wind-PV-Battery based LVDC Microgrid”, *IEEE IAS Global Conference on Emerging Technologies (GlobConET)*, pp.1-6, 2022.
- [8] B. Mendi, **M. Pattnaik** and S. Gopalakrishna, “A Speed Sensorless Modified Perturb and Observe MPPT Scheme for Stand-alone PMSG based Wind Turbine System”, *IEEE IAS Global Conference on Emerging Technologies (GlobConET)*, pp.1-5, 2022.
- [9] B. Mishra, and **M. Pattnaik**, “A Modified Droop based Decentralized Control Strategy for an Islanded AC Microgrid”, *2nd International Conference on Innovation in Energy Management and Renewable Resources (IEMRE-2022)*, pp.1-5, 2022.
- [10] P. K. Behera, B. Mishra, and **M. Pattnaik**, “Geometrical Interpretation of Incremental Conductance MPPT Algorithm for a Stand-Alone Photovoltaic System,” *2021 Innovations in Power and Advanced Computing Technologies (i-PACT)*, pp.1-6, 2021.

- [11] P. K. Behera, A. Satpathy, and **M. Pattnaik**, "Design and Implementation of a Single-Band Hysteresis Current Controlled H-Bridge Inverter," *IEEE Sponsored 3rd International Conference on Energy, Power and Environment (ICEPE)*, pp.1-6, 2020.
- [12] P. K. Behera, S. Das, and **M. Pattnaik**, "Performance comparison between bipolar and unipolar switching scheme for a single-phase inverter based stand-alone photovoltaic system," *2019 IEEE 16th India Council International Conference (INDICON)*, pp. 1-4, 2019.
- [13] K. Nageswara Rao, D. Kumar, and **M. Pattnaik**, "Analysis and Experimental Study of Self-Excited Slip-Ring Induction Generator with Variable Capacitance and Rotor Resistance", *2019 Innovations in Power and Advanced Computing Technologies (i-PACT)*, pp.1-4, 2019.
- [14] J. Mishra, S. Das, D. Kumar, and **M. Pattnaik**, "Performance Comparison of P&O and INC MPPT Algorithm for a Stand-alone PV System", *2019 Innovations in Power and Advanced Computing Technologies (i-PACT)*, pp.1-5, 2019.
- [15] K. Pal and **M. Pattnaik**, "Performance of a Synchronous Buck Converter for a Standalone PV System: An Experimental Study", *2019 1st IEEE International Conference on Energy, Systems and Information Processing, (ICESIP 2019)*, pp.1-6, 2019.
- [16] M. Balaji, S. K. Sarangi, and **M. Pattnaik**, "Design of a DC Motor based Wind Turbine Emulator using Sliding Mode Approach", *2019 1st IEEE International Conference on Energy, Systems and Information Processing, (ICESIP 2019)*, pp.1-5, 2019.
- [17] **M. Pattnaik**, N. Kumar, "Optimum Mode Operation and Implementation of Class-E Resonant Inverter for Wireless Power Transfer Application", *International Conference on Innovative Smart Grid Technologies (ISGT Asia 2018)*, pp.1-5, 2018.
- [18] J. Mishra, **M. Pattnaik**, and S. Samanta, "Power Management Scheme for a Wind-Photovoltaic Hybrid Autonomous System with Battery Storage", *2018 IEEE 4th Southern Power Electronics Conference (SPEC)*, pp. 1-5, 2018.
- [19] J. Mishra, **M. Pattnaik**, and S. Samanta, "Load Voltage based MPPT Algorithm for a Stand-alone Wind Generation System", *15th Edition of the IEEE India Council International Conference INDICON 2018*, pp. 1-4, 2018.
- [20] J. Mishra, **M. Pattnaik**, S. Samanta, "Speed sensorless MPPT control of stand-alone SEIG based wind-battery hybrid system", *6th International Conference on Computer Applications in Electrical Engineering Recent Advances 2017 (CERA17)*, IIT Roorkee, India, Oct. 2017.
- [21] M. Kumar, **M. Pattnaik**, J. Mishra, "An improved ZVS-PWM buck converter with ZCS auxiliary circuit", *IEEE TENCON 2017*, Penang, Malaysia, pp.1-6, Nov. 2017.
- [22] J. Mishra, **M. Pattnaik**, S. Samanta, "Performance Evaluation of a Self-Excited Induction Generator for Stand-alone Wind Energy Conversion System" *IEEE Power, Communication and Information Technology Conference (PCITC-2015)*, SOA, Bhubaneswar, India, pp.1-5, Oct. 2015.

