Prashant Singh

New Delhi, Delhi, India, 110070

+91-9782635534, prashant.singh1@terisas.ac.in , prs21017@gmail.com

---

Research Interests: DC microgrid, Modeling, Control and analysis of modern power system incorporated with renewable energy sources and energy storage systems, Efficient Power Electronic Interfaces for Renewable Energy Applications, Application of machine learning in DC microgrids.

EDUCATION

TERI SAS in collaboration with IIT Roorkee — New Delhi, India
TATA Power, StorTera, Cambridge Cleantech — January 2022- Present
PNDC (University of Strathclyde, Scotland)
Post-doctoral Research Associate
Project Title: Mobile Substation and Grid Storage System (MOBISUB)

National Institute of Technology Kurukshetra — Haryana, India
Ph.D. in Electrical Engineering — January 2017- Dec 2021
Dissertation Title: Power management and Control of DC microgrids incorporating hybrid energy storage systems
Course work: 9.5 CGPA/10 (**Thesis Submitted)**

Rajasthan Technical University, Kota — Kota, India
M.Tech with Honors in Electrical Engineering — 2013-2015

- Relevant coursework: Power system and Power electronics
- Analysis and Comparison of Charging Time between Battery and Supercapacitor for 300 W Stand-Alone Photovoltaic System
  72.38%

Uttar Pradesh Technical University, Lucknow — Uttar Pradesh, India
B.Tech with First Class in Electrical Engineering — 2009-2013
74.8%

RESEARCH EXPERIENCE (5.1 YEARS)

TERI SAS in collaboration with IIT Roorkee — New Delhi, India
TATA Power, StorTera, Cambridge Cleantech — January 2022- Present
PNDC (University of Strathclyde, Scotland)
Post-doctoral Research Associate
Project Title: Mobile Substation and Grid Storage System (MOBISUB)

National Institute of Technology Kurukshetra Haryana, India
Ph.D. Researcher Jan 2017-Dec 2021

- Modelling of different components of distributed generation power system in MATLAB.
- Technical analysis of distributed generation power system incorporating energy storage systems.
- Integration of storage devices to distributed generation power system.
- Power management in distributed generation power system incorporated with hybrid energy storage system and its control.
- Hardware-in-loop (HIL) real-time implementation using OPAL-RT real time simulator.

Rajasthan Technical University, Kota Rajasthan, India
Master's Researcher July 2013-Dec 2015

- Modelling of different renewable energy sources and storage devices in MATLAB.
- Comparison and analysis of various energy storage systems at different cases.

TEACHING EXPERIENCE (1.2 YEARS)

Arya College of Engineering & IT, Kukas, Jaipur Rajasthan, India
Assistant Professor in Electrical Engineering Department Dec 2015-Jan 2017

STUDENT ADVISING

National Institute of Technology Kurukshetra, India

Co-advisor with Prof. J.S.Lather

Anurag Semwal, M.Tech Student

- Comparative Study of Inter Microgrid Power Transfer Controllers

Rajat Pal, M.Tech Student

- Control of solar water pumping system

Manoranjan Kumar, M.Tech Student

- Comparative Performance Analysis of PV Module Using P&O, PSO and CS Algorithm.

Manu Priyam Srivastava, M.Tech Student

- Control and Power-sharing in microgrids.

Vivek K, M.Tech Student

- Sliding Mode Voltage Droop Control in DC Microgrids.

Leela Dhar Nagar, M.Tech Student

- Observer Based Control of Multi-Agent System.

PROFESSIONAL PREPARATIONS AND SKILLS

High-Level Languages: C, MATLAB.
Applications/Packages/Tools: MATLAB SIMULINK, OPAL RT-Simulator, Wavect FPGA controller, Power Quality Analyzers,
Mathematical Techniques: Digital and Adaptive Control, Fuzzy Logic, Adaptive Network-Based Fuzzy Inference System (ANFIS), and Machine leaning.
General Skills: Excellent mathematical analysis, independent research skills, good presentation skills, works well in a team.
Communication Skills: Public speaking, teaching, academic paper writing and presentation.

AWARDS AND MEMBERSHIPS

- MHRD Fellowship recipient.
- IEEE Membership.

ACHIEVEMENTS

- Awarded for Session's best paper presentation in 2nd International conference on Advance trends in Engg. & technology (ICATET-2014) organized by Arya college of engineering & I.T., Jaipur.

PROFESSIONAL SERVICES

Journal Review Services

- IEEE Transactions on Industrial Informatics (2 review).
- International Journal of Energy Research (Wiley) (1 review).
- Applied Energy (Elsevier) (1 review).
- Journal of Ambient Intelligence and Humanized Computing (Springer) (4 review).
- International Transaction of Electrical Energy System (1 review).
- Sustainable Cities and Society (Elsevier) (2 review).
- Journal of Energy Storage (Elsevier) (1 review).

