

International Conference on Hydro and Renewable Energy- Net Zero Carbon Energy Systems 2022

October 17-18, 2022

Organized by

**Department of Hydro and Renewable Energy
Indian Institute of Technology Roorkee**

	Day 1 (Oct 17)	Day 2 (Oct 18)	
9:00	Registration (A.P.J Abdul Kalam Block Entrance)		
10:00		Keynote Session	9:30
11:08	Inaugural and Keynote Session Keynote Address-I: Dr. Vahan Gevorgian (National Renewable Energy Laboratory, USA) Keynote Address-II: Shri Reji Kumar Pillai (India Smart Grid Forum, India)	Keynote Address-I: Prof Rangan Banerjee (Indian Institute of Technology Delhi)	
11:40		Keynote Address-II: Shri S R Narasimhan (Power System Operation Corporation Limited, India)	10:12
13:00		Tea break	10:30 10:40
13:00	Tea break	Technical Session- III: Oral Paper Presentation	12:00
14:00	Technical Session-I: Oral Paper Presentation	Panel Session-II	13:00
15:00	Lunch break	Lunch break	14:00
15:30	Panel Session-I	Technical Session- IV: Oral Paper Presentation	15:30
17:06	Tea break	Technical Session- II: Oral Paper Presentation	16:00
19:00	Tea break	Poster Session	16:30
19:00	Valedictory Session		17:00
19:00	Gala Dinner (Golden Leaf Banquet)		

Minute to Minute Programme of the Conference

Day 1: Oct 17, 2022		
Venue: A.P.J Abdul Kalam Block (L2), IIT Roorkee		
Inaugural and Keynote Session (Room 103)		
10:00 AM	Arrival of Dignitaries	
10:02 - 10:05 AM	Lighting of Lamp	
10:05 - 10:10 AM	Kulgeet	
10:10 - 10:13 AM	Welcome Address	Prof Mukesh Kumar Singhal Head, Department of Hydro and Renewable Energy, IIT Roorkee
10:13 - 10:15 AM	About the Conference	Prof Himanshu Jain Assistant Professor, Department of Hydro and Renewable Energy, IIT Roorkee
10:15 - 10:35 AM	Keynote Address-I:	Dr Vahan Gevorgian Chief Engineer, National Renewable Energy Laboratory (NREL), USA
10:35 - 10:55 AM	Keynote Address-II:	Shri Reji Kumar Pillai President, India Smart Grid Forum (ISGF), India
10:55 - 11:05 AM	Address by Director, IIT Roorkee	Prof M.L. Sharma Acting Director and Dean F&P, IIT Roorkee
11:05 - 11:07 AM	Vote of Thanks	Prof Rhythm Singh Assistant Professor, Department of Hydro and Renewable Energy, IIT Roorkee
11:07 - 11:08 AM	National Anthem	
11:08 - 11:40 AM	High Tea (Across Room 103)	
Technical Session-I: Hydropower		
Oral Paper Presentation (Room 104)		
11:40 - 11:48 AM	3035: Priyanshu Jain and Ruchi Khare Topic- Hydropower generation using excess water pressure in pipe networks	
11:48 - 11:56 AM	160: Firoz Khan, Arun Kumar and Thomas Staubli Topic- Force-Torque Characterization of the Jet Deflector of Pelton turbine	
11:56 - 12:04 PM	6481: Md. Mustafa Kamal and R.P. Saini Topic- Influence of Computational Modelling Techniques on the Performance Predictability of the Hybrid Hydrokinetic Turbine Rotor	
12:04 - 12:12 PM	6685: K. Bheemalingeswara Reddy, Amit C. Bhosale and R.P. Saini Topic- Numerical investigations on the performance of cross-flow hydrokinetic turbine	
12:12 - 12:20 PM	7444: Naman Arora, Arun Kumar and Sunil Kumar Singal Topic- SEM and ImageJ based approach for quantifying sediment size and shape	
12:20 - 12:28 PM	8601: Upendra Bajpai and Sunil Kumar Singal Topic- Hydrokinetic energy generation: A case study of Sarda canal	
12:28 - 12:36 PM	9243: Shaurya Varendra Tyagi, M.K. Singhal and R.P. Saini Topic- Hydro resource estimation and preliminary feasibility and uncertainty analysis for the development of HES for a rural location in Uttarakhand	
12:36 - 12:44 PM	9416: Navam Shrivastava and Anant Kumar Rai Topic- Effects of Pelton turbine needle eccentricity on jet quality	
12:44 - 12:52 PM	9474: Prashant Kumar and R.P. Saini Topic- CFD on Francis turbine under different load conditions	
12:52 - 01:00 PM	9981: Bhushan R. Rode and Arun Kumar Topic- Overview of Pumped Storage Hydropower Plants in India	

