

DR. SUNIL KUMAR, PH.D.

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ResearchGate: <https://www.researchgate.net/profile/Sunil-Sansaniwal>

Google Scholars: <https://scholar.google.com/citations?user=fcJWLUQAAAAJ&hl=en>

PROFILE SUMMARY

Lead with more than ten years of experience in research, consultancy, and academia in energy, environment and mechanical engineering. Extensive experience in handling government research and consultancy projects with knowledge dissemination through research training and publications.

AWARDS/ACHIEVEMENTS/RECOGNITIONS

- Designated as LEED Green Associate by GBCI under the United States Green Building Council, 2021.
- Awarded the prestigious Building Energy Efficiency Higher and Advanced Network Fellowship 2020 for carrying out research at the University of Texas at Austin, USA (Funded by DST, Govt. of India).
- Selected for the Indo-German Research and Academic Exchange Program at the Technical University of Applied Sciences, Germany, in 2019 (Funded by German Academic Exchange Service).
- Received recognition for authoring the most cited research paper published in the Renewable and Sustainable Energy Reviews Journal of Elsevier during 2017-18.
- Received outstanding reviewer recognitions by reputed journals of Elsevier such as Renewable Energy Focus, Solar Energy, and Energy Conversion & Management in 2018.
- Working as Reviewer & Member of Editorial Advisory Board for various publishers (2016 onwards).
- Awarded National Bioenergy Promotion Fellowship by the Ministry of New and Renewable Energy, Government of India at SSS-National Institute of Bioenergy, Kapurthala during 2014-16.
- Conferred with Silver Medal for outstanding academic accomplishments during Bachelor of Engineering in Mechanical Engineering in 2010.
- Meritorious award for securing distinction position in Secondary School Examinations conducted by the Board of School Education Haryana in 2004.
- Ranked 1 in Bhartiya Sanskriti Gyan Pariksha conducted by Gayatri Parivar (Haridwar) in 2004.
- Ranked 2 in Interschool Competition Exam conducted by Ideal Shiksha Samiti (Hisar) in 2002.

PROFESSIONAL QUALIFICATIONS

- 1. Ph. D. (Doctor of Philosophy) in Energy and Environment** **Dec 2021**
Malaviya National Institute of Technology (MNIT), Jaipur, Rajasthan, India
Thesis: *Quantification of Occupant's Adaptive Actions for Improving the Indoor Environmental Quality in Buildings.*
- 2. M. Tech. (Master of Technology) in Mechanical Engineering** **Jun 2014**
Guru Jambheshwar University of Science and Technology (GJUS&T), Hisar, Haryana, India
Percentage marks: 73%
- 3. B. E. (Bachelor of Engineering) in Mechanical Engineering** **Jun 2010**
Maharshi Dayanand University (MDU), Rohtak, Haryana, India
Percentage marks: 75% (Degree awarded with distinction)

ADDITIONAL QUALIFICATIONS

- 1. Graduate Aptitude Test in Engineering (GATE) in Mechanical Engineering** **Feb 2022**
Marks secured: 38.64
- 2. Certification Course on Python Programming** **Feb 2022**
University of Michigan, United States of America
- 3. Certification Course on Computer Proficiency** **2003-04**
Senior Secondary Model School, Hisar

EXPERTISE

- Qualitative and quantitative research
- In-situ research activities
- Building energy modelling
- Driving sustainability through team work
- Scientific reports and research publication
- Development of educational modules for learning

RESEARCH INTERESTS

- Solar thermal and biomass gasification
- Refrigeration & Air-conditioning
- Adaptive environmental controls
- Indoor environmental quality
- Green buildings
- Building energy efficiency

COMPUTER PROFICIENCY

- Microsoft Word/Excel/PowerPoint
- Design tool – AutoCAD
- Statistical tool – SPSS
- Data visualization – Tableau
- Simulation tools – DesignBuilder and eQUEST

RESEARCH EXPERIENCE (6.7 Years.....)

