Cover letter and CV

Dear Sir,

I am Dr. Manoj Kumar Singh, working as an Assistant Professor at the Department of Civil Engineering, Shiv Nadar Institution of Eminence, Greater Noida, UP, India. I was **a visiting subject expert at the Faculty of Civil and Geodetic Engineering, University of Ljubljana, Slovenia and an Ex-JSPS Postdoctoral Fellow at the University of Tokyo, Japan.** I also worked as a Senior Research Analyst at Integrated Research and Action for Development (IRADe), a centre of Excellence designated by the Ministry of Urban Development. Before that, I was a Postdoctoral Fellow at the University of Liege, Belgium, from September 2011 to November 2013. I did my PhD at the Indian Institute of Technology Delhi in August 2011. The title of my Ph.D. thesis is ***"Bioclimatic Design of Built-Environment for North-East India"*.**

Before the present assignment, I was extensively working on adaptive thermal comfort estimation in offices of North-East India and in the classrooms of University buildings in India**.** The same will also be visible in my international journal publications. As a Postdoctoral Fellow at LEMA, University of Liege, Belgium, I worked on historical Belgian buildings to find ways and suggest retrofits to improve **thermal comfort in the indoor environment** and energy efficiency. **My areas of interest are Climatology, Heat stress analysis, Adaptive Thermal Comfort, Occupant behaviour and Built Environment Interaction, Building Energy Simulation, and Energy Performance of Building Envelopes.** I have presented my research findings at international forums like the Solar World Congress, ISES-AP 2008, SDEWES 2013, ICHES Conference, Healthy Buildings, and Asia Conference, among others. I am also on the list of experts for energy-efficient building envelopes for the buildings of North-East India. I have more than 75 publications in refereed International Journals (Publisher: Elsevier), International conferences (ISES, Solaris, ICORE, and REA, etc.), National conferences, and National Magazines with high citations. I am also a **reviewer of 20 high-ranked international/national journals**. For my research work, I am extensively using Building energy simulation tools like TRNSYS. I am also an Indian Green Building Council (IGBC) accredited professional, a silver member of the International Solar Energy Society, and a life member of the Solar Energy Society of India.

I am the recipient of the prestigious JSPS Postdoctoral fellowship and the University of Liege Postdoctoral Fellowship. I also received a fellowship from the Ministry of Human Resource Development, Govt. of India funded, Indian Institute of Technology Delhi during my PhD research, North East Council scholarship, Govt. of India (2000- 2002), Ministry of New and Renewable Energy Fellowship, Govt. of India (2002-2004), Urban habitat forum fellowship and international travel grants from various Govt. agencies like Department of Science and Technology, Govt. of India, CSIR Govt. of India, CCSTDS Govt. of India and Australian and New Zealand Govt. jointly. Regarding collaborative work, I would say that I am working in collaboration with **Prof. Jacques Teller**, Chairman, Department of ArGEnCo, and **Prof. Richard de Dear, Sydney University**, Australia, **Late Prof. N. K. Bansal**, Prof. (Retd.) IIT Delhi, EX-VC SMVD University J&K, **Prof. J. Mathur,** MNIT Jaipur, **Prof. S. Mahapatra**, Assistant professor, Department of Energy, Tezpur University, Napaam, Assam, India, **Prof. B. Givoni**, UCLA, USA, **Prof. Deo Prasad**, Scientia Professor, Chief Executive Officer, CRC for Low Carbon Living Ltd, University of New South Wales, Sydney, Australia, **Dr. A. Kumar**, CBRI, Roorkee, **Prof R. Ooka**, The University of Tokyo, and **Prof. H. B. Rijal**, Tokyo City University. This collaborative work has resulted in research papers in international journals of repute with citations. If I am provided an opportunity to join your institute, I will try my level best to contribute towards the assigned work and the Institute.

All the information provided is true to the best of my knowledge.

Sincerely yours,
Manoj Kumar Singh.

Enclosure: -

Curriculum Vitae

Dr. Manoj Kumar Singh
Assistant Professor,
Department of Civil Engineering
Shiv Nadar Institution of Eminence
Tehsil Dadri, Greater Noida,
Uttar Pradesh 201314, India
Phone No: +91-9127395418 (mobile India)
E-mail: manoj.singh@snu.edu.in,
mksinghtu@gmail.com, mksinghiitd@gmail.com

Computer proficiency: Building Energy Simulation tools **TRNSYS**, **E-Quest, ANSWER-TIMES (**The Integrated MARKAL-EFOM System), **Reference Energy System (RES) for India,** ArcGIS, MATLAB, Adobe Photoshop, Coral Draw, **SPSS**

Area of interest: Adaptive Thermal Comfort, Occupant Behaviour and Built Environment Interaction, Bioclimatic Building Design and Sustainability, Building Energy Simulation, Energy Performance of Building Envelopes, Machine Learning Applications in Adaptive Thermal Comfort.

Profiles:-

Google Scholar profile, please visit the link
http://scholar.google.co.in/citations?user=DOKoIDYAAAAJ&hl=en
ResearchGate profile, please visit the link
https://www.researchgate.net/profile/Manoj_Singh55
Scopus Database
http://www.scopus.com/authid/detail.url?origin=resultslist&authorId=55319636100&zone=
Orcid ID
https://orcid.org/0000-0002-7696-846X

Academic records:

Name of the University/Board Institute	Examinations	Date of passing	Division/ Class with position	Maximum marks and marks secured for the entire degree	Percentage of marks obtained and position, if any,
Jagiroad College. (Guwahati University)	B.Sc. (Physics)	Sept. 2000	**I**	MM 900 MO 560	62.2
Tezpur University	M.Sc. (Physics)	June 2002	**I**	MM 10 MO 7.53	70.3
Tezpur University	M. Tech. (Energy Tech.)	June 2004	**I**	MM 10 MO 8.12	76.2
			Thesis: "Development of Design Guidelines for Energy Efficient Buildings for North-Eastern Region"		
Indian Institute of Technology Delhi	PhD	July 2011	***Thesis: "Bioclimatic Design of Built-Environment for North-East India"***		

Pre and Post Ph.D. experience

Name of the University/ Institute/Designation	Date of Joining	Date of Leaving	Total Experience	Area of Research Work
Jagiroad College **Guest Lecture**	4th Oct 2004	28th Feb 2005	**5 months**	Teaching UG students
Project Associate Jagiroad College	1st July 2005	30th Nov 2005	**5 months**	Running Entrepreneurship Development Cell

University of Liege (**Postdoctoral Fellow**)	1st September 2011	15th Nov 2013	**2 Years 2.5 months**	Thermal comfort in Built Environment and energy efficiency in Belgian buildings
Integrated Research and Action for Development (IRADe) (**Senior Research Analyst**)	20th Jan 2014	9th Oct 2015	**1 Year 9 months**	Energy policy, Energy modelling, Climate change, and Urban development
The University of Tokyo Institute of Industrial Science **JSPS Postdoctoral Fellow**	25th Nov 2015	24th Nov 2017	**2 Years**	Adaptive thermal comfort in the offices of NE India, Building Energy Simulation, and Envelope optimization
Siddhirja Environment Technologies Pvt. Ltd **Deputy Director**	1st Dec 2017	31st Oct 2019	**1 year 11 months**	Running and supervising a team
University of Ljubljana, Faculty of Civil and Geodetic Engineering, **Visiting Lecture**	7th Nov 2019	31st March 2020	**5 months**	Teaching and supervising students, Research
NIT Arunachal Pradesh, Department of Electrical Engineering **Visiting Subject Expert**	20th Jan 2021	3rd June 2022	**1 year 5 months**	Teaching and supervising students, Research
Shiv Nadar Institution of Eminence Department of Civil Engineering **Assistant Professor**	20th June 2022	Continuing	**2 Years 8 months**	Teaching and supervising students, Research

Collaborative Research

S. No.	Organization/Collaborative Publications
1	Collaboration with the Centre for Energy and Environment, Malaviya National Institute of Technology, Jaipur 302017, India.
2	Collaboration with the Department of Human and Social Systems, Institute of Industrial Science, The University of Tokyo, Tokyo 153-8505, Japan.
3	Collaborated with the Department of Architecture & Regional Planning, Indian Institute of Technology Kharagpur 721302, West Bengal, India.
4	Collaborated with the Faculty of Environmental Studies, Tokyo City University, Yokohama, Japan.
5	Collaborated with the Renewable and Energy Efficiency Research Group, Department of Mechanical Engineering, Dr B R Ambedkar National Institute of Technology, Jalandhar, Punjab, 144011, India.
6	Collaborated with the IEQ Laboratory, School of Architecture, Design and Planning, The University of Sydney, Sydney, Australia.
7	Collaborated with the Department of Energy, Tezpur University, Tezpur, 784028, Assam, India.
8	Collaborated with the Department of Energy and Department of Architecture, NEHU, Shillong, during my JSPS postdoctoral research. They assisted me in hiring and collecting thermal comfort data in the office buildings of Shillong.
9	Collaboration with the Faculty of Civil and Geodetic Engineering, University of Ljubljana, Slovenia.
10	Collaboration with the Department of Mechanical Precision Engineering, Malaysia-Japan International Institute of Technology, Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia.
11	Collaboration with the Faculty of Applied Sciences, Department of ArGEnCo, Local Environment Management and Analysis (LEMA), University of Liege, Belgium.

12	Collaboration with the Architectural Engineering Department, College of Engineering, Najran University, Najran 66426, Saudi Arabia.
13	Collaboration with the School of Geographical Sciences and Urban Planning, Arizona State University, Tempe, AZ, USA.
14	Collaboration with the Department of Environmental Science, Bangladesh Agricultural University, Mymensingh, 2202, Bangladesh.

