Vineet Veer Tyagi, M.Sc., Ph.D.
Associate Professor
School of Physics,
Shri Mata Vaishno Devi University, (State University),
(J&K), India

Research Field & Activities

Extensive multidisciplinary research in Clean Energy Technologies and Materials (Solar Energy, Thermal Energy Storage with Phase Change Materials), PV/Thermal Systems, Energy Analysis, Solar Collectors for Different Applications.

Achievements

- Recognition as World level Scientist–Name listed in Energy Subject of World Ranking of top 2% Indian Scientist published by Scopus in October, 2020, November 2021, October 2022 and, October 2023, conducted by an independent team of scientists at Stanford University, USA.
- University of Malaya Post-doctoral Research Fellowship (2011) at UMPEDAC, Faculty of Engineering, **University of Malaya, 50603, Kuala Lumpur, Malaysia.** (Q. S. World Ranking - 65)
- Research Associate (2009), Council of Scientific & Industrial Research (CSIR)at **Centre for Energy Studies, Indian Institute of Technology Delhi, New Delhi, India**.
- Research Associate (2008), National Institute of Solar Energy, Ministry of New and Renewable Energy (MNRE), Gurugram, Haryana, Government of India, New Delhi, India.
- Senior Research Fellowship (Extended) (2006), Council of Scientific & Industrial Research (CSIR).

Education

Ph.D.: School of Energy & Environmental Studies, Devi Ahilya University, Indore, M.P.,
Title of Thesis "**Studies on the Solar Thermal Energy Storage System Having Phase Change Material for Space Heating and Cooling" in November**, **(2007)**.

M.Sc.: Physics (2001) with First Division, M.J.P. Rohilkhand University, Bareilly, U.P.

B.Sc.: Physics, Chemistry, Mathematics (1998) with First Division, M.J.P. Rohilkhand University, Bareilly, U.P.

Research & Teaching Experience

Post Ph. D. Research Experience: 05 years
Teaching Experience – 12 Years
Total: 17 Years

Administrative Responsibilities

- Dean (Research &Development) from 27th September 2022, Shri Mata Vaishno Devi University, Katra, Jammu, India
- Head, School of Energy Management from 29th August 2019, Shri Mata Vaishno Devi University, Katra, Jammu, India
- Associate Dean (R &D) from 15th December 2021 to 26th September 2022, Shri Mata Vaishno Devi University, Katra, Jammu, India
- Executive Council Member, Shri Mata Vaishno Devi University, Katra, Jammu, India
- Academic Council Member, Shri Mata Vaishno Devi University, Katra, Jammu, India
- Chairman, School Research Committee, School of Energy Management, Shri Mata Vaishno Devi University, Katra, Jammu, India
- Chairman, Board of Studies, School of Energy Management, Shri Mata Vaishno Devi University, Katra, Jammu, India

Research Publications – Citation Indices

Total publications (SCI/SCIE/Scopus) (Publisher–Elsevier, Springer, Taylor and Francis, Wiley, etc.)	190
Edited Books	02
Book Chapters	15
Patent applied (under process)	02
Total Cumulative impact factor of published papers based on Clarivate Analytics	779
Total Citations (Google Scholar)	16500
Total Citations (Scopus)	15000
h-index (Source: Google scholar)	54
h-index (Source: Scopus)	52
Invited Talk in International & National Conferences	15
Paper presented in International & National Conferences	12
International & National Conferences/FDP/Workshop Organized	12
Total Project Grant Received (100,000 USD)	05
As Project Investigator	03
As Project Co-Investigator	04

Research/Academic Experience

25th October 2024 to Present	**Associate Professor** School of Physics, Shri Mata Vaishno Devi University, (State University),

	(J&K), India
23rd March 2015 to 24th October 2024	**Assistant Professor** School of Energy Management (Faculty of Engineering), Shri Mata Vaishno Devi University, (State University), (J&K), India
30th October 2014 to 21st March 2015	Research Scientist DST-Centre for Policy Research, B. B. A. University, (Central University), Lucknow, U.P, India
22nd August 2012 to 30th October 2014	Associate Professor, Department of Physics, Manav Rachna University, Faridabad,121001, Haryana, India
1st August 2011 to 31st July 2012	Post Doctoral Research Fellow, University of Malaya Power Energy Dedicated Advance Centre (UMPEDAC), Faculty of Engineering, University of Malaya, 50603, Kuala Lumpur, Malaysia
20th March 2009 to 31st July 2011	Research Associate (CSIR), Centre for Energy Studies, IIT Delhi, New Delhi, India
3rd April 2008 to 19th March 2009	Research Associate, Solar Energy Center, Ministry of Newand Renewable Energy, Government of India, New Delhi, India
1st June, 2007 to 31st August 2007	Visiting Researcher, Department of Mechanical Engineering, Kun Shan University, Tainan, 71003, Taiwan