Senior Research Fellow

Jan 2018-till date

Centre for Energy and Environment, Malaviya National Institute of Technology, Jaipur, India

Project: Residential Building Energy Demand Reduction in India

Funding Agency: Department of Science & Technology (GOI) and Engineering & Physical Sciences Research Council (UK)

Job description: This job profile deals with the following key points:

- Meta-study analysis of residential thermal comfort and energy usage in India.
- Long-term monitoring of various energy aspects in Indian dwellings.
- Qualitative and quantitative assessments of thermal comfort and energy load profiles.
- Developing residential archetypes and reference models using primary datasets.
- Executing project management duties and organizing stakeholder and project meetings.

Research Associate

Nov 2017-Jan 2018

Centre for Energy and Environment, Malaviya National Institute of Technology, Jaipur, India

Project: Indoor Environmental Quality Standard Implementation Methodology

Funding Agency: Indian Society of Heating, Refrigerating and Air Conditioning Engineers

Job description: This job profile deals with the following key points:

- Demonstrating implementation methodology for India's first IEQ standard in actual buildings.
- Improving the efficacy of the standard based on the experience gained through field evidence.
- Qualitative and quantitative assessments of IEQ parameters in buildings.
- Executing project management duties.

Project Engineer

Jun 2016-Jun 2017

Centre for Energy and Environment, Malaviya National Institute of Technology, Jaipur, India

Project: Centre for Building Energy Research and Development

Funding Agency: India-United States Partnership to Advance Clean Energy

Job description: This job profile deals with the following key points:

- Operation and maintenance of the Scheffler dish for steam cooking applications.
- Data refinement and analytics for improving the ISHRAE weather data.
- Demonstrating research projects and their applications.
- Executing project management duties.

Senior Research Fellow

Dec 2014-May 2016

Thermochemical Conversion Division, SSS-National Institute of Bio-energy, Kapurthala, India

Project: *National Bioenergy Promotion Fellowship*

Funding Agency: *Ministry of New and Renewable Energy, Government of India*

Job description: This job profile deals with the following key points:

- Operation and maintenance of downdraft biomass gasification unit.
- Developing course modules for technicians in bio-energy technologies.
- Organizing training programs, conferences, and research advisory meetings.
- Writing research proposals, reports, and scientific publications.

CONSULTANCY EXPERIENCE (2.8 Years)

Technical Course Developer

May 2018-Dec 2018

Environmental Design Solutions, New Delhi, India

Job description: Developing academic e-learning courses on renewable energy technologies for graduate students. Two courses (i.e., A Primer to Solar Power and Renewable Energy) are developed.

Managed Network Expert

Sep 2012-Dec 2014

Chegg India Private Limited, Visakhapatnam, India

Job description: Providing educational guidance and assistance to mechanical engineering students by delivering them the relevant academic solutions and courses of their interests.

TEACHING EXPERIENCE (1.6 Years)

Teaching Associate

Sep 2011-May 2012

Mechanical Engineering Department, Guru Jambheshwar University of Science & Technology, Hisar, India

Subjects taught: Refrigeration and air-conditioning, thermodynamics, energy conversion

Lecturer

Aug 2010-May 2011

Mechanical Engineering Department, Kalpana Chawla Institute of Engineering & Technology, Hisar, India

Subjects taught: Refrigeration and air-conditioning and thermodynamics

SCIENTIFIC PUBLICATIONS (Citations: 1279...)

1. **Sunil Kumar**, Mathur J, Mathur S. Quantifying occupant's adaptive actions for controlling indoor environment in naturally ventilated buildings under composite climate of India. *Journal of Building Engineering* 2021, Mar 12:102399.
2. **Sunil Kumar**, Jain N, Mathur J, Mathur S. Towards implementing an indoor environmental quality (IEQ) standard in buildings: a pilot study. *Building Services Engineering Research and Technology* 2020. DOI: 10.1177/0143624421997989.
3. **Sunil Kumar**, Tewari P, Mathur J, Mathur S. Impact assessment of air velocity on thermal comfort in composite climate of India. *Science & Technology for Built Environment* 2020; 26:1301-1320.
4. **Sunil Kumar**, Mathur J, Garg V, Gupta R. Review of studies on thermal comfort in Indian residential buildings. *Science & Technology for Built Environment* 2020;26(6):727-48.
5. **Sunil Kumar**, Mathur J, Mathur S. Review of practices for human thermal comfort in buildings: Present and future perspectives. *International Journal of Ambient Energy* 2020.

