

Resume



Name : Dr. Rajan Kumar
Designation : Assistant Professor
Department : Electrical Engineering
Qualification : Ph.D.
Phone : -
Email ID : rajan@nith.ac.in
Profile URL : <https://portfolios.nith.ac.in/index.php?nith/rajan-kumar>

Other Profile Links

Research Gate Link :

Personal Web Link :

Google Scholar Link :

Research Profile

Research Interests : Electric Drives, Power Electronics Converters and Renewable Energy

Brief Research Profile : The water pumping has gained a broad attention as a crucial and cost effective application of solar PV array generated power. There is a large potential for solar water pumps in India. Despite a numerous investigations till date, the development of cost effective, simple and efficient water pumping system is still challenging to researchers and industrialists. My research has focused on addressing those challenges, with the focus of my Ph.D. thesis being "design and development of solar PV fed brushless DC motor drives for water pumping". I have developed various grid-isolated and grid-interactive PV based topologies and their control techniques for solar water pumping. Both two stage and single stage PV fed water pumping systems with position sensorless BLDC motor drives, have been developed and implemented. Further a bidirectional power flow control has been proposed and demonstrated to utilize the PV power in case the water pumping is not required. The power generated is fed back to the utility grid, which leads to earning by sale of electricity in addition to a full utilization of PV array. As a Deputy Manager (R&D) in Su-Kam Power Systems Ltd. Gurugram (India), I was involved with two different projects; single phase solar hybrid-grid-tie inverter and e-rickshaw development. I was targeting both control and power electronics parts of these projects.

Qualification

Name of the Degree	Year Of Passing	Institute/University
B.E.	2009	Chhatrapati Shivaji Institute of Technology Durg, India
M.Tech.	2012	Motilal Nehru National Institute of Technology Allahabad, India
Ph.D.	2017	Indian Institute of Technology Delhi, India

Publications

Year	Journal	Publication	Indexed In
2016	IEEE Transactions on Industry Applications	BLDC Motor-Driven Solar PV Array-Fed Water Pumping System Employing Zeta Converter, vol. 52, no. 3, pp. 2315-2322.	SCI
2017	IEEE Journal of Emerging and Selected Topics in Power Electronics	Single Stage Solar PV Fed Brushless DC Motor Driven Water Pump, vol. 5, no. 3, pp. 1377-1385.	SCI
2019	IEEE Transactions on Industry Applications	Grid Interactive Solar PV-Based Water Pumping Using BLDC Motor Drive, vol. 55, no. 5, pp. 5153-5165.	SCI
2017	IET Electric Power Applications	Solar PV Powered BLDC Motor Drive for Water Pumping Using Cuk Converter, vol. 11, no. 2, pp. 222-232.	SCI
2018	IET Power Electronics	Brushless DC motor-driven grid-interfaced solar water pumping system, vol. 11, no. 12, pp. 1875-1885.	SCI
2019	IET Renewable Power Generation	Solar PV Powered-Sensorless BLDC Motor Driven Water Pump, vol. 13, no. 3, pp. 389-398.	SCI
2016	IET Renewable Power Generation	Solar photovoltaic array fed water pump driven by brushless DC motor using Landsman converter, vol. 10, no. 4, pp. 474-484.	SCI
2016	IET Power Electronics	Simple brushless DC motor drive for solar photovoltaic array fed water pumping system, vol. 9, no. 7, pp. 1487-1495.	SCI
2016	IEEE Transactions on Industry Applications	Solar Powered Water Pumping System Employing Switched Reluctance Motor Drive, vol. 52, no. 5, pp. 3949-3957.	SCI

Edited Book/Book Chapter

Type	Title	Publisher	Authors	ISBN/ISSN No.	Year
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Research Projects

Role	Project Type	Title	Funding Agency	From	To	Amount	Status	Co-Investigator
PI	Seed Money / Research Grant	Design and Development of Energy Efficient-Position Sensorless-Brushless DC Motor Drive for Solar Water Pumping	National Institute of Technology Hamirpur	13/12/2019	12/12/2022	5 Lakh	In progress	NA

Research Supervision

Programme Name	Scholar Name	Research Topic	Status	Year	Co-Supervisor
M.Tech	Seema Chauhan	Solar photovoltaic array powered-brushless DC motor drive of industrial applications	In progress	2020	
M.Tech	Kirti Kumari	Power quality improvement in distribution systems using active shunt compensation	In progress	2020	
M.Tech	Ayush Purwar	Design and analysis of power converters for battery charging of electric vehicles	In progress	2020	
Ph.D	Vivek Kumar	Control and implementation of multi-functional multi-phase-compensator for grid-tied solar PV energy conversion systems	In progress	2019	Guiding as Co-Supervisor

Patents

Name	Reg./Ref.No.	Date Of Award/Filing	Organization	Status
Water pumping system with solar photovoltaic array fed brushless DC motor and a method thereof	201611002791	25/01/2016	Indian Patent Office	Filled
A grid interactive solar photovoltaic based water pumping system and method thereof	201611033785	03/10/2016	Indian Patent Office	Filled
A Method and System for Single Stage Solar PV Fed Water Pumping Using Sensorless BLDC Motor	201811029383	04/08/2018	Indian Patent Office	Filled

Teaching

Programme Name	Subjects Taught	From	To	Credits
Assistant Professor	Department of Electrical Engineering, National Institute of Technology Hamirpur (H.P.), India	20/05/2019		-

Administrative Responsibilities

Position Held	Organization	From	To	Remarks
Assistant Faculty In-charge, Training & Placement	National Institute of Technology Hamirpur	01/08/2019	02/08/2020	02
Assistant Faculty In-charge, Institute Magazine and News Bulletin	National Institute of Technology Hamirpur	15/07/2019	02/08/2020	08
Member of Incubation, Innovation and Entrepreneurship Cell (IIEC)	National Institute of Technology Hamirpur	06/08/2019		2020,02
Member of Effective Publicity Team	National Institute of Technology Hamirpur	28/06/2019		08
Hindi Bhasha Adhikari (Departmental)	National Institute of Technology Hamirpur	16/06/2019		2020,.....
Office-in-Charge, Electrical Machine Lab	National Institute of Technology Hamirpur	19/02/2020		
Office-in-Charge, Examination (Departmental)	National Institute of Technology Hamirpur	19/02/2020		
Office-in-Charge, NIRF & Accreditation (Departmental)	National Institute of Technology Hamirpur	19/02/2020		

Expert Talks

Title	Place	Year	Description
Development of Solar Water Pumping System Using Brushless DC Motor Drive	Gautam Buddha University, Greater Noida, India	2020	One-Week online Short-Term Course on "Emerging Trends in Power and Energy Systems"
Position Sensorless Brushless DC Motor Drive	National Institute of Technology Raipur, Chhattisgarh, India	2020	Online Short Term Training Program on "Sustainable Energy Systems Design for Remote Villages in India"
Single Stage-Standalone Solar Photovoltaic Generation System	Jabalpur Engineering College, Jabalpur, India	2020	One-Week Online Short Term Training Program on "Recent Advances in power Electronics and Its Applications"
Single Stage Solar Water Pumping Systems	Maulana Azad National Institute of Technology Bhopal, India	2020	Online Short Term Course on "Research Trends in Energy and Power Systems (RTEPS)"

Professional Activities

Name of Activity	Role	Duration	Organization
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Courses Organized

Category	Type	Title	Venue	From	To	Designation
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Date :

Place :

Signature