Subject Expertise for M. Tech. and Ph. D. Students

- Solar Energy and Applications
- Thermal Energy Storage & Applications
- Non-conventional Energy Sources
- Thermodynamics
- Energy Storage Systems and Applications
- Energy Auditing

Student Supervision (Ph.D. & M. Tech.)

Degree	Completed	Ongoing
Ph. D.	05	01
M. Tech.	24	01

Ph.D. Thesis Supervised/Awarded

Name of Student	Title of Thesis
Kapil Chopra (*Awarded)*	Thermal performance study of heat pipe solar collector system with TES for Air/water heating application.
Atin K. Pathak (*Awarded)*	Solar Energy Utilization for Wastewater Treatment and Its Application for Bioenergy Generation
Har Mohan Singh (*Awarded)*	Studies on the Solar Energy based photo-bioreactor system to harvest Algal Biomass with the use of Bioflocculants
Aditya Chauhan (*Awarded)*	Thermal Modelling and Experimental Validation of PV/Thermal System for Different Applications.

Sudhir K. Pathak (Awarded)	Studies on the ETC solar collector system with TES for water heating application
Mriduta Sharma (Ongoing)	Studies on the Solar Thermal Energy Storage based Collector System for the Treatment of Wastewater

Research Project Completed/Ongoing

S. No.	Title	Name of PI	Name of the Co-PI	Funding Agency	Funding in INR/USD
1	Development of Solar Thermal-Photovoltaic Hybrid System with PCM's Storage unit for Heating & Cooling Application in Buildings	Dr. Vineet V. Tyagi	–	UGC, Govt. of India	Rs. 6,00,000.00
2.	Solar Thermal/ Photovoltaic Hybrid Collector System for Efficient Utilization in Rural Building for Heating and Electrification	Dr. Vineet V. Tyagi	Dr. Sanjeev Anand	Japan International Cooperation Agency Project	Rs. 11,21,588.00
3.	Thermal Analysis of Designed Solar Thermal/ Photovoltaic Hybrid collector System for Air/ Water Heating and Electrification of Building Applications	Dr. Jeyraj Selvaraj	Dr. Vineet V. Tyagi	Japan International Cooperation Agency Project	USD 40,000
4.	Trans-disciplinary Research and Innovation Hub (for Jammu Division Colleges) at SMVDU	Dr. Sharda M. Potukochi	Dr. Vineet V. Tyagi Dr. Sumeet Gupta Dr. Balbir Singh	Govt. of J&K	Rs. 3,00,00,000.00
5.	Moving towards Carbon Neutrality – Strategy and Impact to Society and Industry (M2CNeu)	Dr. Jeyraj Selvaraj	Dr. Vineet V. Tyagi	Japan International Cooperation Agency Project	USD 38,000
6.	Nano-enhanced PCM Integrated Hybrid Solar Air/Water System for Colder Regions of India	Dr. Vineet V. Tyagi	Dr. Kapil Chopra	(SURE), SERB, DST, Govt. of India	Rs. 23,65,000.00
7.	Design and Development of Renewable Energy Powered Bakery Unit for Skill Development and Employment Generation in Himalayan Region	Dr. Y. Anand	Dr. Vineet V. Tyagi And Dr. Sanjeev Anand	National Mission on Himalayan Studies Implemented by the Ministry of Environment, Forest & Climate Change (MoEF&CC)	Rs. 48,00,000.00

Selected Publications in International/ National Journal indexed in (SCI/SCIE/SSCI)

