# Digvijay Singh

*Curriculum Vitae*

*digvijaysingh019@gmail.com*

*9664271996*

## Research Summary

- **Performance Assessment**
  - Examined Potential and Performance of Free-Standing and Building Integrated Photovoltaic Technologies across Indian Climatic Zones.
  - Passive Impacts roof attached PV systems.
  - Impact of BIPV technologies on buildings Thermal Comfort
  - Evaluated Performance of Thermally Insulated BIPV Roofs.
- **Economic Analysis**
  - Conducted Economic and Life Cycle Cost Analysis for BIPV Systems in Composite Climatic Conditions.
  - Evaluated Technoeconomic of Insulated BIPV Systems as Building Envelopes.

## Employment

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|---|---|
| Mar 2022 – Oct 2022 | Assistant Professor, *Uttaranchal University*, Dehradun, India |
| Feb 2019-21 | Teaching assistant at *School of Energy and Environmental Studies, Devi Ahilya Vishwavidyalaya*, Indore, India |
| Jan 2020-Mar 2020 | Visiting Faculty, *School of Physics, Devi Ahilya University*, Indore, India |
| Dec 2014-Jan 2016 | Assistant Professor, *Poornima College of Engineering*, Jaipur, India |

## Academic Qualifications:

2017-22 PhD in Energy and Environment — CGPA 8/10
**Devi Ahilya Vishwavidyalaya**, Indore, India

2012-14 M. Tech in Energy Management — CGPA 7.57/10
**Devi Ahilya Vishwavidyalaya,** Indore, India

2008-12 B. Tech in Electrical Engineering
**Rajasthan Technical University,** Kota, Rajasthan, India — Percentage 67%

## Responsibilities

***Organizing Secretary***

2022 International Conference on Clean Energy Systems and Technologies (ICOEST), Uttaranchal University, Dehradun and ENEA, Italy, 14-16 Oct

***Program Coordinator***

2022 60 hrs Certificate Course in "Design, Installation and Commissioning of Solar PV System" Uttaranchal University, Dehradun and Arbutus Consultants, Pune

2019-21 Compiled NAAC AQAR Report for Departmental Assessment, Devi Ahilya Vishwavidyalaya, Indore"

***Member***

2024 International Conference on Applied Artificial Intelligence (AAI 2024) conference Technical Committee member (TPC), Shoolini University, Solan, Himachal Pradesh.

2018-19 Student counselling cell, Devi Ahilya Vishwavidyalaya, Indore

Anti Ragging cell, Devi Ahilya Vishwavidyalaya, Indore

## Participation in Workshops/Conferences /Seminars/online course.

***Conference***

1. 4th INTERNATIONAL CONFERENCE on ADVANCES in MECHANICAL ENGINEERING And NANOTECHNOLOGY, 2022, Manipal University Jaipur, India and National Institute of Technology Uttarakhand, India, 18-19 Feb 2022
2. 3rd International Conference on Smart and Sustainable Developments in Materials, Manufacturing and Energy Engineering - (SME 2021) | NMAM Institute of Technology, Nitte, Karnataka, India, 19–21 November 2021
3. 2nd International Conference on Aspects of Materials Science and Engineering (ICAMSE) at Panjab University, Chandigarh, $5^{th}$ – $6^{th}$ March 2021
4. Second International Conference on manufacturing, material science and engineering 2020 (ICMMSE), CMRIT, Hyderabad,18-19 December,2020
5. International conference on Innovations in Clean Energy Technology (ICET), Maulana Azad National Institute of Technology, Bhopal, 27-28 August 2020.
6. International conference on Integrated Interdisciplinary Innovations in Engineering (ICIIIE) at Panjab University, Chandigarh, 28-30 August 2020.
7. $3^{rd}$ Rajasthan science congress at Manipal University, Jaipur. 28, Feb – 2Mar, 2015.