Final Year B.Tech.(FYUP). Projects: Supervised/ Supervising

S. No.	Year	Semester	Title/Student Name	Status/Remarks
1	2024-2025	Monsoon Semester (Aug-Dec 2024)	**Study to analyse and optimize the status of thermal comfort in naturally ventilated hostel room of Shiv Nadar Institution of Eminence** Department of Civil Engineering, Shiv Nadar Institution of Eminence. Student Name: Thakur Aaryan Singh	**Completed.**
2	2024-2025	Monsoon Semester (Aug-Dec 2024)	**Indoor Environment quality in the faculty cabins and classrooms of Shiv Nadar Institutions of Eminence** Department of Civil Engineering, Shiv Nadar Institution of Eminence. Student Name: Shrey Gupta	**Completed**
3	2024-2025	Spring Semester (Jan-May 2025)	**Heat Flux and Air Flow Analysis Of Naturally Ventilated Hostel Building To Optimize The Thermal Comfort Using Building Energy Simulation** Department of Civil Engineering, Shiv Nadar Institution of Eminence. Student Name: Thakur Aaryan Singh	**Ongoing.**

Undergraduate Research Projects (OUR): Supervised/ Supervising

S. No.	Year	Title/Student Name	Status/Remarks
1	2022-2023	**Study To Understand the Thermal Performance of a Non-Air-Conditioned Hostel Room of Shiv Nadar Institution of Eminence Using Building Energy Simulation** Department of Civil Engineering, Shiv Nadar Institution of Eminence. Student Name: Thakur Aaryan Singh	**Completed.** The final report submitted to Shiv Nadar Institution of Eminence and Research received an **"Excellent"** remark.
2	2023-2024	**Study to Enhance Thermal Comfort of a Non-Airconditioned Hostel Room of Shiv Nadar Institution of Eminence** Department of Civil Engineering, Shiv Nadar Institution of Eminence. Student Name: Thakur Aaryan Singh	**Completed.** The final report submitted to Shiv Nadar Institution of Eminence and Research received an **"Excellent"** remark.

M.Tech. thesis: Co-Supervised/Co-Supervising

Soon after completing my Ph.D., I got the opportunity to co-supervise master's students for their master's thesis. The entire work was planned upon discussion with the student in the context of his strength to be able to complete the assigned work. I also successfully motivated the students to do quality work leading to publication in the reputed international journal and international conferences as listed below.

S. No.	Year	Title/Student Name	Status/Remarks
1	2012-2013	**Thermal Comfort in Naturally Ventilated Classrooms** Department of Energy, Tezpur University Student Name: Plabita Baruah	**Completed.** Paper presented in international conference PLEA 2014, December 16 – 18, 2014, Ahmadabad, Gujarat, India.
2	2012-2013	**Estimation of degree days for different climatic zones of North-East India** Department of Energy, Tezpur University Student Name: Pallavi Borah	**Completed.** A research article based on this work is published in an international journal (Elsevier) "Sustainable Cities and Society (2015); 14(1): 70-81".
3	2013-2014	**Thermal Characteristics of a Vernacular Building Envelope** Department of Energy, Tezpur University Student Name: Priyanka Dhar	**Completed.** Paper presented in an international conference PLEA 2014, December 16 – 18, 2014, Ahmadabad, Gujarat, India.
4	2016-2017	**Thermal comfort in offices of Tezpur** Department of Energy, Tezpur University Student Name: Dulal Baruah	**Completed**
5	2016-2017	**Evaluate the effectiveness of Solar-passive features in buildings of Tezpur.** Department of Energy, Tezpur University Student Name: Bornita Fouzdar	**Completed**
6	2019-2024	**Thermal Comfort Study in Slovenian residential houses in the winter season** Faculty of Civil and Geodetic Engineering, University of Ljubljana, Slovenia Student Name: Marko Nusdorfer	**Completed**
7	2019-2021	**Thermal performance study of Slovenian log (wooden) houses** Faculty of Civil and Geodetic Engineering, University of Ljubljana, Slovenia Student Name: Matic Hožina	**Completed.** A research article based on this work is under preparation to be uploaded to an international journal (Elsevier).
8	2020-2021	**Estimation of Degree days and bioclimatic classification of Sri Lanka,** Department of Energy, Tezpur University Student Name: N Pravin Diliban	**Completed.**

Ph.D. thesis: Supervising/Supervised

The following are the details of the students who are carrying out his/her doctoral research under my supervision.

S. No.	Year	Title/Student Name	Status/Remarks
1	2022- Continuing	**Net-Zero Energy Buildings in India** Department of Civil Engineering, Shiv Nadar Institution of Eminence Student Name: **N Pravin Diliban**	**Ongoing**

Chairing Sessions and Scientific committees of international conferences

1. **Co-chaired a session, "Sri Lanka Academy of Young Scientists" SCA-16 Conference** (Science Council of Asia), May 30-June 1, 2016, Colombo, Sri Lanka.
2. **Co-chaired a session "Simulation 2", ICHES 2016,** Nagoya University, Nagoya, JAPAN, October 29 – November 2, 2016.

3. **Co-chaired a session "Climate Change Impacts Indoor Environment", Healthy Buildings 2017 Asia,** College of Medicine, National Cheng Kung University in Tainan, Taiwan, September 2 – 5, 2017.
4. I am on the **scientific committee** of the international conference **IAQVEC 2023,** the 11th international conference on indoor air quality, ventilation & energy conservation in buildings, which will be held in Tokyo on May 20-23, 2023.
5. I am on the **Technical Committee Member** (reviewer) of the 2024 11th International Conference on Geological and Civil Engineering (ICGCE 2024), which will be held in Matsue, Japan, March 15-17, 2024.
6. **Chaired a session "Nature-Based Solutions", CATE-2023,** CEPT University, Ahmedabad, Gujarat, India, December 13 – 15, 2023.
7. I am on the **Technical Committee Member** (reviewer) of the 2025 5th International Civil Engineering and Architecture Conference (CEAC 2025), which will take place on March 28-31, 2025, in Tokyo, Japan.
8. I am on the **Scientific Committee for the 14th International Symposium on Heating, Ventilating, and Air Conditioning (ISHVAC 2025)**, which will take place on November-29 to December 2, 2025, in Tokyo, Japan.

Editorial Assignment

1. Assigned as **Guest Editor with Dr. Mitja Košir for a Special Issue of the Sustainability journal** (ISSN 2071-1050, IF = 3.889). Please visit the following link for more information https://www.mdpi.com/journal/sustainability/special_issues/Buildingstomorrow_High-PerformanceBuildings
2. Assigned as **Guest Editor with Prof. Hom B. Rijal for a Special Issue of the Energies journal** (ISSN 1996-1073, IF = 3.253). Please visit the following link for more information https://www.mdpi.com/journal/energies/special_issues/thermal_comfort_and_energy_use_in_buildings
3. Review Editor of Frontiers in Mechanical Engineering, Frontiers in Built Environment and Frontiers in Energy Research, Frontiers in Built Environment - Sustainable Design and Construction Journals.
4. Assigned as **Guest Editor with Prof. Hom B. Rijal and Dr Sally Shahzad for a Special Issue of the Energies journal** (ISSN 1996-1073, IF = 3.253). Please visit the following link for more information https://www.mdpi.com/journal/energies/special_issues/A8ZHB9Z6C2 (5th Sept 2022-31st December).
5. Joined the Editorial Board of Advances in Building Energy Research Journal, Taylor and Francis online in November 2022. https://www.tandfonline.com/action/journalInformation?show=editorialBoard&journalCode=taer20

Achievements/Awards:

i) Represented K.V. Jagiroad in the regional Science exhibition at **Guwahati** (1994)
ii) I was declared man of the series in the University Week cricket competition 2002 – 2003.
iii) **NEC scholarship** awarded during the M.Sc. course (Aug 2000 – July 2002).
iv) **MNRE fellowship** awarded during M.Tech. Course in Energy Technology (Aug 2002 – July 2004).
v) Received travel grant from DST and CCSTDS for attending the ISES conference in Sydney, Australia, in Nov 2008.
vi) Awarded AUS$1000 as a scholarship from the Australian & New Zealand Solar Energy Society jointly for attending the ISES conference in Sydney, Australia, Nov 2008.
vii) Received Urban Habitat Fellowship to attend Urban Habitat Summit 24 -26 September 2009.
viii) Received travel grant from CSIR and IIT Delhi for attending ISES "Solar World Congress", Johannesburg, South Africa, in Oct 2009.
ix) Cleared **Indian Green Building Council Accredited Professional Examination** on 3rd July 2010. http://www.igbc.in/site/igbc/igbcaplist.jsp
x) **Postdoctoral Fellowship** with a research grant **(EURO 13,450** over two years to buy instruments, attend an international conference and pay master's students who will work on the project for a

short duration**)** from the Belgium Government through the University of Liege to carry out independent research work.

xi) **Got travel grant** from **Regional Forum on Climate Change (RFCC): Low Carbon and Climate Resilient Societies** to attend and present research paper as forum presentation, 1-3 July 2015, Asian Institute of Technology, Thailand, Bangkok**.**

xii) **Awarded Japan Society for the Promotion of Science (JSPS) Postdoctoral Fellowship 2015-2017. Attached to the University of Tokyo, Japan.**

xiii) **Studies done during my PhD on buildings in North-East India and the data generated are now included in the ASHRAE thermal comfort standard database Mk II.** This will bring North-East India on a thermal comfort standard map.

xiv) Co-authored a journal paper with 63 leading researchers, "**Development of the ASHRAE Global Thermal Comfort Database II**, Building and Environment (2018); 142C: 502-512" received the **best paper award from Building and Environment journal**.

xv) **Cleared IGBC Accredited Faculty examination** and successfully completed "The Indian Green Building Council (IGBC)", a faculty training program conducted from 17-28th July 2023.

xvi) Received the **best paper award** in the international conference for the manuscript "Nadarajah P. D., **Singh M K.,** Mahapatra S., **Data-Driven Bioclimatic Zoning in Sri Lanka: PCA and Clustering Analysis.,** SLIIT-3rd International Conference on Engineering and Technology" 22nd to 25th July 2024, Malabe, Colombo, Sri Lanka".

My significant contributions to the research area

i) Bioclimatic Classification of North-East India.

ii) Thermal performance and evaluation of comfort temperature in vernacular residential buildings

iii) Establishing that comfort temperature range varies in the same season of different climatic zones as well as different seasons of the same climatic zone.

iv) Adaptive thermal comfort model for North-East India.

v) Characterizing residential building stock of Liege city based on typology, different age categories, Energy use, type of heating system and energy efficiency.

vi) Thermal comfort assessment study in pre-1945 constructed residential buildings.

vii) Data collected in the above studies are now part of the Latest **ASHRAE thermal comfort standard database Mk II**. This has brought North-East India on a thermal comfort standard map.

viii) Co-authored a journal paper with 63 leading researchers on the latest **ASHRAE -55 thermal comfort standard database Mk II entitled** "**Development of the ASHRAE Global Thermal Comfort Database II**, Building and Environment (2018); 142©: 502-512" received the **best paper award from Building and Environment journal**.

ix) Now working on defining thermal comfort parameters (IEQ) in the offices of North-East India.

x) **Bioclimatic Classification of Sri Lanka**. Co-authored the paper along with my PhD student Pravin Diliban Nadarajah in 2024.