Research Publications

1. **V. V. Tyagi** and Buddhi, D. Thermal cycle testing of calcium chloride hexahydrate as a possible PCM for latent heat storage. Solar Energy Materials and Solar Cells, 92(8), 891–899, 2008. (Impact Factor – 6.3)
2. **V. V. Tyagi,** S.C. Kaushik, A.K. Pandey, S.K. Tyagi, Experimental study of super-cooling and pH behavior of a typical phase change material for thermal energy storage, Indian Journal of Pure & Applied Physics, 2011, 49 (02). (Impact Factor – 1.08)
3. **V. V. Tyagi**, A. K. Pandey, G. Giridhar, B. Bandyopadhyay, S R Park and S. K. Tyagi, Comparative study based on exergy analysis of solar air heater collector using thermal energy storage, International Journal of Energy Research, Volume 36, pages 724–736, 2012, (Impact Factor – 4.3)
4. **V. V. Tyagi**, A. K. Pandey, S.C. Kaushik and S. K. Tyagi, Thermal performance evaluation of a solar air heater with and without thermal energy storage: An experimental study, International Journal of Thermal Analysis and Calorimetry, Volume 107, Issue 3, pages 1345-1352, 2012, (Impact Factor – 3.2)
5. **V. V. Tyagi,** Pandey, A. K., Kothari, R., & Tyagi, S. K. (2013). Thermodynamics and performance evaluation of encapsulated PCM-based energy storage systems for heating application in building. Journal of Thermal Analysis and Calorimetry, 115(1), 915–924, (Impact Factor – 3.2).
6. **V. V. Tyagi,** Pandey, A. K., Buddhi, D., & Kothari, R. (2016). Thermal performance assessment of encapsulated PCM based thermal management system to reduce peak energy demand in buildings. Energy and Buildings, 117, 44–52, (Impact Factor – 6.6).
7. A K. Pandey, **V. V. Tyagi**, N.A Rahim, S.C. Kaushik, S. K. Tyagi, Thermal Performance evaluation of direct flow solar water heating system using energetic approach, International Journal of Thermal Analysis and Calorimetery, 121, 1365–1373. 2015, (Impact Factor – 3.2).
8. **V. V. Tyagi**, A.K. Pandey, D. Buddhi, Richa Kothari. Thermal performance assessment of encapsulated PCM based thermal management system to reduce peak energy demand in buildings. Energy and Buildings 117 (2016) 44–52, 1 April 2016. (Impact Factor – 6.6).
9. U. Stritih, **V. V. Tyagi,** R Stropnik, H Paksoy, F Haghighat, MM Joybari, Integration of passive PCM technologies for net-zero energy buildings, Sustainable Cities and Society 41, 286-295, 2018. (Impact Factor –10.5)

10. K Chopra, **V. V. Tyagi**, AK Pathak, AK Pandey, A Sari, Experimental performance evaluation of a novel designed phase change material integrated manifold heat pipe evacuated tube solar collector system, Energy Conversion and Management 198, 2019, (Impact Factor – 9.9).
11. K Chopra, **V. V. Tyagi**, A K Pandey, R. Sharma, A. Sari, PCM integrated glass in glass tube solar collector for low and medium temperature applications: Thermodynamic & techno-economic approach, Energy, 117, 238, 2020, (Impact Factor – 9.0).
12. K. Chopra, **V. V Tyagi**, A. K. Pandey, Thermodynamic and techno-economic analysis of heat pipe ETC water heating system for Indian composite climate, Journal of Thermal Analysis and Calorimetry 139 (2), 1395-1407, 2020, (I.F.- 3.2).
13. K. Chopra, **V. V. Tyagi,**A. K. Pathak, A. K. Pandey, S. Anand, A. Sari, Thermal performance of phase change material integrated heat pipe evacuated tube solar collector system: An experimental assessment, Energy Conversion and Management 203, 112205, 2020, (I.F.–9.9).
14. Atin K. Pathak, **V. V. Tyagi**, Richa Kothari, Sanjeev Anand, Integrated approach for textile industry wastewater for efficient hydrogen production and treatment through solar PV electrolysis, International Journal of Hydrogen Energy, Volume 45, Issue 48, 30 September 2020, 25768-25782, (Impact Factor 8.1)
15. Atin K. Pathak, **V. V. Tyagi**, Sanjeev Anand, A. K. Pandey, Richa Kothari, Advancement in Solar Still Integration with Phase Change Materials based TES Systems and Nano-fluid for Water & Wastewater Treatment Applications, Journal of Thermal Analysis and Calorimetry, 2022, (Impact Factor – 3.2)
16. Pathak A. K, **V. V. Tyagi**, Anand S, Kothari R. Experimental investigation of designed solar parabolic concentrator based desalination system for textile industry wastewater treatment. Energy & Environment. 2022 Aug;33 (5):870-96. (Impact Factor –4.0)
17. K.Chopra, **V. V. Tyagi**, A. K. Pandey, R. K. Sharma, Ahmet Sari, Effect of simultaneous & consecutive melting/solidification of phase change material on domestic solar water heating system, Renewable Energy, 2022, (Impact Factor -9.0)
18. Pathak S. K, **V. V. Tyagi,** Chopra K, Pandey AK, Sari A., Hot Water Generation for Domestic Use in Residential Buildings via PCM Integrated U-Tube Based Solar Thermal Collector: A 4-E Analysis. Buildings. May 4; 13(5):1212. 2023, (Impact Factor –3.1)
19. Chopra K, **V. V. Tyagi,** Pathak SK, Khajuria A, Pandey, Impact of Stearic Acid as Heat Storage Material on Energy Efficiency and Economic Feasibility of a Vacuum Tube Solar Water Heater. Energies. May 24; 16, (11):4291. 2023, (Impact Factor – 3.0**)**