***Workshop/online course***

1. NPTEL online certificate course on "**Electric Vehicle part -1"** conducted by IIT Delhi**,** March 2019 *[AICTE approved FDP Course]*
2. National workshop on "**Intellectual Property Rights"** at School of Data Science and Forecasting (SDSF), Devi Ahilya University, Indore, December 1, 2018.
3. One week course on **"Novel Solar energy application for the built environment"** at Energy department Maulana Azad National Institute of Technology, Bhopal, from 26-30 November,2018. *[Under GIAN-MHRD scheme]*
4. A two-day training program on **"MATLAB"** at School of Computer Science and IT(SCSIT)**,** Devi Ahilya University, Indore from 10-11 August 2018".
5. A short-term course on **"DC smart grids: Renewable Integration, energy storage, system operation"** at Electrical engineering Department, Malviya National Institute of Technology, Jaipur from 10-14 November, 2016.

## Publications

***Journal***

1. **Singh, D**., Buddhi, D., Rajput, P., Singh, K. Y., Mahor, H. S., & Kushwaha, P. K. (2024). Phase change materials in building integrated photovoltaic (BIPV) envelopes: A strengths, weakness, opportunities and threats analysis. *International Journal of Modern Physics B*, 2540041. (**IF** 2.6; **h-index** 81; **SJR** 0.298)

2. Rajput, P., **Singh, D**., Singh, K. Y., Karthick, A., Shah, M. A., Meena, R. S., & Zahra, M. M. A. (2024). A comprehensive review on reliability and degradation of PV modules based on failure modes and effect analysis. *International Journal of Low-Carbon Technologies*, *19*, 922-937. (**IF** 2.4; **h-index** 40; **SJR** 0.5) *[SCI Indexed]*

3. **Singh, D**., Chaudhary, R., Karthick, A., Patil, P. P., & Kaliappan, S. (2024). Economic and life cycle cost analysis of building-integrated photovoltaic system for composite climatic conditions. *Environmental Science and Pollution Research*, 1-22. **(IF** 5.8; **h-index** 132; **SJR** 0.85) *[SCI Indexed]*

4. Poonia, S., Singh, A. K., **Singh, D**., & Kushwaha, H. L (2023). Economic analysis of a business model of basin-type building material-based solar thermal desalination device. *Desalination and water treatment.* **(IF** 1; **h-index** 83; **SJR** 0.26**)** *[SCI Indexed]*

5. **Singh, D.**, Singh, A. K., Poonia, S., & Buddhi, D. (2023). Determination of dew-point temperature and wet-bulb temperature using the steam table on a non-scientific calculator. *Materials Today: Proceedings*, *80*, 314-319. *[Scopus Indexed]*

6. Kumar, R., Ranjan, R., **Singh, D**., & Yamsani, N. (2023, September). Long Term Electricity Load Forecasting for Garhwal Region of Uttarakhand Using Artificial Neural Network. In *2023 6th International Conference on Contemporary Computing and Informatics (IC3I)* (Vol. 6, pp. 955-959). IEEE. *[Scopus Indexed]*

7. **Singh, D.**, Rawat, M., & Buddhi, D. (2023). Technoeconomic evaluation of insulated building integrated photovoltaic system as a building envelope. *Materials Today: Proceedings*, *80*, 339-343. *[Scopus Indexed]*

8. **Singh, D**., Akram, S. V., & Yamsani, N. (2023, September). Internet of Things (lOT) in Community based Solar Cooking Technologies. In *2023 6th International Conference on Contemporary Computing and Informatics (IC3I)* (Vol. 6, pp. 960-966). IEEE. *[Scopus Indexed]*

9. **Singh, D.,** Buddhi, D., & Karthick, A. (2023)**.** Productivity Enhancement of solar still through heat transfer enhancement techniques in Latent heat storage system. *Environmental Science and Pollution Research*, 1-36. **(IF** 5.8; **h-index** 132; **SJR** 0.85) *[SCI Indexed]*

10. Rawat, M., **Singh, D.**, & Buddhi, D. (2022). Thermal performance of cool roofs incorporated with phase change materials**:** A review**.** *Materials Today: Proceedings***.** (**IF** 1.24; **h-index** 56; **SJR** 0.36) *[Scopus Indexed]*