01:00 - 02:00 PM	Lunch Break (Outside A.P.J Abdul Kalam Block)
Panel Session-I: Technologies for Achieving Net-Zero Carbon Energy Systems (Room 103)	
02:00 - 03:00 PM	Dr. Pierre Millet Innovation Director, Elogen, France
	Dr. Pranavamoorthy Balasubramanian Technology Manager, Eaton
	Dr. Vahan Gevorgian Chief Engineer, National Renewable Energy Laboratory (NREL), USA
	Shri Reji Kumar Pillai President, India Smart Grid Forum (ISGF), India
	Moderated by Prof. Arun Kumar
03:00 - 03:30 PM	Session Tea (Across Room 103)
Technical Session-II: Renewable Generation Oral Paper Presentation (Room 104)	
03:30 - 03:38 PM	263: Ankush Hedau and Rajeshwer Prasad Saini Topic- Experimental and Numerical study on the Thermo-hydraulic Performance of the Single Pass Solar Air Heater using Semi-Cylindrical Tubes as the Artificial Roughness
03:38 - 03:46 PM	764: Janaki Komandur, Preethi Para, Vinu R and Kaustubha Mohanty Topic- Determination of Kinetic parameters of thermal and co-pyrolysis of Groundnut deoiled residue and PET plastic
03:46 - 03:54 PM	3538: J Uma Maheswari and Solamalai Dr. Jeyadevi Topic- Cloud based Fault monitoring of Solar panels using LabVIEW
03:54 - 04:02 PM	5645: Sunil Narnaware and N L Panwar Topic- Gasification of waste biomass for bio-hydrogen production
04:02 - 04:10 PM	6597: Deeksha Kumawat, Priya Batra and Surendra Kumawat Topic- An experimental investigation of novel component materials of a single-basin solar still
04:10 - 04:18 PM	6954: Mohit Rana Topic- Comparative assessment of microalgae strain and municipal wastewater for microalgae cultivation for biofuels application
04:18 - 04:26 PM	7083: Gauri Vijay Phadtare and Madhva Vaman Nagarhalli Topic- Analytical approach for hybrid line and point solar concentrator
04:26 - 04:34 PM	7458: Kangana Bhatt, Sanjay Patel, Darshit Upadhyay and Rajesh Patel Topic- Conversion of solid waste to combustible gases using non-stoichiometric model for plasma pyrolysis process
04:34 - 04:42 PM	7858: Jyoti Pal, S.K. Singal and R.P. Saini Topic- Numerical analysis for the performance of a solar air heater having different corrugated shapes of absorber plates.
04:42 - 04:50 PM	8366: Sonal Vilas Shah, Bhawna Yadav Lamba, Avanish Kumar Tiwari, Rohit Sharma and Sapna Jain Topic- A sustainable integrated approach for bio-oil and biogas production along with sewage water reclamation by microalgae: Roadmap to reducing carbon emission
04:50 - 04:58 PM	9829: Indraneel Natu and Dr. Pratham Arora Topic- Modeling of Solar Ammonia Production using ASPEN Plus
04:58 - 05:06 PM	5796: Suyash Jain and Brij N. Singh Topic - Embodied Carbon Footprint of Electric Motor in Electric Vehicles in Context of Circular vs Linear Flow of Manufacturing Materials
07:00 PM	Gala Dinner at Golden Leaf Banquet (outside IIT Roorkee Campus)