20. Chopra K., **V.V. Tyagi**, Pathak, S.K.Singh, G., Pandey, A.K., Thermal and chemical reliability of paraffin wax and its impact on thermal performance and economic analysis of solar water heater, Energy for Sustainable Development, 73, pp. 39–53, 2023, (Impact Factor –4.4)
21. Chopra, K., **V. V. Tyagi**, Popli, S., Pandey, A.K., Technical & financial feasibility assessment of heat pipe evacuated tube collector for water heating using Monte Carlo technique for buildings, Energy, 267, 126338, 2023, (Impact Factor – 9.0)
22. Chopra K, **V. V. Tyagi**, Pathak SK, 5E analysis of a novel designed hot water storage header integrated vacuum tube solar water heater. Thermal Science and Engineering Progress. Jul 1;42:, 101929. 2023, (Impact Factor 5.1)
23. Pathak SK, **V. V. Tyagi**, Chopra K, Sari A. Thermal performance and design analysis of U-tube based vacuum tube solar collectors with and without phase change material for constant hot water generation. Journal of Energy Storage. Aug 30;66:107352., 2023, (Impact Factor 8.9)
24. Pathak, S. K., **V. V. Tyagi,** Chopra, K., Pandey, A. K., Recent advancements in thermal performance of nano-fluids charged heat pipes used for thermal management applications: A comprehensive review, Applied Thermal Engineering, 216, Applied Thermal Engineering, (Impact Factor – 6.1)
25. Pathak A. K., Chopra K., **V. V. Tyagi**, Anand S, Pandey A. K. Solar heat pipe ETC integrated with solar still system for water treatment and hot water production: novel hybrid experimental approach. Journal of Thermal Analysis and Calorimetry. 2023 Sep;148(17):8969-89., (Impact Factor 3.2)
26. Pathak S. K, **V. V. Tyagi** Comparative thermal performance: An experimental study of self-stored U-pipe vacuum tube collectors operated in closed mode. Energy Sources, Part A: Recovery, Utilization, and Environmental Effects. 2024 Dec 31;46 (1):3861-83. (Impact factor 2.4)
27. Pathak S. K, **V. V. Tyagi**, Chopra K, Pandey AK. Solar thermal potential of phase change material based U-pipe ETSCs for different climatic zones: energy analysis and economic viability. Sustainable Materials and Technologies. 2024 Jul 1;40: 00857. (Impact Factor 8.6)
28. Chopra K, **V. V. Tyagi**, Popli S, Kumawat P, Pandey AK. Impact of myristic acid on novel designed manifold assimilated with domestic solar water heater: An experimental approach. Applied Thermal Engineering. 2024 May 31:123560. (Impact Factor 6.1)