Conference Review Services

- IEEE International Conference on Electrical, Computer, and Energy Technologies (ICECET'21).
- International Conference on Smart Grid Energy Systems and Control, SGESC-2021.
- 9th IEEE Power Electronics, Drives and Energy Systems, PEDES 2020.
- International conference on Power Electronics and Renewable Energy Applications, PEREA 2020.
- 8th IEEE Power India International Conference, PIICON 2018.

- Associate Chief Editor, 3rd International Conference on "Advance Trends in Engineering and Technology (ICATET-2015)", 21-22 August, 2015.

- Member of Technical Programme Committee of 2022 International Conference on Energy Storage Technology and Power Systems (ESPS 2022), will be held from February 25th to 27th in Guilin, China.

LIST OF PUBLICATIONS

Journal publications

[1] **Prashant Singh** and J.S. Lather "Small-Signal Modeling and Stability Analysis of Autonomous DC microgrid with Distributed Energy Storage System," Journal of Energy Storage 41 (2021): 102973. https://doi.org/10.1016/j.est.2021.102973 **(Indexed in SCIE) (Impact factor- 6.583)**

[2] **Prashant Singh** and J.S. Lather "Design and stability analysis of a control system for a grid-independent direct current microgrids with Hybrid Energy Storage System, "Computers and Electrical Engineering 93 (2021): 107308. https://doi.org/10.1016/j.compeleceng.2021.107308 **(Indexed in SCIE) (Impact factor- 3.818)**

[3] **Prashant Singh** and J.S. Lather, "Power Management and Control of a grid-independent DC Microgrid with Hybrid Energy Storage System, "Sustainable Energy Technologies and Assessments 43 (2021): 100924. https://doi.org/10.1016/j.seta.2020.100924 **(Indexed in SCIE) (Impact factor- 5.353)**

[4] **Prashant Singh** and J.S. Lather, "Dynamic Power Management and Control for Low Voltage DC Microgrid with Hybrid Energy Storage System using Hybrid Bat Search Algorithm and Artificial Neural Network," Journal of Energy Storage 32 (2020): 10197. https://doi.org/10.1016/j.est.2020.101974 **(Indexed in SCIE) (Impact factor- 6.583)**

[5] **Prashant Singh** and J.S. Lather, "Accurate Power Sharing, Voltage Regulation and SOC Regulation for LVDC Microgrid with Hybrid Energy Storage System using Artificial Neural Network," International Journal of Green Energy, 2020. https://doi.org/10.1080/15435075.2020.1798767 **(Indexed in SCI) (Impact factor- 2.459)**

[6] **Prashant Singh**, J.S. Lather, "Variable Structure Control for Dynamic Power-Sharing and Voltage Regulation of DC Microgrid with a Hybrid Energy Storage System," International Transaction on Electrical Energy System (2020). https://doi.org/10.1002/2050-7038.12510 **(Indexed in SCIE) (Impact factor- 2.860)**

[7] **Prashant Singh**, J.S. Lather, "Dynamic current sharing, voltage and SOC regulation for HESS based DC microgrid using CPISMC technique," Journal of Energy Storage. 30 (2020) 101509. https://doi.org/10.1016/j.est.2020.101509 **(Indexed in SCIE) (Impact factor- 6.583)**

[8] **Prashant Singh** and J. S. Lather, "Artificial neural network-based dynamic power management of a DC microgrid: a hardware-in-loop real-time verification," International Journal of Ambient Energy, pp. 1–9, Feb. 2020. https://doi.org/10.1080/01430750.2020.1720811 **(Indexed in ESCI, SCOPUS)**

[9] **Prashant Singh**, J.S. Lather, "Real-Time Simulation and Analysis of Energy Storage System in Standalone PV-Based DC Microgrid," Lecture Notes in Electrical Engineering (2020) 1–14. https://doi.org/10.1007/978-981-15-5341-7_77 **(Indexed in SCOPUS)**

[10] Avinash Pareek, **Prashant Singh** and J. S. Lather, "Blockchain Technology in Smart Grids and Microgrids: A Critical Review of Challenges and Opportunities. In: Gupta A.R., Roy N.K., Parida S.K. (eds) Power Electronics and High Voltage in Smart Grid. Lecture Notes in Electrical Engineering, vol 817. Springer, Singapore. https://doi.org/10.1007/978-981-16-7393-1_30 **(Indexed in SCOPUS)**

[11] Omendra Singh Shekhawat, **Prashant Singh**, Alok Kumar Singh, Jitendra Sharma, Suman Dhariwal. (Volume. 6 - Issue. 01, January - 2017). "Photovoltaic and Fuel Cell Hybrid Generating System Grid Simulation and Harmonics Analysis ", International Journal of Engineering Research & Technology (IJERT), ISSN: 2278-0181.

[12] **Prashant Singh** "A S., & Kumar, P. (2015, Jan-June). Battery (Ni-Cd) Charging Analysis Of Stand-Alone 300w Solar Photovoltaic System At Constant Solar Insolation." International Journal of Electrical and Electronics Engineers 7, no. 1: 310-317.