Research Grants

S. No.	Title, Value, and Role	Year/ Funding Agency	Status
1	Title: A research proposal developed by me in a consortium got a project grant from ENERGIA, Netherlands to work on Energy Sector Reforms in India. Its total value is **4,50,000 British Pounds**.	Year: 2014-2015 ENERGIA International	**Successful and got the grant**
2	Title: Study to understand the thermal performance of a non-air-conditioned hostel room of Shiv Nadar Institution of Eminence.	Year: 2022-2023	**Successful and got the grant**

	Its total value is **INR 30,000**/-. Role: **PI and Advisor**	SNIoE call under OUR scheme (Opportunities for Undergraduate Research)	
3	FIST- PROJECT (Level-B), R & D Infrastructure The total grant value is **₹ 9900000.00 only**. Project Implementation Group 1. Dr. Ghanshyam Pal, Associate Professor 2. Dr. Gopal Das Singhal, Associate Professor 3. Dr. Hitesh Upreti, Assistant Professor 4. Dr. Ellora Padhi, Assistant Professor **5. Dr. Manoj Kumar Singh, Assistant Professor** 6. Dr. Sushant Kumar Padhi, Assistant Professor	Year: 2023-2028 Department of Science and Technology, Government of India	**Successfully secured the grant** for the Department of Civil Engineering, Shiv Nadar Institution of Eminence, Deemed to be University.
4	Title: Numerical Investigation on Thermal Performance Characteristics of School Courtyards in Hot and Humid Climate Its total value is **Malaysian Ringgit 158,739**/-. **PI:** Dr. Sheikh Ahmad Zaki Bin Shaikh Salim **Co-PI/Collaborative Researcher** **Dr. Manoj Kumar Singh** Prof. Hom Bahadur Rijal Dr. Ahmad Faiz Mohammad Dr. Ng Wai Tuck	Year: 1st Oct 2023- 30th Sept 2026 Fundamental Research Grant Scheme (FRGS), Ministry of Higher Education, Government of Malaysia	**Successful and got the grant**
5	Title: Study to Enhance Thermal Comfort of a Non-Airconditioned Hostel Room of Shiv Nadar Institution of Eminence. Its total value is **INR 30,000**/-. Role: **PI and Advisor**	Year: 2023-2024 SNIoE call under OUR scheme (Opportunities for Undergraduate Research)	**Successful and got the grant**
6	Title: Energy Efficient and Sustainable Buildings of Sri Lanka: Estimating Adaptive Thermal Comfort Parameters and Modelling Total Value: **₹ 33,52,690.00** Role: **PI**	Year: 2023-2024 Research Proposal Application for a Research Grant India Sri Lanka Foundation 2023-24	**Submitted** **On 8th August 2023**
7	Title: Energy Saving Potential Estimation for Present and Future Climates in a Typical Residential Building using Dynamic Thermal Comfort Parameters in all Bio-Climatic Zones of India Total Value: **₹ 29,07,696/-** Role: **PI**	Year: 2023-2024 Research Proposal Application for a Research Grant SURE-SERB 2023-24	**Submitted** **On 28th November 2023**
8	Title: - Intensity Mapping and Prediction for Assessing Climate Change Influenced Hydrometeorological Extreme Weather Events and Hazards for Present and Future Climate Trends **(IMPACT)** Total Value: **₹ 88,01,848.00** Role: **Dr. Manoj Kumar Singh (PI)** Dr. Jagabandhu Dixit (Co-PI)	Year: 2024-2025 Research Proposal Application for a Research Grant Ministry of Earth Sciences, Government of India	**Submitted** **On 13th June 2024**
9	Title: - Machine Learning Assisted Integration of Renewable Energy for Decarbonization and Sustainable Development in Sri Lanka (MAITRE) Total Value: **₹ 1,10,36,500.00 (Tentative)** **Indian Side** Role: **Dr. Manoj Kumar Singh (PI)**	Year: 2024-2025 Research Proposal Application for a Research Grant DST Bilateral project call 2024-25	**Submitted** **On 30th July 2024**

	Dr. Jagabandhu Dixit (Co-PI) **Sri Lankan Side** Role: **Dr. Shakila Pathirana (PI)** Mr. H K Isuru Shanaka Lakmal (Co-PI) Dr. Amila Jeewandara (Co-PI)		
10	Title: - **Optimizing Indoor Environmental Quality in Tropical Climate School Classrooms: Human-centered Design and Hybrid Cooling Strategies for a Conducive Learning Environment.** Total Value: **₹ 2,69,50,000.00 (RM 1.4 million)** **PI:** Dr. Sheikh Ahmad Zaki Bin Shaikh Salim **Co-PI/Collaborative Researcher** **Dr. Manoj Kumar Singh** Ts. Dr. Mohd Fitri bin Mohd Yakub Dr Azizul Bin Azizan Dr Leng Pau Chung Dr. Mohd Firdaus bin Mohd Taib Dr. Amalina binti Ibrahim Ts. Dr. Doris Toe Hooi Chyee PN Sohaila Binti Safie	Year: 2024-2027 Research Proposal Application for a Research Grant Universiti Teknologi Malaysia 2024	**Successful and got the grant**

Local Chapters/Society/committee member

1. Opened ASHRAE local student Chapter at Shiv Nadar Institution of Eminence and attached to it as Student Branch Co-Advisor.
2. ASHRAE TC 7.6 Member and Handbook Subcommittee member, AP (2027) Chapters 37 & 42. Review completed.
3. ASHRAE Technical Committee 4.10, Indoor Environmental Modelling member.
4. ASHRAE Project team member: Project 8 - Whole-Life Carbon Gap Analysis and Tool Development.

Existing Research Instruments

The following table presents the list of instruments that I purchased to carry out my proposed JSPS research work. Presently these instruments are being used by my collaborators in India for carrying out comfort surveys. I brought the instruments for the research work proposed during the JSPS postdoctoral fellowship using the JSPS research fund, which was handed over to me after the completion of the work. These instruments are costly, compact, sensitive and meet international standard requirements of calibration. I also purchased a single license for SPSS to carry out data analysis. So here I wish to mention that **I can start the research work immediately after joining the position**.

S. No.	Name of Instrument	Specifications	Quantity
1	Globe thermometer	Globe thermometer 0602 0743	3
2	Thermal Anemometer	TESTO 405 - Thermal Anemometer	3
3	Temp, RH, CO_2 Sensor	TR-76Ui CO2/Temperature/Humidity Data Logger	3
4	HOBO U12-012	HOBO Temperature/Relative Humidity /Light / External Data Logger	16
5	HOBO MX1104	HOBO Temperature/Relative Humidity /Light / External Data Logger	3
6	HOBO Software	HOBO ware Pro Mac/Win Software	1
7	USB Cable to readout data	HOBO	3
8	Fluke 61 Infrared thermometer	Fluke	3
9	Sensitive Weighing Machine	Sweat Measurement	3

10	Weighing machine	Subjects weight	3
11	Lux meter	To measure the illumination level	3
12	Testo-400 Thermal comfort kit	To Measure IEQ parameters	1

Publications:

Books edited.

1. Koˇsir M., **Singh M K.,** (Ed.). (2022). **Buildings of Tomorrow: Goals and Challenges for Design and Operation of High-Performance Buildings,** MDPI, St. Alban-Anlage 66,4052 Basel, Switzerland., August 2022. ISBN 978-3-0365-4881-4 (hardback); ISBN 978-3-0365-4882-1 (PDF) https://doi.org/10.3390/books978-3-0365-4882-1

International Journal

1. **Singh M. K.,** Mahapatra S., Atreya S. K., **Development of Bio-climatic zones in North East India,** Energy and Buildings (2007); 39(12): 1250–1257. **Impact Factor 6.6. Q1**
2. **Singh M. K.,** Mahapatra S., Atreya S. K., **Bioclimatism and vernacular architecture of North East India,** Building and Environment (2009); 44(2): 878–888. **Impact Factor 7.1. Q1**
3. **Singh M. K.,** Mahapatra S., Atreya S. K., **Thermal performance study and evaluation of comfort temperatures in vernacular buildings of North-East India,** Building and Environment (2010); 45 (2): 320–329. **Impact Factor 7.1. Q1** *(This article is also one of 25 hot articles of building an environment journal. Please visit the link to see the Science-direct page:*https://top25.sciencedirect.com/subject/engineering/12/journal/building-and-environment/03601323/archive/35/)
4. **Singh M. K.,** Mahapatra S., Atreya S. K., Givoni B., **Thermal monitoring and indoor temperature modeling in vernacular buildings of North-East India,** Energy and Buildings (2010); 42(10): 1610–1618. **Impact Factor 6.6. Q1**
5. **Singh M. K.**, Mahapatra S., Atreya S. K., **Adaptive thermal comfort model for different climatic zones of North-East India**, Applied Energy (2011); 88(7): 2420–2428. **Impact Factor 10.1. Q1**
6. **Singh M. K.,** Mahapatra S., Atreya S. K., **Solar passive features in vernacular architecture of North-East India,** Solar Energy (2011); 85(9): 2011-2022. **Impact Factor 6. Q1**
7. Nguyen A. T., **Singh M. K.,** Reiter S., **An adaptive thermal comfort model for hot humid South-East Asia**, Building and Environment (2012); 56(10): 291-300. **Impact Factor 7.1. Q1**
8. **Singh M. K.,** Mahapatra S., Teller J., **An analysis on energy efficiency initiatives in the building stock of Liege, Belgium,** Energy policy (2013); 62(11): 729-741. **Impact Factor 9.3. Q1**
9. **Singh M. K.,** Mahapatra S., Teller J., **Relation between indoor thermal environment and renovation in Liege residential buildings,** Thermal Science (2014); 18(3) 889-902. **Impact Factor 1.7 Q4**
10. Borah P.**, Singh M. K.,** Mahapatra S., **Estimation of degree-days for different climatic zones of North-East India,** Sustainable Cities and Society (2015); 14(1): 70-81. **Impact factor 10.5. Q1**
11. **Singh M. K.,** Mahapatra S., Teller J., **Development of thermal comfort models for various climatic zones of North-East India,** Sustainable Cities and Society (2015); 14(1): 133-145. **Impact factor 10.5. Q1**
12. Kumar A.**,** Shrivastava V.**, Singh M. K.,** Hancke, G. P.**, Current status of the IEEE 1451 standard-based sensor applications,** IEEE Sensors Journal **(**2015);15(5): 2505-2513. **Impact Factor 4.3. Q1**
13. **Singh M. K.,** Attia S., Mahapatra S., Teller J., **Assessment of thermal comfort in existing pre-1945 residential building stock,** Energy **(**2016);98(3): 122-134. **Impact Factor 9. Q1**
14. Kumar S., **Singh M. K.,** Loftness V., Mathur J., Mathur S., **Thermal Comfort Assessment and Characteristics of Occupant's Behavior in Naturally Ventilated Buildings in Composite**