6. **Sunil Kumar**. Advances and challenges in solar-powered wastewater treatment technologies for sustainable development: an overview. *International Journal of Ambient Energy*, 2019. DOI: 10.1080/01430750.2019.1682038.
7. **Sunil Kumar**, Sharma V, Mathur J. Energy and exergy analyses of various typical solar energy applications: a comprehensive review. *Renewable and Sustainable Energy Reviews* 2018; 82 (1):1576-1601.
8. **Sunil Kumar**, Rosen M, Tyagi SK. Global challenges in the sustainable development of biomass gasification: an overview. *Renewable and Sustainable Energy Reviews* 2017;80:23-43.
9. **Sunil Kumar**, Rosen M, Tyagi SK. Recent advances in developments of biomass gasification technology: a comprehensive review. *Renewable and Sustainable Energy Reviews* 2017;72:363-84.
10. Kumar M, **Sunil Kumar**, Khatak P. Progress in solar dryers for drying various commodities. *Renewable and Sustainable Energy Reviews* 2016; 55:346-60.
11. **Sunil Kumar**, Kumar M. Analysis of ginger drying inside a natural convection indirect solar dryer: An experimental study. *Journal of Mechanical Engineering & Sciences* 2015; 9:1671-85.
12. **Sunil Kumar**, Kumar M, Kaushal R, Kumar V. Investigation of indirect solar drying of ginger rhizomes (*Zingiber officinale*): a comparative study. *Journal of Engineering Science & Technology* 2017; 12(7):1956-71.
13. **Sunil Kumar**, Bhutani V. Recent advances in the developments of pool boiling systems for food processing. *Journal of Biofuel and Bioenergy* 2016; 2(1):44-51.
14. Pal K, **Sunil Kumar**, Gera P, Jha MK, Tyagi SK. An assessment to the biomass-based combustion systems. *Journal of Biofuel and Bioenergy* 2016; 2(2):102-21.
15. **Sunil Kumar**, Kaushal R. Biomass pyrolysis for sustainable developments of bio-products. 1st International Conference on New Frontiers in Engineering, Science & Technology, New Delhi, India, Jan 8-12, 2018, 656-63.
16. **Sunil Kumar** and Mathur J. Development and validation of ISHRAE Indoor Environmental Quality Standard. Accepted in the Fifth International Conference on Efficient Building Design, ASHRAE: Beirut, Lebanon 2022.
17. **Sunil Kumar**, Kumar M, Sahdev R. Towards natural convection solar drying of date palm fruits: an experimental study. Accepted in *Environmental Progress & Sustainable Energy* 2021.
18. Nayak BK, **Sunil Kumar**, Mathur J, Chandra T, Garg V, Gupta R. A review of residential building archetypes and their applications to study building energy consumption. Submitted in *Journal of Architectural Science Review* 2021.
19. Nayak BK, **Sunil Kumar**, Mathur J, Chandra T, Garg V. Parametric assessment of energy consumption in residential buildings of Jaipur, India. Submitted in *Energy and Environment* 2022.

