

JANI DAS

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Research Associate, Bureau of Economic Geology
University of Texas at Austin

To utilize my skill sets in terms of problem solving, hardworking, meeting deadlines and team play for contributing to the development of society.

EXPERIENCE

MAY 2023-TILL DATE

RESEARCH ASSOCIATE,

BUREAU OF ECONOMIC GEOLOGY, UNIVERSITY OF TEXAS AT AUSTIN, TEXAS, USA

JANUARY 2023-MARCH 2023

FACULTY CHAIR PERSON, RESEARCH AND CONSULTANCY CELL, MUTHOOT INSTITUTE OF TECHNOLOGY AND SCIENCE, KERALA

NOVEMBER 2021-MARCH 2023

ASSOCIATE PROFESSOR, ELECTRICAL & ELECTRONICS, MUTHOOT INSTITUTE OF TECHNOLOGY AND SCIENCE, KERALA

JANUARY 2020-DECEMBER 2022

HEAD OF THE DEPARTMENT, ELECTRICAL & ELECTRONICS, MUTHOOT INSTITUTE OF TECHNOLOGY AND SCIENCE, KERALA

JUNE 2019-OCTOBER 2021

ASSISTANT PROFESSOR, ELECTRICAL & ELECTRONICS, MUTHOOT INSTITUTE OF TECHNOLOGY AND SCIENCE, KERALA

MARCH 2015-DECEMBER 2018

SENIOR RESEARCH FELLOW, IIT BOMBAY

JUNE 2014-MARCH 2015

JUNIOR RESEARCH FELLOW, IIT BOMBAY

JUNE 2012-MAY 2014

ASSISTANT PROFESSOR, ELECTRICAL & ELECTRONICS, RAJAGIRI SCHOOL OF ENGINEERING AND TECHNOLOGY, KERALA

APRIL 2007-JULY 2010

LECTURER, ELECTRICAL & ELECTRONICS, RAJAGIRI SCHOOL OF ENGINEERING AND TECHNOLOGY, KERALA

JANUARY 2006- APRIL 2007

LECTURER, ELECTRICAL & ELECTRONICS, SCMS SCHOOL OF ENGINEERING AND TECHNOLOGY, KERALA

JULY 2004-DECEMBER 2005

PROJECT ASSISTANT, NEST CYBER CAMPUS, ALUVA, KERALA

EDUCATION

AUGUST 2019

PHD

DEPARTMENT OF ENERGY SCIENCE AND ENGINEERING, INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

Dissertation: “Variability Analysis of Isolated Renewable Energy Systems” under the guidance of Prof. Rangan Banerjee, Professor, Energy Science and Engineering, IIT Bombay

JUNE 2012

M.TECH, INDUSTRIAL POWER AND AUTOMATION

DEPARTMENT OF ELECTRICAL ENGINEERING, NATIONAL INSTITUTE OF TECHNOLOGY CALICUT

CGPA-8.9 (First Class with Distinction)

Thesis: “Optimum Operation of a cogeneration facility using Genetic Algorithm” under the guidance of Prof. S. Ashok ,Professor, Dept of Electrical Engineering, NIT Calicut

JUNE 2000

B.TECH, ELECTRICAL AND ELECTRONICS ENGINEERING

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING, GOVERNMENT ENGINEERING COLLEGE, THRISSUR

CGPA-67.7% (First Class)

PHD THESIS

VARIABILITY ANALYSIS OF ISOLATED RENEWABLE ENERGY SYSTEMS

The thesis work is aimed at analysing the variability of solar, wind, load resources and storage requirement in an isolated renewable system considering intraday variability of resources. The analysis has been done seasonally and on differentiated daily time scales of sunshine and non-sunshine hours. Probabilistic approach has been used for analysis. The uncertainty in the parameters arising from the variability has been studied in detail with the help of a case study for an isolated wind-solar-battery microgrid system set up in Kutch, Gujarat. The impact of the variability on determination of storage requirement, system reliability and operating characteristics have been illustrated. Energy, carbon footprint and cost analysis of the system has been analysed in Indian context. It has been concluded that the variability of generation, load and storage requirement have impact on the energy payback time, net energy ratio and annualised life cycle cost of the renewable system.