Day 2: Oct 18, 2022		
Venue: A.P.J Abdul Kalam Block (L2), IIT Roorkee		
Keynote Session (Room 103)		
09:30 – 09:50 AM	Keynote Address-I:	Prof Rangan Banerjee Director, Indian Institute of Technology Delhi
09:50 - 10:10 AM	Keynote Address-II:	Shri S R Narasimhan Chairman and Managing Director, Power System Operation Corporation Limited (POSOCO), India
10:10 - 10:12 AM	Vote of Thanks	Prof Rhythm Singh Assistant Professor, Department of Hydro and Renewable Energy, IIT Roorkee
10:12- 10:40 AM	High Tea (Across Room 103)	
Technical Session- III:		
Grid Integration of Renewable Generation and Energy Storage		
Oral Paper Presentation (Room 104)		
10:30 - 10:38 AM	108: Anuj Sanghvi and Ryan Cryar Topic- Cybersecurity Value-at-Risk Framework	
10:38 - 10:46 AM	867: Souvik Roy and Rhythm Singh Topic- An approach to procure energy and reserve from distributed generation integrated in a small distribution system	
10:46 – 10:54 AM	1880: Gargee Pise and Milan Kumar Nandgaonkar Topic- Energy and Exergy Analysis of a Latent Heat Storage system integrated to Catalytic Converter	
10:54 - 11:02 AM	2140: Dixit Kumar Pathak and Dheeraj Kumar Khatod Topic- A Review on Integrated Renewable Energy Systems for off-grid rural Electrification	
11:02 - 11:10 AM	2496: Gargee Pise, Milan Kumar Nandgaonkar and Sanket Keer Topic- Numerical Investigation of Catalytic Converter Performance with TES for multiple PCM	
11:10 - 11:18 AM	2791: Kalyan Pal and V. S. K. V. Harish Topic- Modelling and Simulation of Thermostatically Controlled Loads for Power System Regulation	
11:18 - 11:26 AM	3432: Sunil Kumar Sethy and Amit C. Bhosale Topic- Effect of mechanical behavior of gas diffusion layer pores with contact pressure in a proton exchange membrane fuel cell	
11:26 - 11:34 AM	4445: Abhay Kumar, Manuele Bertoluzzo and Amritansh Sagar Topic- Design and control stage comparisons for the V2H wireless power transfer system	
11:34 - 11:42 AM	6082: Kashif Ali, R.P. Saini, Arun Kumar and Md. Mustafa Kamal Topic- An experimental study on a combined sensible-latent heat thermal energy storage system for different positions of PCM	
11:42 - 11:50 AM	6339: Debanjan Mukherjee, Nikhil Kumar Mishra and Karuna Kalita Topic- Estimation of minimum inertial energy storage capacity and minimum active power inertial reserve from frequency response behaviour of load- loss contingencies in India	
11:50 - 11:58 AM	9591: Harshal Singh, Snehangshu Mondal and Maddali Ramgopal Topic- Application of machine learning algorithms in the optimal design and operation of a chiller plant with thermal energy storage	