*11*. Poonia, S., Singh, A. K., Jain, D., Kumar, N. M., & **Singh, D**. (2022). Techno-Economic Analysis of Integrated Solar Photovoltaic Winnower-Cum Dryer for Drying Date Palm Fruit. *Sustainability*, *14*(20), 13686. (**IF** 3.9; **h-index** 109; **SJR** 0.66) *[Scopus Indexed]*

12. **Singh, D.,** Akram, S. V., Singh, R., Gehlot, A., Buddhi, D., Priyadarshi, N., ... & Bokoro, P. N. (2022). Building Integrated Photovoltaics 4.0: Digitization of the Photovoltaic Integration in Buildings for a Resilient Infra at Large Scale. *Electronics*, 11(17), 2700. (**IF** 2.7; **h-index** 49; **SJR** 0.59) *[Scopus Indexed]*

13. **Singh, D**., Gautam, A., Chaudhary R. (2022). Potential and performance estimation of free-standing and building integrated photovoltaic technologies for different climatic zones of India, *Energy and Built Environment*, 3 (1): 40-55 (**IF-**; **h-index** 12 ; **SJR** 1.57 ) *[Scopus Indexed]*

14. **Singh, D.**, Poonia S, Singh A.K. (2022). Carbon reduction and economic evaluation of building attached photovoltaic systems *Materials Today: Proceedings*. 63:92-98 (**IF** 1.24; **h-index** 56; **SJR** 0.36) *[Scopus Indexed]*

15. **Singh, D.,** Chaudhary, R., & Karthick, A. (2021)**.** Review on the progress of building-applied/integrated photovoltaic system. *Environmental Science and Pollution Research*, 1-36. **(IF** 5.8; **h-index** 132; **SJR** 0.85) *[SCI Indexed]*

16. **Singh, D.**, & Chaudhary, R. (2021). Performance evaluation of thermally insulated building integrated photovoltaic roof. *Materials Today: Proceedings*. (**IF** 1.24; **h-index** 56; **SJR** 0.36) *[Scopus Indexed]*

17. Kumar, S., Kumar, A., Maithani, R., Sharma, S., & **Singh, D.** (2022). Exergy analysis of various solar thermal collectors. *Materials Today: Proceedings*. (**IF** 1.24; **h-index** 56; **SJR** 0.36) *[Scopus Indexed]*

18. **Singh, D.,** Gautam, A. K., & Chaudhary, R. (2021). Application of phase change material in

building integrated Photovoltaics: A review, *Materials Today: Proceedings*,45, 4624-4628. (**IF** 1.24; **h-index** 56; **SJR** 0.36) *[Scopus Indexed]*

19. **Singh, D.**, Rawat, M., Singh, S. P., & Chaudhary, R. (2021). Performance of PV integrated wall and roof as a building material. In *IOP Conference Series: Materials Science and Engineering* (Vol. 1033, No. 1, p. 012005). IOP Publishing. **(IF** 0.51**; h-index** 48**; SJR** 0.249**)** *[Scopus Indexed]*

20. **Singh, D.,** & Chaudhary, R. (2021). Impact of roof attached Photovoltaic modules on building material performance. *Materials Today: Proceedings*, 46, 445-450 (**IF** 1.24; **h-index** 56; **SJR** 0.36) *[Scopus Indexed]*

21. **Singh D.**, et al., (2020) Evolution of Design Criteria for Earth Air -Pipe Cooling System of Greenhouse. *International Journal of Agriculture Sciences*, ISSN: 0975-3710 & E-ISSN: 0975-9107, Volume 12, Issue 24, pp.- 10517-10519. *(NAAS rating – 4.20)*

22. Singh, A.K., Poonia, S., Jain, D., **Singh, D.** (2019). Direct Calculation of Wet- Bulb Temperature and Dew-Point Temperature. *International Journal of Agriculture Sciences*, 11 (20), 9169- 9171. *(NAAS rating – 4.20)*

23. A. K. Singh, **Digvijay Singh**, "Simple Methods for Determination of Wet-Bulb Temperature and Dew-Point Temperature", *International Journal of Science and Research (IJSR)*, Volume 8 Issue 9, September 2019, 670 – 672.