SKILLS

- Proficient in statistical analysis based tools in MATLAB
- Proficient in SIMAPRO and OpenLCA Energy modelling and Life Cycle Assessment software
- Proficient in TIMES-VEDA energy modelling
- Basic use of Crystal Ball, Monte Carlo Simulation tool

PUBLICATIONS

Book Chapters

- **Das J (2022)** Power Quality Issues with Electric Vehicle Charging Stations, Advanced Technologies in Electric Vehicles, Elsevier (Accepted for publication)
- **Das, J. (2023).** Clear Sky and Real Sky Solar Radiation Modelling for Locations in India. In: Doolla, S., Rather, Z.H., Ramadesigan, V. (eds) Advances in Clean Energy and Sustainability. ICAER 2022. Green Energy and Technology. Springer, Singapore. https://doi.org/10.1007/978-981-99-2279-6_2(Awarded consolation prize for the best paper at ICAER 2022).
- **Das J. (2022)** Heat Effect on Silicon PV Modules. In: Al-Ahmed A., Inamuddin, Al-Sulaiman F.A., Khan F. (eds) The Effects of Dust and Heat on Photovoltaic Modules: Impacts and Solutions. Green Energy and Technology. Springer, Cham. https://doi.org/10.1007/978-3-030-84635-0_9
- **Das J. (2021)** Life Cycle Energy Analysis of an Isolated Photovoltaic-Wind-Battery Microgrid in India. In: Komanapalli V.L.N., Sivakumaran N., Hampannavar S. (eds) Advances in Automation, Signal Processing, Instrumentation, and Control. Lecture Notes in Electrical Engineering, vol 700. Springer, Singapore. https://doi.org/10.1007/978-981-15-8221-9_117

Journal Papers

- **Jani Das (2022)** *Batteries and flow batteries-life cycle assessment in Indian conditions.* Clean Technologies and Environmental Policy. <https://doi.org/10.1007/s10098-022-02431-w>.
- **Jani Das (2022)** *Comparative life cycle GHG emission analysis of conventional and electric vehicles in India.* Environment Development and Sustainability 24, 13294–13333. <https://doi.org/10.1007/s10668-021-01990-0>.
- **Jani Das (2022)** Spectrum analysis for deterministic storage sizing in an isolated microgrid, Materials Today: Proceedings, Volume 58, Part 1, 2022, Pages 359-366, ISSN 2214-7853, <https://doi.org/10.1016/j.matpr.2022.02.269>.
- **Jani Das, Ajit Paul Abraham, Prakash. C. Ghosh, Rangan Banerjee (2018)** *Life Cycle Energy and Carbon Footprint Analysis of photovoltaic battery microgrid system in India*, Clean Technologies and Environmental Policy, vol.20(1), pp 65-80.
- **Jani Das, Ammu Susanna Jacob, Ajit Paul Abraham, Rangan Banerjee and Prakash Ghosh (2017)** *Cost and Energy Analysis of PV Battery Grid Backup System for a Residential Load in Urban India*, Energy Procedia, vol.118, pp 88-94.
- **Sunpho George, Jani Das (2013)** Analysis of Sinusoidal pulse width modulation Control Strategies for Quasi Z Source Inverter, International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering, vol.2(9), pp 4355-4362.

Conference Papers

- **Jani Das, Venugopalan K, Johnson Daniel (2022)** *Prediction of Electric Vehicle Charging Load with Uncertainty using Probabilistic Methodology*, 2022 IEEE International Power and Renewable Energy Conference (IPRECON 2022), **12/2022**
- **Jani Das (2022)** *Life Cycle Analysis of Hydrogen Production and Fuel Cell Electric Vehicle in Indian Conditions*, 19th IEEE India Council International Conference (INDICON 2022), Cochin University of Science and Technology, Kerala, India, **11/2022**
- **Jani Das (2021)** *Correlation Analysis in Wind Speed and Solar Insolation temporal series in Indian locations*, 18th IEEE India Council International Conference (INDICON 2021), IIT Guwahati, **12/2021**.