**Panel Session-II: Policies for Achieving Net Zero Carbon Energy Systems
(Room 103)**

12:00 - 01:00 PM	Prof Rangan Banerjee Director, Indian Institute of Technology Delhi (IIT Delhi), India
	Shri SR Narasimhan Chairman and Managing Director, Power System Operation Corporation Limited (POSOCO), India
	Shri Abhishek Ranjan Senior Vice President, ReNew Power, India
	Shri Abhishek Jain Fellow & Director - Powering Livelihoods, Council On Energy, Environment and Water (CEEW), India
	Moderated by Prof. Arun Kumar
01:00 - 02:00 PM	Lunch Break (Outside A.P.J Abdul Kalam Block)
Technical Session- IV: Planning for Net Zero Energy Systems Oral Paper Presentation (Room 104)	
02:00 – 02:08 PM	637: Minakshi Patel, Rhythm Singh, Pratham Arora and Diptiranjana Mahapatra Topic- Role of carbon pricing in India’s transportation sector: energy consumption and CO ₂ emission
02:08 – 02:16 PM	2918: Sidhartha Sondh, Darshit Upadhyay, Sanjay Patel and Rajesh Patel Topic- Solid Waste Pre-Processing Plant: A Constructive Study for Efficient Waste Management System
02:16 – 02:24 PM	3949: Vishal Saini, S. K. Singal and R. P. Saini Topic- Techno-economic feasibility investigation of an integrated renewable energy system
02:24 – 02:32 PM	4181: Priya Gupta and Rhythm Singh Topic- Indirect forecasting of hourly PV power generation based on a hybrid model combining data analysis and machine learning technique
02:32 – 02:40 PM	4204: Amit Sharma, Ravi Kumar and C.S. Rajoria Topic- Analysis of thin layer mathematical modelling for Mint leaves using solar photovoltaic/thermal (PV/T) system
02:40 – 02:48 PM	6107: Shalini Keshri and Dr. Priyanka Dey Topic- Net Zero Potential at Neighbourhood Level: A Case study of Town Planning Scheme-45, Surat.
02:48 – 02:56 PM	7009: Ravi Tiwari and Himanshu Jain Topic- Investigating Impact of Conservation Voltage Reduction (CVR) on Efficiency of Air Conditioning and Refrigeration Loads.
02:56 – 03:04 PM	7141: Ghazal Srivastava and Absar Kazmi Topic- A comparative assessment of two full-scale selector-attached SBR-based wastewater treatment plants complying with EBPR at variable SRT and microbial community dynamic
03:04 – 03:12 PM	7487: Matrika Ghimiray, Anand B. Rao and Rangan Banerjee Topic- An Integrated Framework for Socio-Economic and Environmental Impact Assessment of Large-Scale Hydropower Projects
03:12– 03:20 PM	9626: Robins Anto and Rhythm Singh Topic- Smart Grid Technologies and Consumer Engagement a Review
03:20 – 03:28 PM	8549: Karisma Karisma and Pardis Moslemzadeh Tehrani Topic: Legal and regulatory challenges of blockchain-enabled renewable energy systems
03:28 – 04:00 PM	Session Tea (Foyer)

Poster Session (Foyer)

03:30- 04:30 PM	156: Mayank Kumar, Dr. M.K. Singhal, Sunil Kumar Yadav and Swati Srivastava Topic- Impact Analysis of Government Policies for SHP Development in States and Private Sectors in India
	177: Mayank Bhardwaj and Amit Arora Topic- Parametric Dependence and Performance Assessment of Ground Coupled Heat Exchangers
	394: Ankush Halba and Hifjur Raheman Topic- Experimental investigation for accessing the effect of preheating of biodiesel blend (B20) on performance and emission characteristics of a 10-kW diesel engine
	443: Chandrasekaran Ramprasad and Subramanayam Busetty Topic- Biogas Estimation, Energy Potential and Carbon Footprint Assessment of the Tiruppur Municipal Solid Waste Landfill Site
	449: Gunjan, Yogita Jain and Radhika Singh Topic- Efficacy of Water Hyacinth and Petha Wastewater as a Sustainable Biofuel Feedstock
	733: Manjushri Patil and Milankumar Nandgaonkar Topic- Passive cooling techniques used in proton exchange membrane fuel cell (PEMFC) cooling
	774: C. Sowthily Kaviarasu, Senthil Kumar S and Mythili C Topic- Efficient Fault Detection and Diagnosis Procedure for Solar Photovoltaic Array based on Multiclass Support Vector Machine
	1402: Pravinkumar Patel and Saurabh Pandya Topic- Performance Parameters Analysis for Energy Recovery Efficiency during Deceleration of Induction Motor Direct Torque Control Drive using Taguchi Approach
	1602: Md Mustafa Kamal, Ali Asghar and Imtiaz Ashraf Topic- Modelling and Performance Evaluation of a Microgrid Coupled to a Sustainable Hydrogen Energy Storage
	1687: Pramod Rajput, Rhythm Singh, Amit Bhosale and Pratham Arora Topic- Performance assessment of solar photovoltaic water pumping system (SPVWPS) for composite climate of India
	1821: Abdul Rehman, Mohd Shahzaib and Sonal K. Thengane Topic- Oxidative torrefaction of paddy straw in a continuous reactor
	2055: Shital Pawar and Vikrant Haribhakta Topic- Recent developments in evaporative cooling as an energy efficient technology for the short-term storage of perishable farm goods: A Review
	2264: Atul Jha Topic- Role of roof mounted photovoltaics in reducing operational emissions of residential buildings in different climatic zones of India
	2880: Harshit Tiwari and Sanjeev Kumar Prajapati Topic- Hydroponics Effluent Recycling for Bioenergy using Microalgae
	2904: Ashish Karn and Ashutosh Bhat Topic- The efficacy of air injection in mitigating silt erosion on hydro turbine blades: a computational study
3125: Sunil Babu Penugonda, M.K. Singhal and R.P. Saini Topic- Wind Resource Assessment Using Weather Research Forecasting (Wrf) Tool Over A Complex Terrain: A Case Study On Southern Region Of Andhra Pradesh, India	
3360: Shaurya Varendra Tyagi, M.K. Singhal and R.P. Saini Topic- Renewable resources characterization and preliminary feasibility analysis for a rural location in Uttarakhand	
3622: Prashanth Kumar Sanjeevaiah, Ramesh K Donga and Ashish Karn Topic- Performance evaluation of an undershot water wheel turbine using CFD	
3926: Praveen Kumar Vidarthi Topic- A path towards net zero emission using building integrated photovoltaic: A review	