Climate of India, Energy for Sustainable Development (2016);33(C): 108-121**. Impact Factor 4.4. Q1**

15. Dhingra M., **Singh M. K.,** Chattopadhyay S., **Rapid Assessment tool for traditional Indian Neighbourhoods: a Case Study of Alwar walled city in Rajasthan,** Sustainable Cities and Society (2016); 26(10): 364-382. **Impact factor 10.5. Q1**
16. Kumar S., Mathur J., Mathur S., **Singh M. K.,** Loftness V., **An adaptive approach to define thermal comfort zones on psychrometric chart for naturally ventilated buildings in composite climate of India**. Building and Environment (2016); 109(11): 135-153. **Impact Factor 7.1. Q1**
17. Dhingra M., **Singh M. K.,** Chattopadhyay S., **Macro level characterization of Historic Urban Landscape: Case study of Alwar walled city,** Journal of City, Culture and Society (2017); 9: 39-53. **Impact Factor 1.490. Q1**
18. Takasu M., Ooka R., Rijal H. B., Indraganti M., **Singh M. K., Study on adaptive thermal comfort in Japanese offices under various operation modes**. Building and Environment (2017); 118(06): 273-288. **Impact Factor 7.1. Q1**
19. **Singh M. K.,** Ooka R., Rijal H. B., Takasu M., **Adaptive comfort in offices of North-East India in autumn season,** Building and Environment (2017); 124(C): 14-30. **Impact Factor 7.1. Q1**
20. Singh A., Pandey, Y., Kumar, A., **Singh M. K.,** Kumar, A., Mukhopadhyay, S. C., **Ventilation monitoring and control system for high rise historical buildings**, IEEE Sensors Journal **(**2017);17(22): 7533-7541. **Impact Factor 4.3. Q1**
21. **Singh M. K.,** Kumar S., Ooka R., Rijal H. B., Gupta G, Kumar A., **Status of thermal comfort in naturally ventilated classrooms during the summer season in the composite climate of India**, Building and Environment (2018); 128(C): 287-304. **Impact Factor 7.1. Q1**
22. Kumar A., Singh, A., Kumar, A., **Singh M. K.,** Mahanta P., Mukhopadhyay, S. C., **Sensing Technologies for Monitoring Intelligent Buildings: A Review**, IEEE Sensors Journal, (2018); 18(12): 4847-4860. **Impact Factor 4.3. Q1**
23. Veronika et al., (63 co-authors)., **Development of the ASHRAE Global Thermal Comfort Database II**, Building and Environment (2018); 142(C): 502-512.**Impact Factor 7.1. Q1. *Received best paper award from Building and Environment journal.***
24. Kumar S., **Singh M. K.,** Mathur A., Mathur J., Mathur S., **Evaluation of comfort preferences and insights into behavioural adaptation of students in naturally ventilated classrooms in a tropical country, India,** Building and Environment, (2018); 143(C): 532-547. **Impact Factor 7.1. Q1**
25. Kumar S., **Singh M. K.,** Mathur J., Mathur A., **Thermal performance and comfort potential estimation in a high thermal mass naturally ventilated office building: An experimental study,** Journal of Building Engineering, (2018); 20: 569-584**. Impact Factor 6.7. Q1**
26. Kumar S., **Singh M. K.,** Kukreja R., Chaurasiya S K., Gupta V., **Comparative study of thermal comfort and adaptive actions for modern and traditional multi-storey naturally ventilated hostel buildings during monsoon season in India,** Journal of Building Engineering, (2019); 23: 90-106. **Impact Factor 6.7. Q1**
27. **Singh M. K.,** Ooka R., Rijal H. B., Kumar S., Kumar A. Mahapatra S., **Progress in thermal comfort studies in classrooms over last 50 years and way forward**, Energy and Buildings. (2019); 188-189(C): 149–174. **Impact Factor 6.6. Q1**
28. Semahi S., Zemmouri N., Singh **M. K.,** Attia S., **Comparative bioclimatic approach for comfort, passive heating and cooling strategies in Algeria**, Building and Environment. (2019); 161(C): 106271. **Impact Factor 7.1. Q1**
29. Kumar S., **Singh M. K.**, **Field investigation on occupant's thermal comfort and preferences in naturally ventilated multi-storey hostel buildings over two seasons in India,** Building and Environment. (2019); 161(C): 106309. **Impact Factor 7.1. Q1**

30. Mahar W A., Verbeeck G., **Singh M. K.,** Attia S., **An investigation on thermal comfort of houses in dry and semi-arid climate of Quetta, Pakistan**, Sustainability, (2019);11: 5203. **Impact Factor 3.3. Q1**

31. Kumar S., **Singh M. K.,** Mathur A., Košir M., **Occupant's thermal comfort expectations in naturally ventilated engineering workshop building: A case study at high metabolic rates,** Energy and Buildings. (2020); 217(C): 109970. **Impact Factor 6.6. Q1**

32. Talukdar Md. S. J., Talukdar T. H., **Singh M.K.,** Baten Md. A., Hossen Md. S., **Status of thermal comfort in naturally ventilated university classrooms of Bangladesh in the hot and humid summer season,** Journal of Building Engineering, (2020); 32(C): 101700. **Impact Factor 6.7. Q1**

33. Kumar S., Mathur A., **Singh M. K.,** Rana K. B., **Adaptive thermal comfort study of workers in a mini-industrial unit during summer and winter season in a tropical country, India**., Building and Environment (2021); 197 (C): 107874. **Impact Factor 7.1. Q1**

34. Kumar S., **Singh M. K., Seasonal comfort temperature and occupant's adaptive behaviour in a naturally ventilated university workshop building under the composite climate of India**., Journal of Building Engineering (2021); 40(C): 102701. **Impact Factor 6.7. Q1**

35. Kumar S., **Singh M. K.,** Al-Tamimi N., Alotaibi B. S., Abuhussain M. A., **Investigation on subject's seasonal perception and adaptive actions in naturally ventilated hostel dormitories in the composite climate of India**, Sustainability (2022); 14: 4997. **Impact Factor 3. Q1**

36. Abuhussain M. A., Al-Tamimi N., Alotaibi B. S., **Singh M. K.,** Kumar S., **Impact of Courtyard Concept on Improving Energy Efficiency and Homes Privacy in Saudi Arabia**, Energies, (2022); 15: 5637. **Impact Factor 3. Q2**

37. **Singh M. K.,** Ooka R., Rijal H. B., Kumar S., de Dear R., **Adaptive thermal comfort in the offices of three climates of North-East India**, Journal of Building Engineering (2023); 75(C): 106843. **Impact Factor 6.7. Q1**

38. Taufan A., Zaki S. A., Tuck N W., **Singh M. K.,** Rijal H. B., **Energy-efficient retrofitting strategies in mosque buildings: A review**, Renewable and Sustainable Energy Reviews (2023); 183(C): 113479. **Impact Factor 16.3. Q1.**

39. Diliban N. P., **Singh M. K.,** Mahapatra S., Pajek L., Košir M., **Bioclimatic Classification for Building Energy Efficiency using Hierarchical clustering: A case study for Sri Lanka.**, Journal of Building Engineering (2024); 83: 108388. **Impact Factor 6.7. Q1.**

40. Pajek L., Možina M., Nadarajah P. D., **Singh M. K.,** Košir M., **Future-proofing a naturally ventilated log house: A case study of adaptive thermal comfort under climate change impact.,** Energy and Buildings (2024), 307: 113951. **Impact Factor 6.6. Q1**.

41. Ilmiawan F. A., Zaki S. A., **Singh M. K.,** Khalid W., **Effect of preferable wind directions on personal thermal comfort of occupants in the air-conditioned offices in hot-humid climate,** Building and Environment. (2024); 254: 111390. **Impact Factor 7.1. Q1**

42. Nafiz M., Zaki S A., Nadarajah P. D., **Singh M. K., Influence of psychological and personal factors on predicting individual's thermal comfort in an office building using linear estimation and machine learning model**, Advances in Building Energy Research (2024); 18 (2): 105-125. **Impact Factor 2.1 Q2.**

43. Možina M., Pajek L., Diliban N P., **Singh M. K.,** Košir M., **Defining the calibration process for building thermal performance simulation during the hot season: A case study of a single-family log house,** Advances in Building Energy Research (2024); 18 (2): 180–215. **Impact Factor 2.1 Q2.**

44. Amaripadath D., Azar E., **Singh M. K.**, Attia S., **Heat exposure mitigation in renovated nearly zero-energy dwellings during concurrent heat waves and power outages with passive strategies,** Journal of Building Engineering (2024); 91(C): 109655. **Impact Factor 6.7. Q1.**

45. Nadarajah P. D., Lakmal H.K.I.S., **Singh M. K.,** Zaki S. A., Ooka R., Rijal H. B., Mahapatra S., **Identification and Application of the Best-Suited Machine Learning Algorithm Based on Thermal Comfort Data Characteristic: A Data-Driven Approach**, Journal of Building Engineering. (2024); 95(C): 110319. **Impact Factor 6.7. Q1.**

46. Alam N., Zaki S. A., Ahmad S A., Azizan A., **Singh M. K.,** Azizan A., Othman N., **Machine Learning Approach for Predicting Personal Thermal Comfort in Air Conditioning Office in Malaysia**, Building and Environment. (2024); 266(C): 112083. **Impact Factor 7.1. Q1.**

47. Rosli M. F., Zaki S. A., **Singh M. K.,** Rijal H. B., Othman N., **Sleep quality and thermal comfort assessment in the hot and humid climate of Malaysia,** Advances in Building Energy Research (2025); 19 (1): 87–112. **Impact Factor 2.1 Q2.**

48. Firman S. N., Zaki S. A., Tuck N W., **Singh M. K.,** Rijal H. B., **A study on adaptive thermal comfort and ventilation in Malaysia school classrooms of tropical climate**, Building and Environment. (2025); 273: 112701. **Impact Factor 7.1. Q1.**

Journal manuscript under preparation/submitted.