- **Jani Das (2021)** *Spectrum Analysis for Deterministic Storage Sizing in an Isolated Microgrid*, International Conference on Artificial Intelligence and Energy Systems-AIES2021, St Joseph's College of Engineering and Technology, Palai. Kerala, **12/2021**.
- Abhijith Prasad, Ajin Eldho Paul, Basil Varghese, Dathatrayan Deleep, **Jani Das**, Anjali Varghese.C **(2021)** *Prediction of Optimum PV Array Configuration for a Fixed Shading Object using MATLAB*, IEEE 2nd International Conference on Advances in Computing, Communication, Embedded and Secure Systems (ACCESS 21) at Adi Sankara Institute of Engineering and Technology, Ernakulam, Kerala, **09/2021**.
- Emil Raju, Arun Jose, Febin Mathew George, Sherin Sabu, **Jani Das**, Venugopalan K **(2021)** *MATLAB Modelling Of EV and BMS For Modular Battery Swapping*, International Conference On Smart Grid & Electric Vehicle, Hindustan Institute of Technology and Science, Tamil Nadu, **07/2021**.
- Ajith Vijayan, Venugopalan K, **Jani Das** (2021) *Residential Demand Side Management Using Artificial Intelligence*, IEEE International Conference on Smart Computing and Communications (ICSCC-2021), Muthoot Institute of Technology and Science, Kerala, **07/2021**.
- **Jani Das (2021)** *Life cycle energy analysis of a Microalgal Based Bioreactor*, IEEE Texas Power and Energy Conference (TPEC 2021), Texas A & M University, United States, **02/2021**.
- **Jani Das (2020)** *Optimal Component Sizing of an Isolated PV-Wind-Battery Microgrid in India using Multi Objective Optimisation*, 17th IEEE India Council International Conference (INDICON 2020), Netaji Subhash Institute of Technology, New Delhi, **12/2020**.
- Karthika S, Meera Ashok, Meera Mohan, R. Hima, **Jani Das**, Anjali Varghese. C **(2020)** *An Enhanced P and O Algorithm for Maximum Power Point Tracking*, IEEE International Conference on Futuristic Technologies in Control Systems and Renewable Energy, MES College of Engineering, Kerala, **09/2020**
- Abhijith K.S, Ananthakrishnan.V.V, Ashok.K.S, Ashwin T.A, **Jani Das**, Anjali Varghese. C **(2020)** *Modelling and Analysis of an Efficient Solar*, IEEE International Conference on Futuristic Technologies in Control Systems and Renewable Energy, MES College of Engineering, Kerala, **09/2020**
- **Jani Das**, Rangan Banerjee **(2018)** *Life cycle energy and carbon footprint analysis of large MW scale grid connected wind power systems in India*, 2018 3rd International Conference on Power and Renewable Energy, Berlin, Germany, **09/2018**.
- **Jani Das**, Rangan Banerjee **(2017)** *Estimation of long range correlations and FARIMA modelling of wind speed in Maharashtra*, 2017 IEEE PES Asia-Pacific Power and Energy Engineering Conference (APPEEC), Bengaluru, **11/2017**.
- **Jani Das**, Prakash. C. Ghosh, Rangan Banerjee **(2016)** *Life Cycle Analysis of Battery Technologies for Photovoltaic Application in India*, 2016 21st Century Energy Needs-Materials, Systems and Applications (ICTFCEN), IIT Kharagpur, **11/2016**.
- **Jani Das**, S. Ashok **(2014)** *Peak Load Management with Wheeling in a Combined Heat and Power Unit under Availability Based Tariff*, 2014 Fourth International Conference on Advances in Computing and Communications, RSET, **08/2014**.
- Soumya Simon, **Jani Das (2014)** *PV powered soft switched boost converter using MPPT control*, 2014 Annual International Conference on Emerging Research Areas: Magnetics, Machines and Drives, **07/2014**.
- **Jani Das**, S. Ashok **(2013)** *Industrial Power Wheeling and Optimal Power Interchange under Availability Based Tariff*, 2013 Third International Conference on Advances in Computing and Communications, RSET, **08/2013**.
- **Jani Das**, S. Ashok **(2013)** *Optimum operation of a cogeneration facility using Genetic Algorithm*, 2013 International Multi-Conference on Automation, Computing, Communication, Control and Compressed Sensing (iMac4s), SJCT Pala, **03/2013**.
- **Jani Das**, S. Ashok **(2012)** *Optimum Operation of an Extraction Cum Condensing Cogeneration System Under Time of use rates*, Manipal Institute of Technology, Manipal, **03/2012**.

FUNDED PROJECTS

- **Intelligent Microgrids with Appropriate Storage of Energy (IMASE) (Completed)**
 - Junior and senior research fellow (IIT Bombay)
 - DST sponsored project in association with IIT Bombay and University of Nottingham
- **Optimal placement and impact assessment of electric vehicle charging stations on grid characteristics in urban locations of Kerala (Completed)**
 - Investigator
 - Funded by Energy Management Centre, Kerala

Abstract:

The overall aim of the proposal is to conduct impact assessment and analysis of EV charging stations (Solar PV based wherever possible) in urban scenario in Kerala.