	<p>4514: Md Modassir Khan and Arun Kumar Kadian Topic- Algae biodiesel as an alternate and clean fuel of diesel engines – A review</p> <p>5156: Saikishore Naidu and Raj Sakhare Topic- Advancement in Energy generation using Wave energy</p> <p>5352: Rajat Kumar, Ankur Dwivedi and Varun Goel Topic- A review on heat pipe-assisted thermal management system for Lithium-ion batteries in electrical vehicles</p> <p>6497: Prakash Kumar Singh, Kumari Nutan Singh and Mrinal Krishna Choudhury Topic- Construction of Solar Food Dehydrator to minimize the post harvest losses</p> <p>6834: Sayantika Roy and Neelotpal Sardar Topic- Basic Concept and a Short Review on Electric Vehicle And Vehicle To Grid Technology For Grid Stabilization</p> <p>6870: Sheetal Shinkhede and Dr Sanskriti Mujumdar Topic- Thermal Energy Mapping For Net Zero Carbon Emission</p> <p>6886: Ankush Halba and Pratham Arora Topic- Biomass Gasification System to generate Clean and Sustainable Electricity for the Indian Himalayan Region</p> <p>7038: Nitish Prasad and Dr. Vishnu Prasad Topic- Performance evaluation of hydrokinetic turbine by varying meridional blade region</p> <p>8179: Chaitanya Yogi, Ramneek Kaur and Bhavika Sood Topic- A Study on Contemporary Status of Net-Zero Policies of India: Impacts, Challenges and Future Prospects</p> <p>8340: Govinda Singh, Deepak Agarwal and Nitesh Kumar Dixit Topic- Fabrication of compact renewable energy system powered by wind-solar energy.</p> <p>8549: Karisma Karisma and Pardis Moslemzadeh Tehrani Topic- Legal and regulatory challenges of blockchain-enabled renewable energy systems</p> <p>9718: Lenin Babu and Gowri Manohar T Topic- Control Strategies for Mitigating Power Quality Issues in Renewable Energy coordinated Microgrid - A Comprehensive Review</p> <p>9905: Shivinder Mehta and Vinod Puri Topic- Design Analysis of SPV With Super Capacitor Operated 7 Level New Modified Cascaded H-Bridge Inverter Using SPWM Switching Techniques</p>	
Valedictory Session (Room 103)		
04:30 – 04:35 PM	Conference Summary	Prof Himanshu Jain Assistant Professor, Department of Hydro and Renewable Energy, IIT Roorkee
04:35 – 04:45 PM	Award Ceremony	
04:45 – 04:50 PM	Address by Chief Guest	Dr Vahan Gevorgian Chief Engineer, National Renewable Energy Laboratory (NREL), USA
04:50 – 04:55 PM	Closing Remarks	Prof Mukesh Kumar Singhal Head, Department of Hydro and Renewable Energy, IIT Roorkee
04:55 – 5:00 PM	Vote of Thanks	Prof Rhythm Singh Assistant Professor, Department of Hydro and Renewable Energy, IIT Roorkee