CONFERENCES/WORKSHOPS/TRAINING ATTENDED

- One day industry and academia amalgamation named 2nd PAN India Research Network Meet jointly organized by National Institute of Wind Energy, Chennai, and CEE, MNIT Jaipur (06th Jan 2020).
- One day Industry-Academia Conclave on Energy Storage organized by Department of Science and Technology, Govt. of India at MNIT Jaipur (30th Nov 2019).
- Two days regional workshop on Energy Efficiency in Residential Buildings organized by Bureau of Energy Efficiency, Ministry of Power in association with RRECL at Jaipur (05-06th Nov 2019).
- One-week academic workshop on 'Energy Storage: The Future of Energy' under the AICTE Training and Learning (ATAL) scheme organized by MNIT, Jaipur, India (11-15th Mar 2019).
- South Asia's Largest Exhibition on Refrigeration & Cold Chain, Air Conditioning, Ventilation, and Intelligent Buildings organized by Indian Society of Heating, Refrigerating, and Air Conditioning Engineers at BEC, Mumbai, India (28th Feb to 2nd Mar 2019).

- One-week short-term course on Research Methods and Data Analysis Using SPSS organized by NIT Jalandhar, India (20-24th Jan 2019).
- E-course on Cities and Climate Change organized by UN Climate Change Learning Partnership 2019.
- Three days' workshop on Building Performance Evaluation (under the initiative of the UK-India Learn-BPE project) at Manipal University, Jaipur, India (11-13th Oct 2018).
- One DL program on ASHRAE 90.1 organized by ASHRAE Jaipur Section in association with ISHRAE Jaipur Chapter at Hotel Leisure Inn Grand Chanakya, Jaipur, India (23rd Aug 2018).
- One day SVAGRIHA Training Program organized by Green Rating for Integrated Habitat Assessment at MNIT, Jaipur, India (03rd Aug 2018).
- South Asia's Largest Exhibition on Refrigeration & Cold Chain, Air Conditioning, Ventilation, and Intelligent Buildings organized by Indian Society of Heating, Refrigerating, and Air Conditioning Engineers at BIEC, Bangalore, India (22-24th Feb 2018).
- One-week short-term course on Building Energy Simulation for ECBC 2017 organized by Indian Institute of Information Technology, Hyderabad, India (12-16th Feb 2018).
- One-day Thought-Provoking Workshop on Pertinent Issues Related to Air Quality in India, organized by Civil Engineering Department, MNIT, Jaipur, India (20th Jan 2018).
- One-week short-term course on Recent Advances in PCM-based Cooling Technology organized by IIT Bhubaneswar (India) under GIAN scheme (11-15th Dec 2017).
- Five days National Workshop on Performance Evaluation and O&M of Solar Thermal Systems organized by the National Institute of Solar Energy under MNRE, India (20-24th Apr 2017).
- One-day National Workshop on Concentrated Solar Technologies organized by Rajasthan Renewable Energy Corporation Limited at Bhiwadi, Rajasthan, India (2nd Mar 2017).
- International Conference on New and Renewable Energy Resources for Sustainable Future organized by SKIT, Jagatpura, Jaipur, India (2-4th Feb 2017).
- First and Second International Conference on Recent Advances on Bio-energy Research organized by SSS-NIBE, Kapurthala, India (14-17th Mar 2015 and 25-27th Feb 2016).
- International Conference & Exhibition on Cutting Edge Technological Challenges in Mechanical Engineering organized by NIET, Greater Noida, India (21-22nd Mar 2015).
- National Conference on Research Methodology and Advancement in Engineering and Science organized by Shanti Niketan College of Engineering, Hisar, India (24th Apr 2013).
- Three days National Workshop on Designing of Concentrated Solar Thermal & Solar Water Heating System organized by National Institute of Solar Energy, Gurgaon, India (08-10th Aug 2016).
- One-week National Training Program on Biofuel Production and Its Characterization organized by SSS-NIBE, India (30th Nov-04th Dec 2015).
- Three days National Training Program on Biofuel Production and Catalysis organized by SSS-NIBE, India (19-21st Jan 2015).