1. **Singh M. K.,** Kumar S., Ooka R., Rijal H. B., **Characteristics of seasonal and regional differences in comfort parameters: An adaptive thermal comfort study**, *Energy and Buildings, Under preparation*. **Impact Factor 6.6. Q1.**

2. Alam N., Ahmad S A., Azizan A., Zaki S. A., **Singh M. K.,** Othman N., **Impact of Spatial Parameter on Personal Thermal Comfort in Air-Conditioned Offices Using Internet of Things**, Building and Environment. (2024), *Under Review*. **Impact Factor 7.1. Q1.**

3. Alam N., Zaki S. A., Yi C. J., Tuck N. W., **Singh M. K.,** Rijal H. B., Othman N. B., **Thermal Performance of Roof Retrofitting for Attic Overheating Mitigation in Terrace Houses Under Hot and Humid Climates,** Advances in Building Energy Research. (2024), *Under review*. **Impact Factor 2.1. Q2.**

National Magazine

1. **Singh M. K.,** Mahapatra S., **The Energy Perspective of Bioclimatic Buildings in North-East India, SEEM,** Jan-March issue 2009, page 34-41.

International Conference

1. **Singh M. K.,** Mahapatra S., **Bio-climatic Classification of North East India**, *International seminar and exhibition on non – conventional and renewable energies, energy efficiency and sustainability. "Prithvi 2005", 20 – 26 Feb 2005,* Thiruvananthapuram, Kerala.

2. **Singh M. K.,** Mahapatra S.*,* **Solar Passive Features in Traditional buildings of North East India**, *International seminar and exhibition on non – conventional and renewable energies, energy efficiency and sustainability. "Prithvi 2005", 20 – 26 Feb 2005*, Thiruvananthapuram, Kerala.

3. **Singh M. K.,** Mahapatra S.*,* **Design Guidelines for construction of Energy Efficient buildings in North East India,** ICORE 2006. Hyderabad 7-8 February 2006, India. Page 346-350.

4. **Singh M. K.,** Mahapatra S. Atreya S. K., **Bio-Climatic Chart for Different Climatic Zones of North East India,** SOLARIS 2007, February 7-9, IIT Delhi, presented the paper and published in proceedings Vol I, page 194 – 199.

5. **Singh M. K.,** Mahapatra S. Atreya S. K., **Sustainability through Bioclimatic Building Design in North–East India,** 3rd International Solar Energy Society Conference – Asia Pacific Region (ISES-AP 08), 25 – 28 November 2008, Sydney Convention & Exhibition Centre, Australia. Page 1-10.

6. **Singh M. K.,** Mahapatra S. Atreya S. K., **Thermal performance study on Vernacular Architecture of North – East India,** ICORE 2008, 17 – 18 October 2008, Chennai, India**.**

7. **Singh M. K.,** Mahapatra S. Atreya S. K., **Comfort Status in Naturally Ventilated Buildings of North-East India,** Renewable Energy Asia 2008, December 11 – 13. IIT Delhi. Page 1110 – 1116.

8. **Singh M. K.,** Mahapatra S. Atreya S. K., **Study to enhance comfort status in naturally ventilated vernacular buildings of northeast India,** 29th ISES Solar World Congress, Johannesburg 11-14 October 2009, South Africa. Vol 2, Page number 1442 – 1450.

9. **Singh M. K.,** Mahapatra S. Atreya S. K., **Thermal acceptability assessment in vernacular buildings of cold and cloudy regions of North-East India,** 30th ISES Solar World Congress, Kassel 28 August – 02 September 2011, Germany. Vol 3, Page number 2370-2379.

10. **Singh M. K.,** Mahapatra S., Teller J., **Study on indoor thermal comfort in the residential buildings of Liege, Belgium,** CISBAT 2013, Lausanne 4-6 September 2013, Switzerland. Page number 481-486.

11. **Singh M. K.,** Mahapatra S., Teller J., **Relation between indoor thermal environment and renovation in Liege residential buildings,** *8th* SDEWES conference, 22 – 27th September 2013, Dubrovnik, Croatia**.** Page number 0757-01 to 0757-12.

12. **Singh M. K.,** Mahapatra S., Teller J., **Design optimization of vernacular building in warm and humid climate of North-East India,** PLEA -2014, 30th International PLEA Conference: Sustainable Habitat for Developing Societies: Choosing the Way Forward, December 16 – 18, 2014, Ahmadabad, Gujarat, India, Proceedings 1, pp. 279-286.

13. Dhar P.**,** Borah, P.**, Singh M. K.,** Mahapatra S., **Thermal Characteristics of a Vernacular Building Envelope,** PLEA -2014, 30th International PLEA Conference: Sustainable Habitat for Developing Societies: Choosing the Way Forward, December 16 – 18, 2014, Ahmadabad, Gujarat, India, Proceedings 3, pp. 109-116.

14. Baruah P., **Singh M. K.,** Mahapatra S., **Thermal Comfort in Naturally Ventilated Classrooms,** PLEA -2014, 30th International PLEA Conference: Sustainable Habitat for Developing Societies: Choosing the Way Forward, December 16 – 18, 2014, Ahmadabad, Gujarat, India, Proceedings 1, pp. 83-90.

15. Dhingra M., Kaushik A., **Singh M. K.**, Parikh J. K., **Mainstreaming Disaster Resilience for Sustainable Development of Cities in India: Case study of Guwahati and Shillong**, International Conference on *Disaster Risk Reduction: Challenges and Opportunities for Sustainable Growth* IDRiM-2015, Scope Convention Centre, Scope Complex, October28-30, 2015, New Delhi, India.

16. Kaushik A., Dhingra M., **Singh M. K.**, Parikh J. K., **Indian Cities Towards Smartness: A Case Study of Guwahati City**, Smart City Expo and World Congress, 17-19 November 2015, Barcelona, Spain.

17. Takasu M., Ooka R., Rijal H. B., Indraganti M., **Singh M. K., Study on thermal adaptation in naturally ventilated office buildings in Japan**, 9th Windsor Conference: Making Comfort Relevant, Cumberland Lodge, Windsor, UK, 7-10 April 2016. Published in Conference Proceedings pp 515-531, ISBN-978-0-9928957-3-0.

18. **Singh M. K.,** Ooka R., Rijal H. B., Mahapatra S., **Defining thermal comfort in residential buildings of North-East India**, SCA-2016 Conference (Science Council of Asia), May 30-June 1, 2016, Colombo, Sri Lanka. Published in Conference Proceedings pp 118-123.

19. Takasu M., Ooka R., Rijal H. B., Indraganti M., **Singh M. K., Study on thermal adaptation in naturally ventilated office buildings in Japan,** The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan (SHASE), Annual Conference, 14-16 September 2016, Kagoshima, Japan. Published in Proceedings, IS-4, Page No. 13-16.

20. **Singh M. K.,** Ooka R., Rijal H. B., Bansal N K., **The Effect of Cool Roof on Built Environment in Composite and Hot and Dry Climates of India**, The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan (SHASE), Annual Conference, 14-16 September 2016, Kagoshima, Japan. Published in Proceedings, IS-8, Page No. 73-76.

21. Takasu M., Ooka R., Rijal H. B., Indraganti M., **Singh M. K., Study of comfort temperature in naturally ventilated office building in Japan**, 9th International Conference on Indoor Air Quality

Ventilation & Energy Conservation in Buildings, October 23-26, 2016, Incheon Songdo, Republic of Korea. Published in Proceedings, Page No. 1-10.

22. **Singh M. K.,** Ooka R., Rijal H. B., Mahapatra S., **Building simulation-based study to improve thermal performance of a traditional residential house,** ICHES2016 Nagoya University, Nagoya, JAPAN, October 29 – November 2, 2016. Published in Proceedings, Page No. 1-10.

23. **Singh M. K.,** Ooka R., Rijal H. B., Takasu M., **Thermal Comfort in offices of North-East India in Autumn Season**, Healthy Buildings 2017, Asia, September 2 to 5, 2017, College of Medicine, National Cheng Kung University in Tainan, Taiwan. Published in Proceedings, CC 7-5, Page No. 347-351.

24. Ooka R., Takasu M., Rijal H. B., Indraganti M., **Singh M. K., Adaptive thermal comfort and occupant behaviour in Japanese offices under various operation modes,** Healthy Buildings 2017, Asia, September 2 to 5, 2017, College of Medicine, National Cheng Kung University in Tainan, Taiwan. Published in Proceedings, CC 9-3, Page No. 391-395.

25. **Singh M. K.,** Ooka R., Rijal H. B., Takasu M., **Adaptive thermal comfort and occupant behaviour in offices of North-East India in autumn season**, The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan (SHASE), Annual Conference, 13-15 September 2017, Kochi, Japan. Published in Proceedings, IS-6, Page No. 1-4.