Review Publications

1. **V. V. Tyagi** & Buddhi, D. PCM thermal storage in buildings: A state of art. Renewable and Sustainable Energy Reviews, 11(6), 1146–1166, 2007. (Impact Factor – 16.3)
2. Sharma, A., **V. V. Tyagi**, Chen, C. R., Buddhi D. Review on thermal energy storage with phase change materials and applications. Renewable and Sustainable Energy Reviews, 13(2), 318–345. (Impact Factor – 16.3)
3. **V. V. Tyagi,** S C. Kaushik, S. K. Tyagi, and T. Akiyama, Development of Phase Change Materials based Microencapsulated Technology for Buildings: A Review, Renewable and Sustainable Energy Reviews, 15, Pages 1373-1391, 2011. (Impact Factor – 16.3)
4. **V. V. Tyagi,** Buddhi, D., Kothari, R., & S. K. Tyagi, Phase change material (PCM) based thermal management system for cool energy storage application in building: An experimental study. Energy and Buildings, 51, 248–254, 2012. (Impact Factor – 16.3)
5. **V. V. Tyagi**, N. L. Panwar, N. A. Rahim and Richa Kothari, Review on Solar Air Heating System with and without Thermal Energy Storage System, Renewable and Sustainable Energy Reviews, 16 , pp. 2289– 2303, 2012, (Impact Factor – 16.3)
6. **V. V. Tyagi,** S C. Kaushik and S. K. Tyagi, Advancement in Photovoltaic/Thermal (PV/T) Hybrid Solar Collector Technology, Renewable and Sustainable Energy Reviews, Volume16, issue 3, 1383-1398, 2012, (Impact Factor – 16.3)
7. Eneja Osterman, **V. V. Tyagi**, Uroš Stritih, N. A. Rahim, Vincenc Butala, Review of PCM based cooling technologies for buildings, International Journal of Energy and Buildings, volume 49, 2012, Pages 37-49. (Impact Factor – 6.6)
8. **V. V. Tyagi**, N. A. A. Rahim, N. A Rahim, J. Selvaraj, Progress in Solar PV: Research and Achievement, Renewable and Sustainable Energy Reviews, 20, Pages 443-46., 2013, (Impact Factor – 16.3)
9. K. Chopra, **V. V. Tyagi**, A. K. Pandey, A. Sari, Global advancement on experimental and thermal analysis of evacuated tube collector with and without heat pipe systems and possible applications, Applied Energy 228, 351-389, 2018. (I.F. – 10.1).
10. Aditya Kumar, **V. V. Tyagi**, Sanjeev Anand, Futuristic Approach for Thermal Management in Solar PV/Thermal Systems with Possible Applications, Energy Conversion and Management, 2018. (I.F.– 9.9)
11. **V. V. Tyagi,** Chopra, K. Kalidasan, B. Sarı A. Kothari, R., Phase change material based advance solar thermal energy storage systems for building heating and cooling applications: A prospective research approach, Sustainable Energy Technologies and Assessments, 47, 101318, 2021, (Impact Factor – 7.1)

12. **V. V. Tyagi**, Chopra K, Sharma R.K., Sarı A., Kothari R., A comprehensive review on phase change materials for heat storage applications: Development, characterization, thermal and chemical stability, Solar Energy Materials and Solar Cells, 234, 111392, 2022, (Impact Factor - 7.7)
13. Pathak, S.K., **V. V. Tyagi**, Chopra, K., Rejikumar, R., Pandey, A. K., Integration of emerging PCMs and nano-enhanced PCMs with different solar water heating systems for sustainable energy future: A systematic review, Solar Energy Materials and Solar Cells, 254, 112237, 2023, (Impact Factor – 7.7)
14. Said Z, Pandey AK, Tiwari AK, Kalidasan B, Jamil F, Thakur A. K., **V. V. Tyagi**, Sarı A, Ali HM. Nano-enhanced phase change materials: Fundamentals and applications. Progress in Energy and Combustion Science. 2024 Sep 1;104:101162. (Impact factor 32.0)
15. **V.V. Tyagi**, Sudhir Kumar Pathak , K. Chopra, Sustainable growth of solar drying technologies: Advancing the use of thermal energy storage for domestic and industrial applications, Journal of Energy Storage, Volume 99, Part B, 2024, 113320. (Impact Factor 11.8)