24. **D. Singh**, S. P. Singh, M. Agnihotri, K. Palley, and A. K. Singh, ―An Experimental and Economic Study of room heating through Solar Evacuated Tube Collector, *Int. J. Res. Advent Technol*., vol. 7, no. 1, pp. 516–519, 2019 *[UGC approved]*
25. Renu, A. K. N., & **Singh, D**. (2019). Performance Evaluation of 400 kW Grid Connected Rooftop Solar Photovoltaic Power Plant Installed at SKIT, Jaipur. *SKIT Research Journal, 9(1),25-32*

*26.* **Singh, D**., Singh, A. K., Singh, S. P., & Poonia, S. (2017). Economic Analysis of Parabolic Solar Concentrator Based Distillation Unit. *Indian Journal of Economics and Development*,*13*(3), 569-575. *(NAAS rating – 5.15) [UGC approved]*

27. **Singh, D**., Singh, A. K., Singh, S. P., & Poonia, S. (2017). Year-Round Potential of Greenhouse as a Solar Dryer for Drying Crop Produce. *Agricultural Engineering Today*, *41*(2), 29-33. *(NAAS rating – 4.23)*

***Conference***

1. Potential of Greenhouse as a solar dryer for Drying Crop Produce" **Digvijay Singh**, A.K. Singh, & S.P. Singh. 3rd *Rajasthan Science Congress* (RSC) Manipal University, Jaipur ,28 Feb – 2Mar, (2015).
2. **Digvijay Singh**, A.K. Singh, S.P. Singh. "Design and Development of low-cost solar cooker for rural people" *International conference on renewable energy* (ICORE), 27-29, (2013), November, KIIT, Odisha, Bhuvnashwar.

***Book chapters***

1. Rawat, M., **Singh, D.**, Singh, S., & Buddhi, D. (2023, September). Thermal insulation materials and its energy savings aspects for building envelopes: A review. In AIP Conference Proceedings (Vol. 2771, No. 1). *AIP Publishing*. *[Scopus Indexed]*
2. **Singh, D.,** & Singh, S.P. (2021). Estimation of Energy Generation and Daylight Availability for Optimum Solar Cell Packing Factor of Building Integrated Semitransparent Photovoltaic Skylight *Advances in Clean Energy Technologies,* Springer**,** Singapore**. DOI:** 10.1007/978-981-16-0235-1

3. **Singh, D.,** Singh, A.K. Singh, S.P. Poonia, Surendra., (2021). Optimization of Tilt Angles for Solar Devices to Gain Maximum Solar Energy in Indian Climate *Advances in Clean Energy Technologies* Springer, Singapore**. DOI:** 10.1007/978-981-16-0235-1

4. S.P. Singh and **Digvijay Singh** (2019) Passive and Hybrid cooling systems for building in Hot and Dry Climatic conditions, *NIPA Publishers*, New Delhi and *CRC Press* Pg.no.247-260, ISBN-978-93-87973-84-8

## Course Taught

M.Tech

| | |
|---|---|
| 2019-21 | Energy Efficient Buildings |
| 2019-21 | Illumination Engineering |

U.G level

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| 2015-16 | Fundamentals of Electrical engineering |
| 2015-16 | Power electronics |
| 2019 | non-conventional energy sources |
| 2020 | Environmental Science |

Labs Handled

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| 2019-20 | Solar thermal and PV |
| 2021-22 | Energy and Environment software |
| 2014-15 | Basic Electrical Engg. |
| 2015-16 | Power electronics |

## Grants

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| 2023 | Technology Business Incubator (NIDHI-TBI)" worth Rs. 570.9 Lakhs as Co- PI from Department of Science and Technology (DST) |

## Awards and Recognition

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| 2023 | Certification of Appreciation for fund approval Project titled "Technology Business Incubator (NIDHI-TBI)" worth Rs. 570.9 Lakhs as |
| 2019-21 | University Golden Jubilee Fellowship |
| 2023-24 | Invited to deliver talk to the participants of UGC-HRDC in the Refresher Course in Environment and Disaster Management (MDC) (03/01/2023 to 16/01/2023) for University & College teachers on "Sustainable Buildings." |