26. **Singh M. K.,** Ooka R., Rijal H. B., **Thermal comfort in Classrooms: A critical review, 10thWindsor conference 2018: Rethinking Comfort,** 12th -15th April 2018, Cumberland Lodge, The Great Park, Windsor, Berkshire SL4 2HP. Published in Conference Proceedings pp 649-668, ISBN-978-0-9928957-8-5**.**

27. Attia S., Mustafa A., **Singh M. K., Assessment of thermal overheating in free-running buildings in Cairo**, Proceedings of the 1st international conference on comfort at the extremes: Energy, Economy and Climate CATE 2019, 11-12 April 2019, Dubai. UAE. Published in Conference Proceedings pp 902-913**.**

28. Kumar S., **Singh M. K.,** Gupta V. K., **Quantification of indoor environments and study of thermal comfort in naturally hostel buildings in the tropical country, India,** CLIMA-2019, REHVA-13th HVAC World Congress, 26-29 May-2019, Bucharest, Romania. E3S Web Conference, Volume 111, 02059, 2019. *https://doi.org/10.1051/e3sconf/201911102059)*

29. **Singh M. K.,** Ooka R., Rijal H. B., Kumar S., **Characteristics of thermal comfort in the offices of North-East India,** IAQVEC-2023, 11th International Conference on Indoor Air Quality, Ventilation & Energy Conservation in Buildings, E3S Web of Conferences 396, 01037 (2023), May 20-23, 2023, Tokyo, Japan. https://doi.org/10.1051/e3sconf/202339601037

30. Nadarajah P D., **Singh M. K.,** Mahapatra S., **Improving Sri Lanka Buildings Energy Efficiency Through Bioclimatic Classification and Potential Assessment**, IAQVEC-2023, 11th International Conference on Indoor Air Quality, Ventilation & Energy Conservation in Buildings, E3S Web of Conferences 396, 01038 (2023), May 20-23, 2023, Tokyo, Japan. https://doi.org/10.1051/e3sconf/202339601038

31. Košir M., Možina M., **Singh M. K.,** Pajek L., **Adaptive thermal comfort assessment of a naturally ventilated log house during summer under climate change impacts**, IAQVEC-2023, 11th International Conference on Indoor Air Quality, Ventilation & Energy Conservation in Buildings, E3S Web of Conferences 396, 01006 (2023), May 20-23, 2023, Tokyo, Japan. https://doi.org/10.1051/e3sconf/202339601006

32. **Singh M. K.,** Nadarajah P. D., Kumar S., Mathur J., **Characteristics of thermal comfort in the warm and humid climate of North-East India,** CATE-2023, December 13-15, 2023, CEPT University, Ahmedabad, India. Proceedings page no 238-249. https://carbse.org/CATE2023/PaperID_1119_Characteristics_of_thermal_comfort_in_the_warm_and_humid_climate_of_North-East_India.pdf

33. Singh P., Kumar S., Bagha A. K., Chander N., **Singh M K., Photothermal performance analysis of a concentrating direct absorption solar collector with Ag-Au blended plasmonic nanofluid.,**

10th International and 50th National Conference on Fluid Mechanics and Fluid Power (FMFP) December 20-22, 2023, IIT Jodhpur, India.

34. Nadarajah P. D., **Singh M K.,** Mahapatra S., **Data-Driven Bioclimatic Zoning in Sri Lanka: PCA and Clustering Analysis.,** SLIIT-3rd International Conference on Engineering and Technology" 22nd to 25th July, 2024, Malabe, Colombo, Sri Lanka.

35. Firman N. S., Zaki S. A., Tuck Ng. W., **Singh M. K.,** Rijal, H. B., **Field Study on Thermal Comfort and CO_2 Concentration in School Classrooms in Hot-Humid Climate, Malaysia.,** International Building Physics Conference (IBPC 2024), Toronto Metropolitan University, 25 - 27 July 2024 Toronto, Canada. In: Berardi, U. (eds) Multiphysics and Multiscale Building Physics. IABP 2024. Lecture Notes in Civil Engineering, vol 555. Springer, Singapore. https://doi.org/10.1007/978-981-97-8317-5_19

36. Firman N. S., Zaki S. A., Tuck Ng. W., **Singh M. K., Assessment of Overheating Risk in School Classrooms of a Hot-Humid Climate.,** Proceedings of the International Exchange and Innovation Conference on Engineering & Sciences (IEICES 2024), 10, pp. 838-844, October 17-18, 2024, Kyushu University, Fukuoka City, Japan. *https://doi.org/10.5109/7323358 (Scopus indexed)*

37. Ilmiawan F. A., Zaki S. A., **Singh M. K.,** Rijal, H. B., **Field Measurement on Skin Temperature and Thermal Comfort of the Human Body with Various Wind Directions.,** Proceedings of the International Exchange and Innovation Conference on Engineering & Sciences (IEICES 2024), 10, pp. 1152-1157, October 17-18, 2024, Kyushu University, Fukuoka City, Japan. *https://doi.org/10.5109/7323403 (Scopus indexed)*

Conference Manuscripts under preparation/submitted.

1. Firman N. S., Zaki S. A., Tuck Ng. W., **Singh M. K.,** Rijal, H. B., **Impact of Building Orientation and Height on Thermal Conditions in Malaysian School Classrooms: A Field Study in Kuala Lumpur.,** Healthy Buildings-2025, 18-21st August 2025, Engineering Staff College of India, Hyderabad, India. *Manuscript Submitted*.

Book Chapters under preparation/submitted.

1. Gupta L., Dixit J., **Singh M. K., Assessment of land use land cover change and its impact on land surface temperature and flood inundation for urban areas of Assam, India.,** "Navigating the Climate Crisis: Perspectives and Actions from the Global South for Mitigation & Adaptation", Chintan Research Foundation (CRF), C-14, Second Floor, Block C, Lajpat Nagar III, Lajpat Nagar, New Delhi, Delhi 110024. *Abstract Submitted*.

National Seminar

1. **Singh M. K.,** Mahapatra S. Atreya S. K., **Climate-responsive Building Design in North-East India,** presented a paper in National Seminar on "Emerging trends in Energy Efficiency Opportunities and Challenges", 17 – 18 Oct 2008, Guwahati, Assam and published in proceedings, page 13 – 25.

2. Given presentation on building envelope design of the vernacular architecture of northeast India, as **an expert on building envelope design** in a workshop series organized by SEEM, Kerala and sponsored by MNRE to spread awareness on ECBC code, at Agartala, Tripura on 24 – 25 July 2009.

National Conference

1. **Singh M. K.,** Mahapatra S. Atreya S. K., **Green Building Design: A step towards sustainable habitat.** Renewable Energy and Sustainable Development. **Pp 257-268,** Editors: R Kataki, A C Borah, EBH Publishers, Guwahati, 2012. ISBN: 978-93-80261-78-2.

Other Publication

1. Published interview-based story entitled **"Abode, perhaps the northeast way!"** in Live Mint, Hindustan Times, covering a story based on my research on the traditional architecture of Northeast India on 18th June 2009. This story was covered by Simantik Dowerah, an Assistant editor with the same newspaper. Find the article at the following link:*http://www.livemint.com/2009/06/18151801/Abode-perhaps-the-northeast-w.html*

Invited Lectures

1. Delivered a lecture at Centre for Energy, MANIT Bhopal on the topic "Thermal comfort and Bioclimatic Building Design" on 5th March 2014.
2. Resource Person and Speaker at Workshop on "**Green Building Science"** – Zakir Hussain College of Engineering &Technology, Aligarh Muslim University, Aligarh, India on April 17th & 18th, 2014.
3. Gave an invited presentation in "Climate Change and Urban Development" in TROPMET 2015, 15-18 Feb 2015, Panjab University, Chandigarh, India.
4. Delivered a lecture on the topic "Principals of Thermal Comfort and its Importance" on 29th January 2016 at Wakasa Senior High School, Obama City, Fukui Prefecture, Japan, under the science dialogue program, an initiative by JSPS, Government of Japan to motivate high school students towards science. This lecture was sponsored by JSPS, Government of Japan.
5. Delivered a lecture on the topic "Principals of Thermal Comfort and its Importance" on 10th September 2016, Jr. and Sr. High School at Komaba, University of Tsukuba, 4-7-1 Ikejiri, Setagaya City, Tokyo 154-0001, under science dialogue program, an initiative by JSPS, Government of Japan to motivate high school students towards science. This lecture was sponsored by JSPS, Government of Japan.
6. Delivered lecture at the Architectural Institute of Japan on the topic "Thermal comfort in residential buildings of North-East India" on 6th October 2016.
7. Delivered Lecture at Centre of Energy, IIT Guwahati, on the topic "Thermal comfort in the buildings of North-East India" on 30th May 2017.
8. Delivered an invited presentation as a resource person for the ATAL workshop on "Energy and Audit" at North-Eastern Hill University, Shillong, Meghalaya, on 15th October 2019.
9. Delivered an invited presentation at the graduate students meeting on 2nd December 2019 at the Faculty of Civil and Geodetic Engineering, University of Ljubljana, Slovenia.
10. Delivered an invited lecture on the topic **"Thermal Comfort and Climate Responsive Buildings"** as a resource person for the Training program "Role of Renewable Energy Sources in Indian Energy Security" organized by the Department of Mechanical, Production & Industrial and Automobile Engineering, Delhi Technological University, New Delhi, India on 8th July 2021.
11. Delivered an invited lecture on the topic **"Thermal comfort in Built-Environment"**, Organized by Star College Scheme, DBT, Govt. of India & Department of Physics, Anandaram Dhekial Phookan College Nagaon, Assam, India, on 15th Nov 2021.
12. Delivered an invited lecture on the topic **"Thermal comfort in Built-Environment"**, Under the Alumni Interaction Initiative, Organized by the Department of Energy, Tezpur University, Napaam, Sonitpur, Assam India, New Delhi, India on 22nd Nov 2021.
13. Delivered an invited Key lecture on the topic "**Thermal comfort in Built-Environment: New Direction and Dimensions"** at the International Conference "Frontiers of Energy Management and Technology Innovation (FEMTI), Pisa, organized by the University of Pisa, Italy, on 16th December 2021.

14. Delivered an invited lecture on the topic **"Thermal comfort in Built-Environment: New Direction and Dimensions"**, as a resource person for the Training program "Alternative Energy Sources for Sustainable Development" organized by the Department of Mechanical, Production & Industrial and Automobile Engineering, Delhi Technological University, New Delhi, India on 6th January 2022.

15. Delivered a keynote lecture on the topic **"Energy Efficient Buildings with Net Zero Carbon Emission"**, at the INSORE summit, an initiative of NERERL & The Republic of Croatia. INSORE was held in Assam Administrative Staff College, Khanapara, Guwahati, Assam from 22nd July-24th July 2023. https://www.nererl.com/insore-india-chapter

16. Delivered a lecture on **"Thermal comfort in the Indian Himalayan Region architecture"** in a workshop titled "Advancement in Passive Solar Heated Building Design and Performance Assessment" at the National Institute of Himalayan Environment in Collaboration with DIT University Dehradun on 16th January 2024.

17. Delivered a lecture on **"Traditional Residential and Office Buildings of North-East India"** in a two-day workshop titled "Vikashit Bharat 2047 Abhiyan Aatmnirbhar North East" at the National Institute of Technology Meghalaya, Cherrapunji, Meghalaya on 14th -15th November 2024.

18. Delivered a lecture on the **"**Efficient Energy Use course**"** for master students, Faculty of Civil and Geodetic Engineering, Chair of Buildings and Constructional Complexes, University of Ljubljana, Slovenia, on 14th January 2025.