Edited Books

1. D P Singh, Richa Kothari and **V. V. Tyagi**, Emerging Energy Alternatives for Sustainable Environment, TERI International Press, New Delhi, India (2018), ISBN: 9788179934111
2. Anita Singh, Richa Kothari, Somvir Bajar, **V. V. Tyagi.** Sustainable Butanol Biofuels, CRC Press, (2023). (ISBN- 9781003165408)

Invited Speaker/ Resource person at National/International Conference/Workshop

1. Invited Speaker during International Conference on Environmental Technology and Sustainable Development: Challenges & Remedies at Baba Saheb Bhimrao Ambedkar University (Central University), Lucknow, 21st – 23rd February 2014.
2. Invited Speaker during International Workshop on Bridging Development Divide for Inclusive Growth through Science, Technology and Innovation at Baba Saheb Bhimrao Ambedkar University (Central University), Lucknow, 16th – 17th January 2015.
3. Invited Resource Person in Entrepreneurship Development Programme at Shri Mata Vaishno Devi University, Katra, 27th November, 2017 to 23rd December, 2017.
4. Invited Speaker during Faculty Development Program on Sustainable Design and Manufacturing at Shri Mata Vaishno Devi University, Katra, 12th February 2018 to 16th February 2018.
5. Expert Lecture on Solar Thermal Energy Storage in PCM's for Low Temperature Applications at Research Centre for Nano-Materials and Energy Technology, School of Science and Technology, Sunway University, Malaysia on 3rd September 2018.
6. Invited Speaker during National Workshop on Advances in Clean Energy Conversion Technologies and Materials for Energy Storage Applications at Shri Mata Vaishno Devi University, Katra, 24th – 25th January 2019.

7. Invited Speaker during National Symposium on Energy, Environment and Sustainable Development at Central University of Jammu on 31th July 2019.
8. Invited Speaker during Faculty Development Program on Energy & Power Systems at Shri Mata Vaishno Devi University, Katra, 5th – 9th August 2019.
9. Invited Speaker during Short Term Course n Engineering Optimization at Shri Mata Vaishno Devi University, Katra, 21st – 25th October 2019.
10. Invited Expert Lecture on Thermal Energy Storage for Solar Energy Applications at Research Centre for Nano-Materials and Energy Technology, School of Science and Technology, Sunway University, Malaysia on 15th December 2019.
11. Invited Speaker during 2nd International Conference on Advances in Mechanical Engineering and Nanotechnology at Manipal University Jaipur, 28th – 29th February 2020.
12. Invited Speaker during Faculty Development Program at Shri Mata Vaishno Devi University, Katra, 21st – 25th December 2020.
13. Invited Speaker during International Workshop on Renewable Energy and Storage Devices for Sustainable Development at Amity University Uttar Pradesh, 12th – 14th January 2021.
14. Invited Expert Lecture during One-Week Short Term Training Programme-II on Energy (Non-Conventional Sources of Energy) at Beant College of Engineering & Technology, Gurdaspur, 26th April – 1st May, 2021.
15. Invited Speaker during Certificate Course on Renewable Energy Technologies under Institutional Development Plan project of NAHEP, ICAR at Dr. YS Parmar University of Horticulture and Forestry, Nauni (Solan), 13th – 23rd December 2021.
16. Invited Guest Speaker during National Energy Conversion Day at Press Information Bureau, Ministry of Information & Broadcasting GoI, Ranchi on 14th December 2021
17. Invited Speaker during National Conference on Sustainable Environment: Water-Health-Agriculture- Climate Nexus at Central University of Jammu, 15th -16th September 2022.
18. Invited Expert Lecture on Solar Thermal Collectors and Application at University of Malaya on 27th May, 2023.
19. Invited Keynote Speaker during International Conference on Role of Science and Technology in Sustainable Development at Him Science Congress Association (HSCA), H.P, 13th -14th October 2023.
20. Invited Speaker during 1st International on Advances Materials & Sustainable Energy Technologies at Sunway University Malaysia, 30th-31st October 2023.

Editorial Board Member:

- Associate Editor for Nano Energy, Frontiers in Energy Research, (SCI Journal) (I.F.-2.6)
- International Journal of Energy Engineering (Scopus Journal)
- International Journal of Daylighting (Scopus Journal)
- International Journal of Thermal Engineering (Scopus Journal)

- International Journal of Energy (American Institute of Mathematical Sciences, AIIMS), (ESCI Journal)

Dr. Vineet Veer Tyagi