➤ **Invited Lectures:**

1. Joined as a project consultant to setup a prototype for "**Hybrid Energy Storage based Stand-alone Photovoltaic Power System**", related to a DST sponsored project, during 29th April to 3rd May 2019 in the Electronics & Instrumentation Engineering Dept. of NIT Silchar.
2. Delivered invited lecture "**Overview of Stand-alone Wind Energy Conversion System and Its MPPT Control**" on 3rd Dec. 2019 in the Short Term Course "*Applications of Soft Computing in Power System (ASCPS)*" organized during 2nd -7th December 2019 in the Dept. of EE & EEE, VSSUT, Burla, Odisha.
3. Delivered invited lecture "**Power Converter Topologies in Wind Energy Conversion System and it's MPPT Control**" & **Design of Wind Turbine Emulator using DC Motor for Stand-**

alone WECS” on 21st and 22nd Feb. 2020 in a 5 days National Workshop on “*Modelling and Simulation of Power Electronics Converters for Renewable Energy using MATLAB & Simulink*” from 18th -22nd Feb. 2020 in the Dept. of Electrical Engineering, University College of Engineering & Technology, Bikaner.

4. Delivered invited lecture “**Hardware Implementation of Direct Power Control Scheme on RT-Lab Platform**” on 18th June 2020 in “*OPAL-RT’s 12th Conference on Real-Time Simulation (RT-2020)*” online mode.
5. Delivered invited lecture “**An Overview of Power Electronic Converters for Hybrid Renewable Energy System**” on 30th Sept. 2020 in the AICTE Training and Learning (ATAL) Academy FDP “*Energy Storage for Sustainable Development*” organized during 26th -30th September 2020 in the Electronics & Instrumentation Engineering Dept. of NIT Silchar, Online mode.
6. Delivered invited lecture “**Design and Development of Hybrid Renewable Energy System**” on 24th Nov. 2021 for Program on “*Energy Storage for Sustainable Development*” organized by BHEL India, Online mode.
7. Delivered invited lecture “**Design, Development and Power Management of a Laboratory Scale Hybrid Renewable Energy System**” on 24th May, 2022 for Program on “*Synergistic Training Program Utilizing Scientific and Technological Infrastructure (STUTI)*” in the Dept. of Electrical Engineering, NIT Rourkela, organized by NIT Rourkela in collaboration with Amity University, supported by DST, Government of India.
8. Received minor research grant for the proposal entitled “**Design and implementation of a PMSG based standalone wind generation system with battery storage**” for funding under TEQIP-III.
9. Served as Session Chair in “*International Conference on Power Electronics and Energy (ICPEE-2023)*”, on 4th Jan, 2023, 3rd -5th January 2023.
10. Delivered invited lecture “**Power Electronic Converters for Hybrid Renewable Energy Systems and Electric Vehicle Applications**” on 17th Mar. 2023 for Program on “*Five Day National Workshop on Recent Trends in Electric Vehicle: Challenges and Opportunities*” organized by Vignan’s Institute of Information Technology (A), Visakhapatnam. (Online mode)
11. Delivered invited lecture “**Design and Real-Time Implementation of a Wind-PV-Battery based Hybrid Renewable Energy System**” in the short term course on “*Condition, Assessment of Power System Equipment (CAPSE-2023)*” held during April 11-15, 2023 in the Dept. of Electrical Engineering, NIT Rourkela, organized by NIT Rourkela.

➤ Professional Activities / Assignments

i. Assignments abroad:

- 22nd-25th May, 2018, Singapore, to present paper in International Conference *IEEE PES ISGT ASIA 2018*.
- 5th -8th Nov. 2017, Penang, Malaysia, to present paper in International Conference *IEEE TENCON 2017*.
- 24th - 25th Sept. 2014, Naples, Italy, to present paper in International Conference *IET RPG 2014*.
- 21th-25th July 2013, Vancouver, Canada, to present paper in International Conference *IEEE PES GM 2013*.

ii. Reviewer of International Journals

- IEEE Transactions on Energy Conversion
- IEEE Transactions on Industrial Electronics
- International Journal of Energy Research (John Wiley & Sons)
- Electric Power Components and Systems (Taylor’s and Francis)

➤ Professional Association:

- Senior Member of IEEE- SM-92125882
- Member of Institution of Engineers (IETE, India)- M-502912