19. Invited as an expert to deliver a lecture on the topic **"Linking adaptive thermal comfort and building thermal performance"** in One-week Online Short-Term Course (e-STC) On Flow and Energy: Computational Fluid Dynamics for Sustainable Solutions, March 08th-12th, 2025, at the Department of Mechanical Engineering Dr B R Ambedkar National Institute of Technology Jalandhar - 144008, Punjab, India.

Invited Lecture Organized

1. Organized an expert talk on the topic **"Technologies to Mitigate Climate Change"**, delivered by **Prof. Pinakeswar Mahanta, Director NIT Arunachal Pradesh**, on 7th July 2022.

2. Organized an expert talk on the topic **"Introduction to ASHRAE (The American Society of Heating, Refrigerating and Air-Conditioning Engineers) and the benefits of establishing a student chapter at SNIoE"**, delivered by **Dr. Rajinder Singh, Associate Professor, Mechanical Engineering Department, Pusa Institute of Technology, New Delhi** &Chair Refrigeration and Student Activities, ASHRAE India Chapter, on 9th February 2023.

3. Organized an expert talk on the topic **"Passive Climate Adaptability: A Way to Future-Proof Buildings Against the Challenges of Global Warming"**, delivered by **Dr. Mitja Kosir, Associate Professor, Head and Chair of Buildings and Constructional Complexes, Faculty of Civil and Geodetic Engineering, University of Ljubljana, Slovenia**, on 2nd November 2023.

Work experience:

Teaching experience

1) Worked as a lecturer in the **Department of Physics at Jagiroad College** from 4th Oct 2004 to 28th Feb 2005. I was assigned to teach undergraduate students.

Courses Taught	Remarks
1) Solid-state physics	Teaching UG students and taking laboratory
2) Electronics	
3) Physics laboratory	

1) I was a teaching assistant during Ph.D. at **IIT Delhi**. I taught master's students for four semesters.

Courses Taught	Remarks
1) Design Methods	

2) Advanced Materials and Finishes	PG Course. 4 semesters: 2008-2009 and 2009-2010, as Teaching Assistant during Ph.D. at IIT Delhi.
3) Invited Seminar	
4) Design Studio	

2) Subjects taught at PG level as guest Lecturer at **Faculty of Civil and Geodetic Engineering**, **University of Ljubljana, Slovenia**.

Courses Taught	Remarks
1) Living Environment	PG Course. Teaching, Tutorial, Conducting experiments and supervising master's students.
2) Energy-Efficient Use in Buildings	

3) Subjects taught at PG level for M.Tech. program "**Renewable Energy and Energy Management (REEM)**, and Electrical Engineering, Undergraduate program as guest Lecturer at **National Institute of Technology Arunachal Pradesh, India.**

Courses Taught	Remarks
1) Basic Thermodynamics	PG Course. Teaching, Tutorial, Conducting experiments and supervising master's students
2) Energy Economics and Planning	PG Course. Teaching, Tutorial, and supervising master's students
3) Power Generation Economics	PG Course. Teaching, Tutorial, and supervising master's students
4) Electromagnetic Field theory	UG, Electrical Engineering; Teaching, Tutorial, and supervising

4) Subjects taught at UG/PG level at The **Department of Civil Engineering, SNIoE, Dadri**, Greater Noida, UP-201314, India.

Courses Taught	Remarks	Semester/Year
1) CED-307: Estimation, Costing and Project Management	UG Course. Teaching, Tutorial and advising	Monsoon semester 2022
2) DES-211: Creativity and Concept in Design	UG Course. Teaching and advising	Monsoon Semester 2022
3) DES-211: Creativity and Concept in Design	UG Course. Teaching and advising	Spring Semester 2023
4) CED-687: Building Energy Modeling	PG Course. Teaching, Tutorial, and supervising master's students	Spring Semester 2023
5) CED-307: Estimation, Costing and Project Management	UG Course. Teaching, Tutorial and advising	Monsoon semester 2023
6) DES-211: Creativity and Concept in Design	UG Course. Teaching and advising	Monsoon semester 2023
7) CED-687: Building Energy Modeling	PG Course. Teaching, Tutorial, and supervising master's students	Monsoon Semester 2023
8) CED-218: Risk and Reliability Analysis	UG Course. Teaching and advising	Spring Semester 2024
9) CED: 891 Research Methodology	PG Course, Teaching and advising	Spring semester 2024
10) CED-685: Sustainable Buildings	UG/PG Course, Teaching and advising	Monsoon Semester 2024
11) CED 420: Building Physics	UG Course. Teaching and advising	Spring Semester 2025
12) CED-218: Risk and Reliability Analysis	UG Course. Teaching and advising	Spring Semester 2025

Achievements and Participation in ASHRAE India activities as Student Coordinator

1) Participated in the 5th Edition Dr. Prem Jain Memorial Cricket Tournament on 27th January 2024, Jamia Millia Islamia Sports Complex, Okhla, New Delhi.

2) **Runners-up** in the 4th Edition N C Gupta Memorial Football Tournament held on 14th September 2024, New Delhi.

3) **2nd Prize winner** for the Poster titled " Nadarajah P D., Singh M. K., Decarbonizing housing for net zero energy in India's present and future climates" in the International Symposium on Clean Air, Water, Energy and Circular Economy organized by the ASHRAE India Chapter on 16th September 2024, at Development Alternatives, Qutab Institutional Area, New Delhi.

4) Attend the ASHRAE DL Lecture by Dr Chandra Shekhar, Vice President of ASHRAE and Professor at the National University of Singapore, on the topic Emerging HVAC Technologies for Energy-Efficient Healthy Buildings in Hot & Humid Climates, at India Habitat Centre, Magnolia Hall, New Delhi on 4th January 2025.

Research Experience

1) Worked as a Project Associate in an NGO, NB Institute of Rural Technology, from July 2005 to Nov 2005.

2) Worked in TERI as a Project Assistant in the Biomass-based Gasifier Project in Dec 2005.

3) I completed my PhD from the Indian Institute of Technology Delhi in the field of **"Bioclimatic Built-Environment Design (Jan 2006 to July 2011).**

4) **Worked as a Postdoctoral Fellowship** with a research grant **(EURO 13,450** over two years to buy instruments, attend an international conference and to pay master's student who will work on the project for a short duration**)** from the Government of Belgium through the University of Liege to carry out independent research work **(Sept 2011 to Nov 2013)**.

5) Worked as a **Senior Research Analyst and Modeling Head, IRADe,** New Delhi, India **(Jan 2014 to 9th Oct 2015).**

6) Joined the Institute of Industrial Science (IIS), The University of Tokyo as **JSPS Postdoctoral Fellow from 25th November 2015.**

7) Worked at the **Joint International Research Laboratory of Green Buildings and Built Environments (Ministry of Education),** Chongqing University, China as a visiting scholar (28th November to 27th December 2018).

8) Joined as **Visiting Lecturer, Faculty of Civil and Geodetic Engineering, University of Ljubljana, Slovenia** on 7th Nov 2019.

13) Worked as a subject expert at the National Institute of Technology Arunachal Pradesh from Jan 2021 till May 2022.

10) Presently working as Assistant Professor, Department of Civil Engineering, Shiv Nadar Institution of Eminence, Greater Noida, Uttar Pradesh, India.

Workshop/ Seminar/ International Conference Attended:

1) Attended Training cum Demonstration Program on "**Bamboo Based Biomass Gasifier**", by the Department of Energy, Tezpur University, in collaboration with CGPL, IISc. Bangalore. Sponsored by National Mission on Bamboo Application. On 20 Nov 2004 at Tezpur University.

2) Attended Training cum Workshop on "**Integrated Rural Energy Planning**", by the Department of Energy, Tezpur University, in collaboration with Meghalaya Non-Conventional and Rural Energy Development Agency Shillong. Sponsored by MNRE, Government of India, New Delhi, from 28th to 30th January 2005 at Tezpur University.

3) Attended and presented papers in the International seminar "**Prithvi 2005**" held in Thiruvananthapuram, Kerala, India from 20th – 25th Feb 2005 under the theme **"Non-Conventional Energy"** and **"Eco-Friendly Habitat" organized by** Swadeshi Science Movement, Kerala.

4) Assisted Prof S. K Atreya in running a design school (**a summer design school to develop awareness among the faculty of engineering colleges about modern design practices and approaches**) from 6th June 2006 to 17th June 2006.

5) Attended a one-day workshop on **"Energy Security and Climate Change"** at CES, IIT Delhi, on October 10, 2007.

6) Attended one-day conference **"India R & D 2008: NANOTECHNOLOGY – The Science of the Future"** on 5th September 2008 at FICCI, New Delhi.

7) Attended and presented paper at the **3rd International Solar Energy Society Conference – Asia Pacific Region (ISES-AP 08)**, 25 – 28 November 2008, Sydney Convention & Exhibition Centre, Australia.

8) Attended and presented a paper at the International Conference **"Renewable Energy Asia 2008"**, December 11 – 13, IIT Delhi. Page 1110 – 1116.

9) Attended **1st Habitat Summit**, *An Indian Habitat Centre and Urban Habitat Forum Initiative* from 24th to 26th September 2009 at Indian Habitat Centre, New Delhi.

10) Attended and presented a paper at **ISES Solar World Congress**, Johannesburg, 11-14 October 2009, South Africa.

11) Attended national conference **"GRIHA National Conference and Exhibition on Green Building Materials and Technology"** on 4th January 2010 at the Stein Auditorium, India Habitat Centre, New Delhi.

12) Attended **Solar Energy Conclave 2010** on 11th January 2010 in Vigyan Bhawan, New Delhi.

13) Attended "**National Conference on Green Design: Buildings and Habitats"** on 7-8th January 2011 at the Stein Auditorium, India Habitat Centre, New Delhi.

14) Attended and presented a paper at the National Conference on "Renewable Energy for Development of Underdeveloped Areas with Particular Reference to North-East India", 23rd– 25th March 2010, Tezpur University, Tezpur, Assam.

15) Attended and presented a paper at **ISES Solar World Congress**, Kassel, 28 August – 02 September 2011, Germany.

16) Attended **TRNSYS days 2012**, 5-7 September 2012, 3-day TRNSYS training at the University of Liege, Arlon campus, Belgium.

17) Attended and presented a paper in CISBAT 2013, EPFL, Lausanne, 4-6 September 2013, Switzerland.

18) Attended and presented a paper at the 8th SDEWES Conference 2013, Dubrovnik, 22 – 27th September 2013, Croatia.