PROFESSIONAL ACTIVITIES

1. Membership of professional bodies:

- ASHRAE Technical Committee (T-TAC-TC01.01; T-TAC-TC02.01 and T-TAC-TRG4.IAQP)
- Chartered Institution of Building Services Engineers (Member ID: 058034)
- Indian Society of Heating, Refrigerating & Air Conditioning Engineers (Member ID: S00079280)
- Institution of Mechanical Engineers (Member ID: 80181805)
- International Association of Engineers (Member ID: 246519)
- Society of Building Science Educators (Member ID: 56179992)
- Teaching & Education Research Association (Member ID: M19101178)
- The Asia Society of Researchers (Senior Member ID: R219042002)

2. Workshops, Conferences, and Research meetings organized:

- Member, Organizing Committee for Industry-Academia Conclave on Energy Storage jointly organized by Department of Science and Technology (GOI) and MNIT, Jaipur (30th Nov 2019).
- Member, Organizing Committee for International Conference & Exhibition on Green Buildings organized by the Confederation of Indian Industry (CII) at Jaipur (04-07th Oct 2017).
- Member, Organizing Committee for First & Second International Conferences on Recent Advances on Bioenergy Research organized by SSS-National Institute of Bioenergy, Kapurthala (2015-16).
- Member, Organizing Committee for the First Research Advisory Committee Meeting organized by SSS-National Institute of Bioenergy, Kapurthala (22nd Jun 2015).

3. Research projects, proposals, and reports prepared:

- Report on 'Meta-study of Residential Energy & Comfort Datasets in India' (Bi-national Research Project).
- Report on 'How Indian Homes Consume Energy?' (Bi-national Research Project).
- Two chapters on Biomass Gasification and Pyrolysis for a Consultancy Project on 'Training Module for Trainees in Bioenergy' (Under National Bioenergy Fellowship Program, Govt. of India).
- Research project on Biomass Gasifier Testing, Certification, and R&D Centre at SSS-NIBE, Kapurthala (Under National Bioenergy Fellowship Program, Govt. of India).
- Proposal to train participants from government bodies and ASEAN member States on Bioenergy Technology (Under National Bioenergy Fellowship Program, Govt. of India).

4. Working as the reviewer for the following journal titles:

- Applied Energy (SCI)
- Applied Water Science (UGC-CARE)
- Bentham Science Publishers
- Diagnostics (SCI)
- Energy (SCIE)
- Energy Conversion and Management (SCIE)
- Energy Sources, Part A: Recovery, Utilization & Environmental Effects (SCI)
- Environmental Progress and Sustainable Energy (SCI)
- Environmental Science and Pollution Research (SCI)
- Heliyon Energy (SCIE)
- Ingeniería-e-Investigación (SCIE)
- International Energy Journal (Scopus)
- International Journal of Ambient Energy (Scopus)
- International Journal of Energy Research (SCIE)
- International Journal of Environmental Research and Public Health (SCIE)
- Journal of Building Construction & Planning Research
- Journal of Building Engineering (SCI)
- Journal of Engineering Science & Technology (Scopus)
- Journal of Thermal Analysis & Calorimetry (SCI)
- Lawrence Press
- Renewable & Sustainable Energy Reviews (SCI)
- Renewable Energy Focus (Scopus)
- Scientific Nature Reports (SCI)
- Science of the Total Environment (SCIE)
- Signals (CNKI)
- Sensors (SCIE)
- Solar Energy (SCIE)
- Sustainable Cities and Society (SCIE)

5. Scientific editorial services

- Member, Editorial Advisory Board, Heliyon Energy

STUDENT GUIDED /SUPERVISED

Guided final year students of B. Tech. (Mechanical Engineering) for their major project entitled 'Field Assessment of IEQ in Residential Buildings during Winter Season of Jaipur'.

INTERNATIONAL VISITS

Technical University of Applied Science, Amberg (Germany)

PERSONAL INFORMATION

- Date of Birth: 03rd Aug 1989 (Bhiwani, Haryana, India)
- Linguistic Proficiency: English, Hindi
- Marital status: Married
- Interest/ Hobbies: Watching comedy shows
- Permanent Address: H. No. 52, Chander Lane, Kaimari Road, Hisar 125001, Haryana, India