The specific objectives to achieve this aim are:

- Optimal placement of EV charging stations in an urban profile in Kerala.
- Study of impact of grid integration of both conventional and renewable based EV chargers

These objectives directly address the call challenges:

- Number of EV chargers which can be optimally placed in the urban cities of Kochi and Trivandrum
- Sensitivity analysis of power system parameters like voltage, frequency and power to the EV charging load in an urban scenario
- Designing a tariff structure for benefit of customers and EV charging utility.
- Variability analysis for solar power based EV chargers for prediction of grid demand.

- **Development of Augmentative and Alternate Communication Device for disabled people (Completed)**
 - Investigator
 - In association with National Institute of Speech and Hearing
 - Developed for supporting disabled people in communicating with the outside world

IEEE Funded Projects

- **UV-C Disinfecting Module (Completed)**
 - Co-Investigator
 - Funded by IEEE Humanitarian Activities Committee (HAC) and IEEE Special Interest Group on Humanitarian Technology (SIGHT) by an amount of 1050\$.
 - Supporting Break The Chain campaign against Covid 19 for disinfecting equipment
- **Nursing Call System (Completed)**
 - Student Project-Mentor
 - Funded by IEEE Humanitarian Activities Committee (HAC) and IEEE Special Interest Group on Humanitarian Technology (SIGHT) by an amount of 4740\$.

INVITED LECTURES AND POSITIONS

- **Variability Analysis of Renewable Data Using Statistical Methodology** at FDP on Research Perspectives in Energy, Environment and Conservation by SCMS School of Engineering and Technology, Kerala, India, 06/2023.
- **Session chair** for the track “Power Electronics and Drives” at INDICON 2022, 11/2022.
- Panelist at **Sustainability Assessment of Electric Vehicles: Opportunities and Challenges**, webinar organised by The Energy and Resources Institute (TERI), 09/2022
- **Variability Analysis of Renewable Data Using Statistical Methodology** at International Online Conference on Energy Sciences (ICES 2021), 12/2021.
- **Sustainability analysis of Energy Systems using TIMES-VEDA Modelling** at Tata Institute of Social Sciences, Mumbai, 01/2015.

REVIEWER

- Applied Energy
- Clean Technologies and Environmental Policy
- Journal of Environmental Protection
- Journal of Power and Energy Engineering
- Energy Nexus

CONFERENCES/FACULTY DEVELOPMENT PROGRAMS /WORKSHOPS/TECHNICAL FESTS ORGANISED/PARTICIPATED

As Convener

- **Organising Chair of 8th International Conference on Smart Computing and Communications** organised by Muthoot Institute of Technology and Science, Kerala (July 1-3,2021)
- **Organising Chair of National Power Conference 2022** held at Muthoot Institute of Technology and Science, Kerala, India
- Kerala Technological University sponsored Five day Faculty Development Program on “Application Oriented Design and Control of Electric Motor Drives” organized by Dept of EEE, Muthoot Institute of Technology and Science, Kerala (January 16th-20th,2023).
- National level six day online FDP on “Emerging Trends in Power, Energy and Control” organised by Dept of EEE, Muthoot Institute of Technology and Science, Kerala (August 22-27, 2022)
- National level five day online FDP on “Research Initiatives in Renewable Energy Systems” organised by Dept of EEE, Muthoot Institute of Technology and Science, Kerala (July 21-25, 2020)
- National level five day online FDP on “Research Initiatives in Advanced Control Systems” organised by Dept of EEE, Muthoot Institute of Technology and Science, Kerala (February 22-26, 2021)
- KTU sponsored online FDP on “Recent Advances in Power Electronics and Power Systems” organised by Dept of EEE, Muthoot Institute of Technology and Science, Kerala (June 14-18, 2021)

Participated (Selected FDPs and workshops)

- Mission Innovation at IIT Delhi , November 2017
- Annual Technical Fest at IIT Bombay, December 2017
- ICAER workshop on Smart Grids at IIT Bombay, December 2017
- Tutorial sessions for Continuing Education Programme on Energy Management at IIT Bombay– November 2014-18.

PROFESSIONAL ACTIVITIES

- Approved Research Supervisor of APJ Abdul Kalam Technological University, Kerala
- IEEE-Professional Member (Membership No- 97893848)
- Life Member-Renewable Energy Society of India
- Involved in laboratory set up of hybrid storage based microgrids related to DST funded project “Intelligent Microgrids with Appropriate Storage for Energy (IMASE)”
- Training in embedded systems from Quest Innovative Solutions, Kochi.