19) Attended and gave an invited presentation on "Climate Change and Urban Development" in TROPMET 2015, 15-18 Feb 2015, Panjab University, Chandigarh.

20) Attended training program on **ANSWER-TIMES (**The Integrated MARKAL-EFOM System) from 22nd July to 10th August 2015.

21) Attended SCA-16 Conference (Science Council of Asia), and presented a paper on May 30-June 1, 2016, Colombo, Sri Lanka.

22) Attended "The Society of Heating, Air-Conditioning and Sanitary Engineers" of Japan (SHASE), Annual Conference and presented a paper on September 14-16, Kagoshima, Japan.

23) Attended the International conference "ICHES-2016" at Nagoya University and presented a paper, October 29 - November 2, 2016, in Nagoya, Japan.

24) Attended the International conference "Healthy Buildings Asia-2017" at the College of Medicine, National Cheng Kung University and presented a paper from September 2 to 5, 2017, in Tainan, Taiwan.

26) Attended "The Society of Heating, Air-Conditioning and Sanitary Engineers" of Japan (SHASE) Annual Conference and presented a paper on September 13-15, 2017, in Kochi, Japan.

27) Attended "IAQVEC-2023", 11th International Conference on Indoor Air Quality, Ventilation & Energy Conservation in Buildings, May 20-23, 2023, Tokyo, Japan.

28) Completed "The Indian Green Building Council (IGBC)", Faculty training program conducted from 17-28th July 2023.

28) Attended "CATE-2023- Comfort at Extremes", an International conference on December 13-15, 2023, at CEPT University, Ahmedabad, India.

29) Attended "16th GRIHA Summit 2024- Accelerating Climate Action in the Built Environment", an International conference on December 4-5, 2024, at India Habitat Centre, Lodhi Road, New Delhi, India.

Present status: Working as Assistant Professor, Department of Civil Engineering, Shiv Nadar Institute of Eminence, Tehsil Dadri, Greater Noida-201314, UP, India.

Membership:

1) Institute of Physics, UK,
2) ASHRAE Member,
3) ISES Member,
4) Young ISES Member,
5) Life member of the Solar Energy Society of India (SESI)
6) Member of the Indoor Air Quality, Ventilation and Energy Conservation in Buildings (IAQVEC) association
7) Indian Green Building Council Accredited Faculty,
8) International Building Performance Simulation association-India Member

Hobbies: Drawing portraits, Video Editing, Social work, Photography.

Reviewer to International Journals:

1) Renewable & Sustainable Energy Reviews
2) Energy and Buildings
3) Building and Environment
4) Frontiers of Architectural Research
5) Landscape and Urban Planning
6) IEEE Sensors Journal
7) Journal of Architectural Engineering Technology
8) Sustainable Energy Technologies and Assessments
9) Indian Journal of Pure & Applied Physics
10) Energy Efficiency, Springer
11) Sustainable Cities and Society.
12) Journal of Building Engineering

I have reviewed more than 200 papers from the above international journals.

Citation received (Scopus Data):	**2701**
Citation received (Google Scholar):	**3925**
Citations received (Research gate):	**3397**
Total Impact factor of publications:	**308.1**
h index	**27(Scopus database)**
	30(ResearchGate)

30(Google scholar)

Abstract of M.Tech. Thesis

Title: "Development of Design Guidelines for Energy Efficient Buildings for North-Eastern Region"

Buildings must be synonyms with comfort because men spend their entire lives in the building, so these must be taken seriously and should be given prime importance. As men spend most of their time in the building, they also try to increase their level of comfort artificially, which is purely dependent on energy consumption. Nowadays, it becomes important, rather unavoidable, to think of a building that has low energy and provides comfort to the people living in it naturally.

In this study, we have classified the whole Northeastern region at a micro level depending upon the climatic conditions in relation to the geography. This provides us with a closer picture in a systematic way. The base of the study is the 30-year data that we have collected from RMC Guwahati. We have also studied the effect of the different physical parameters on comfort conditions. The outcome of this study is used to plot points on Givoni's bioclimatic diagram, which ultimately leads us to the measures that we should take into consideration for creating the comfort conditions inside the building.

By studying traditional architecture, it has been found that the buildings that were constructed about 70 to 100 years or more back have a number of passive features that help in controlling the indoor environment, mostly promoting ventilation as the humidity level is alarmingly high in this region. In most traditional buildings, it has been observed that the locally available materials are efficiently used. Since the locally available material is from the same climatic zone, so they cope with the local environment well. These factors also influence the economic factor quite a lot. In the end, guidelines are prepared for low-rise residential buildings as such buildings are very common in the region. To increase the effectiveness of these guidelines, the concepts should be incorporated at the time of planning new buildings. Emphasis is given to the optimum use of locally available materials because these will ultimately lower the load on the conventional system leading to energy saving. Another aspect is that this type of architecture is environment-friendly as well as retains comfortable conditions.

Abstract of Ph.D. thesis

Title: "Bioclimatic Design of Built-Environment for North-East India"

Design plays an important role in making buildings comfortable for human beings. Human beings spend most of their time in buildings. So, the built environment must be designed for optimal thermal comfort to support life and its sustainability. It is inherent in human beings to always look for an enhanced level of comfort. This activity leads to an increase in the energy consumption of buildings directly or indirectly. In today's scenario, it becomes important or rather unavoidable to look for building design solutions that provide optimal comfort and consume minimum energy.

This study is carried out in North-East India to study the design of the vernacular building for the climate-oriented features that can be applied to modern architecture and the status of comfort in those buildings. We have classified the Northeastern region of India at a micro-climate level based on the climatic conditions in relation to the geography in three bio-climates (warm and humid, cool and humid and cold and cloudy). This classification provides more specific information about each climatic zone. Bioclimatic charts are developed to estimate the potential passive design strategies for two seasons, summer and winter.

We have studied vernacular architecture and different climatic-oriented features as well as solar passive features available in vernacular houses of the region along with their functionality. This study tried to investigate why these traditional structures are still very popular and widely constructed. This study

also identifies the functionality of these vernacular architectures and based on it, three houses (one in each climatic zone) are selected for long-term monitoring. Later in the study, it is found that the functionality of the houses is in harmony with the socio-cultural setup and thus makes the architecture very popular.

In these three selected houses, monitoring work has been carried out in all the seasons of the year, followed by a comfort survey. Based on the data collected, we have done a thermal performance study to find comfort status and to define the range of comfort temperatures. Based on the data, predictive formulae have been developed to predict the indoor thermal environment. It has also been tried to incorporate behavioural factors in developing the mathematical formula. The developed formula is successfully validated with CC > 0.9. When a detailed analysis of the data collected during a comfort survey was done, it was found that PMV (Predicted Mean Vote calculated according to ISO 7730 standard) deviates from AMV (Actual mean vote recorded on 7 points ASHRAE sensation scale) for the same thermal environment. To explain the deviation, a mathematical relation has been developed to evaluate the corrective term called adaptive coefficient (λ), which has been added to PMV to get cPMV (Corrected Predicted Mean Vote). The value of "λ" may be negative or positive depending on the adaptation level of the occupants.

In the end, simulations of vernacular architecture have been carried out with the objective of designing the indoor environment for optimal human thermal comfort. The model of vernacular buildings generated in TRNSYS provides the indoor temperature variation with fair accuracy as compared to what has been obtained during actual field measurements. Finally, important conclusions are drawn based on the research work with a discussion on limitations and the future scope of the study.

About Postdoctoral research work at the University of Liege

Title: Study on thermal performance and defining comfort status in ancient residential houses of Liege City

I was a postdoctoral fellow at the Faculty of Applied Sciences, Department of ArGEnCo, LEMA (Local Environment Management and Analysis), the University of Liege, from September 2011 to November 2013. I enjoyed my stay and found all the required support from the university and my colleagues in LEMA, which made my life easy as it was my first experience of a long-term stay outside India. To carry out postdoctoral research work, I received a research grant (**EURO 13,450** over two years to buy instruments, attend an international conference and pay master's students who will work on the project for a short duration**)** from the Belgian government through the University of Liege. To get this research grant, I developed a research proposal with assistance from Prof Jacques Teller to study the historical building stock, which was built before 1945 and is still in use. The Wallonia region has about 800000 ancient housing. Out of which 50% were constructed between 1800-1945. These buildings are low on overall energy efficiency and have a high heating load in winter. Considering the importance of energy efficiency and the economy in the present scenario, the European Commission's directive has directed the improvement of the energy efficiency of these buildings and newly constructed ones by 50% with respect to the case as usual by 2020. I did research on characterizing the residential building stock of Liege city based on typology, different age categories, Energy use, Type of heating system and energy efficiency. I also carried out a thermal performance and thermal comfort assessment study in 20 selected buildings by monitoring the indoor environment and carrying out a questionnaire-based comfort survey in 85 houses. Monitoring and thermal comfort surveys were carried out from November 2011 to May 2012. My research brought forth evidence that occupants in historical buildings feel comfortable with indoor thermal conditions that are not covered in modern thermal comfort standards such as ISO 7730 and ASHRAE 55-2013. My research recommended that these historical buildings must not be evaluated using modern comfort standards, or a different set of guidelines must be developed for these historical buildings. I also established links between different renovations and their impact on the built environment in historical houses. All these works led to the publication of research articles in Energy Policy, Energy and Thermal Science Journal and Energy Journal.

About JSPS Postdoctoral Fellow at The University of Tokyo

The duration of my JSPS postdoctoral fellowship (Japan Society for Promotion of Sciences) at The University of Tokyo was from November 2015 to November 2017. As a JSPS postdoctoral fellow, I carried out an adaptive thermal comfort study in typical office buildings in three climatic zones (warm and humid, cool and humid and cold and cloudy) of North-East India, considering normal building stock incorporating naturally ventilated, air-conditioned and mixed-mode (having optional AC units) office buildings. This study was successfully completed and was able to define the thermal comfort status in the naturally ventilated office buildings of North-East India. A year-long monitoring and 2326 questionnaire-based thermal comfort surveys were conducted, leading to a total of 2326 valid questionnaire responses collected from three representative locations in the three climatic zones of Northeast India. This study resulted in two international journals (Q1) and four international conference papers.

Declaration:

I hereby declare that the information furnished above is true to the best of my knowledge.

Date: 3rd March 2025
Place: Shiv Nadar Institution of Eminence, Greater Noida, UP, India