[13] **Prashant Singh** and J.S. Lather "Energy Management and Control for DC Microgrid with Hybrid Energy Storage System using Combined Cuckoo Search Algorithm and Artificial Neural Network," in International Journal of Green Energy **(Under Review).**

[14] **Prashant Singh**, Leeladhar Nagar and J.S. Lather " Observer Based Consensus Control of Multi-Agent System in a PV based DC microgrid," in Journal of Scientific and Industrial Research (JSIR) (CSIR-NISCAIR) **(Under Review).**

Conference publications

[1] Avinash Pareek, **Prashant Singh** and P. N. Rao, "Analysis and Comparison of Charging Time between Battery and Supercapacitor for 300W Stand-Alone PV System," in 2018 IEEE International Conference on Current Trends towards Converging Technologies (ICCTCT), pp. 1–5. DOI: 10.1109/ICCTCT.2018.8551164.

[2] Avinash Pareek, **Prashant Singh** and Anmol Gupta, "A Five–Level PWM Inverter for Hybrid PV/Fuel Cell/Battery Standalone Power System," in 2018 IEEE 3rd International Innovative Applications of Computational Intelligence on Power, Energy and Controls with their Impact on Humanity (CIPECH), pp. 1–5. DOI: 10.1109/CIPECH.2018.8724186.

[3] **Prashant Singh** and J. S. Lather, "A PWM-based sliding mode voltage control of DC-DC boost converter for DC microgrid," in 2018 IEEE 8th Power India International Conference (PIICON), 2018, pp. 1–5. DOI: 10.1109/POWERI.2018.870445.

[4] **Singh Prashant**, A. Sujil, and Prabhat Kumar. "Analysis and comparison of batteries charging time for stand alone photovoltaic system." in 2016 IEEE 6th International Conference on power system (ICPS), 2016, pp. 1-4.

[5] **Prashant Singh**, A. Sujil, Prabhat Kumar, and Avtar Singh. "Comparison of batteries charging time for standalone photovoltaic system." In 2016 IEEE International Conference on Emerging Trends in Electrical Electronics & Sustainable Energy Systems (ICETEESES), , pp. 244-249.

[6] **Prashant Singh**, Sujil A, Prabhat Kumar and Alok Kumar Singh, "Analysis of battery charging time of 300W solar photovoltaic system at constant solar irradiation", International conference on "Advances in power generation from renewable energy sources" (APGRES 2015), RTU, Kota, India, pp. 36-40, June 15-16, 2015.

[7] **Prashant Singh**, Sujil A, Prabhat Kumar" Use of Super capacitor to enhance charging performance of 300W stand-alone solar PV system at constant solar irradiation", 4th International Conference on Advance Trends in Engineering, Technology and Research (ICATETR-2015), Kota, India, pp. 189-192 , June 19-20, 2015

[8] Praveen Kumar Jangir, **Prashant Singh** , Prabhat Kumar "Development of hybrid power generation system using wind & PV-Solar : A Review", 3rd International Conference on Advance Trends in Engineering and Technology (ICATET-2015), Jaipur, India, pp. 67-71, August 21-22, 2015.

[9] **Prashant Singh**, Sujil A, Prabhat Kumar and Alok Kumar Singh "Super Capacitor Charging-Discharging Analysis of Stand-Alone 300W Solar Photovoltaic System at Time Varying Insolation", 3rd International Conference on Advance Trends in Engineering, Technology and Research (ICATETR-2014), Kota, India, pp. 185-189, December 22-23, 2014.

[10] **Prashant Singh**, Alok Kumar Singh, Sujil A and Prabhat Kumar "Renewable Energy Scenario in India: Present and Future", 2nd International Conference on Advance Trends in Engineering and Technology (ICATET-2014), Jaipur, India, pp. 258-263, April 18-19, 2014.

[11] **Prashant Singh**, Sujil A and Prabhat Kumar, "Advanced Control Strategy to Enhance Wind Turbine Ride Through: A Review", International Conference on Advance Trends in Engineering and Technology (ICATET-2013), Jaipur, India, pp.233-238, December 19-20, 2013.

References

Dr. J. S. Lather
Professor
Electrical engineering department
National Institute of Technology Kurukshetra
Haryana, India, 136119
Phone- +91 9467500101
Email- jslather@nitkkr.ac.in

Dr. Ashwani Kumar Sharma
Professor
Electrical engineering department
National Institute of Technology Kurukshetra
Haryana, India, 136119
Phone- +91 9466478827
Email- ashwani.k.sharma@nitkkr.ac.in

Dr. Jiwanjot Singh
Assistant Professor
Electrical engineering department
National Institute of Technology Silchar
Assam, India, 788010
Phone- +91 9872581018
Email- jiwanjot.singh@ee.nits.ac.in

Dr. Om Krishan
Assistant engineer
Haryana Vidyut Prasaran Nigam Limited
Yamuna Nagar, Haryana, 135001
Phone- +91- 9812120547
Email- omkrishan285@gmail.com