

# Curriculum Vitae

## DR PAVITRA SINGH

PhD (IIT), B.Tech, M.Tech (IIT)

**Experience:** 15 yrs. Research, Teaching, and Industry

**Publications:** 28 (SCI Journals, Book Chapters & Conferences)

**Awards:** 1 Best Paper Award (International Conference (ICTEMA20)

1 Silver Medal State Player and

1 Gold Medal Inter IIT Sport Meet 2018

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<https://scholar.google.com/citations?user=YV5F5EIAAAAJ&hl=en&oi=ao>



## Professional Qualification

- PhD in Energy Science and Engineering from, Indian Institute of Technology, Guwahati in 2021.
- M. Tech. in Mechanical Engineering (Specialization in Fluid & Thermal) from Indian Institute of Technology Guwahati, in the year 2007 (First Class).
- B.E. in Mechanical from C.C.S. University Meerut in the year 2002 (First Class).

## Professional Experience

- Working as Assistant Professor in NIAMT (NIFFT) Ranchi, from November 2023 to till now.
- Worked as Dean R&D, and Assistant Professor (a Gazetted post) in Mechanical Engineering, Government Engineering College Munger, (under the Department of Science, Technology & Technical Education Patna, Bihar), from 20<sup>th</sup> April 2023 to till date.
- Worked as Research Fellow and Consultant at Dyn3D Technologies, from June 2021 to till April 2023.
- July 2017 to June, 2021: SRF, and Teaching Assistant, Department of Energy Science and Engineering, Indian Institute of Technology Guwahati, India.
- Worked as Associate Professor (Coordinator M.Tech, Internship and Projects/Exams) in School of Mechanical Engineering in Lingaya's University Faridabad, since 1<sup>st</sup> Aug. to 11<sup>th</sup> July 2016.
- Worked as Associate Professor (Coordinator/Head M. Tech program and Exams) in Mechanical Engineering in GNIOT Greater Noida, since 21st Jan.2013 to 30<sup>th</sup> Dec.2013.

- Worked as Associate Prof. and HOD Mechanical Engineering in RD Engineering college Ghaziabad, since 5<sup>th</sup> Aug. 2011 to 16<sup>th</sup> Jan. 2013.
- Worked as Associate Professor in Mechanical Engineering in J.P. Institute of Engineering and Technology, since Sep 2008 to Aug. 2011.
- Worked as Assistant Professor, in Mechanical Engineering in Babu Banarasidas Institute of Technology Ghaziabad, from 08 July 2007 to July 31st 2008.
- Worked as Lecturer in the Department of Mechanical Engineering, in Inderprastha Engineering College Ghaziabad, since 15<sup>th</sup> Sep. 2003 to 22-07-2005.

### **Research Interest**

- Thermo-Fluids, CFD, Drying, Fluidized Bed Technology
- Energy Conversion (**Solar Energy Extraction** and storage, solar evacuated tube collector) and solar evacuated tube collector
- Fluidized Bed, Battery Thermal Management. Drying, novel solar evacuated tube collector

### **Subjects/Courses Taught/Teaching**

- Thermodynamics
- IC Engine
- RAC
- HMT
- Fluid Maniacs and Fluid Machinery
- Mechanics
- Manufacturing Process
- Engineering Drawing.

### **Competencies and Skills**

- ANSYS FLUENT 14.5
- Solid Works
- AUTO CAD, Excel, and Python basic

### **Recognition**

#### **Honors/Awards and Extracurricular Activities**

- Best paper award in international conference (ICTEMA2020)
- Gold Medal in IIT Sports Meet 2018 in Para-powerlifting.
- State Player Assam Sports Authority (won Silver Medal in Para-powerlifting) Guwahati stadium in 2019.
- MHRD Ph. D. Scholarship during Dec. 2012 to Dec. 2018.
- Welfare secretary MSH IIT Guwahati
- Rifle shooting prize from Lakshyabhed shooting range, Guwahati in 2018.

## **Project /Thesis**

### **PhD & M.Tech Projects**

- Thermal and Hydrodynamic Studies of a Rotating Fluidized Bed Dryer with Static Geometry.
- Design, Development and Performance Evaluation of Cyclone Type Trans-Esterification Set up.

### **Thesis Supervising/Supervised: 1 PhD and 3 PG Level**

**PhD Thesis:** Title: Design development and Performance evaluation of a fluidized bed grain-temperature stabilizer (**Submitted Nov. 2023**).

### **M.Tech Theses:**

- Proper sizing of solar energy storage for grid connected photovoltaic System (2016)
- High power LED console's thermal management and optimization (BITS Pilani-2021).
- Performance Evaluation of cyclone type transesterification System (JP Ins. of Engineering and Technology Meerut).

### **Position Held/Participation in Administrative/Institute/ Academic Activities**

- Dean R & D, Government Engineering College Munger (Department of Science Technology and Technical Education, Patna) Bihar.
- Assistant Examination Controller, Government Engineering College Munger (Department of Science Technology and Technical Education, Patna) Bihar.
- Head of Department (ME), RD Engineering College Ghaziabad (UPTU Lucknow).
- Coordinator M. Tech Program, Coordinator Internship Program, Seminar and B.Tech. Projects.
- Welfare secretary MSH IIT Guwahati

### **List of publications**

#### ***International Journals (3 years)***

1. **Singh, P.**, Mahanta, P., Kalita, P., Singh AK., 2023. Thermal analysis of a rotating fluidized bed dryer in static geometry dryer with and without slit. ***Drying Technology***. DIO:10.1080/07373937.2023.2207199.
2. **Singh, P.**, Mahanta, P. and Kalita, P., 2021. A comparative analysis and scale-up of a novel slit-less gas-solid vortex reactor dryer with spiral chimney versus conical chimney outlet. ***International Communications in Heat and Mass Transfer***, 121, p.105112. doi.org/10.1016/j.icheatmasstransfer.2021.105112. [**SCI & IF: 6.782 (Elsevier ISBN 0735-1933). 16/1/2021.**]

3. **Singh, P.**, Kalita, P., and Mahanta, P. 2021. A novel slit-less gas-solid vortex reactor dryer: Experimental validation and scale-up. *Journal of the Taiwan Institute of Chemical Engineers*, 118, pp.121-130. doi.org/10.1016/j.jtice.2021.01.017. [SCI & IF: 5.876]. (Elsevier ISBN: 1876-1070). 16/1/2021
4. **Singh, P.**, Mahanta, P. and Kalita, P., 2021. Numerical investigation of fluid flow and heat transfer in a gas-solid vortex reactor without slit: Scale-up and optimization. *International Communications in Heat and Mass Transfer*. 128, p.105590. https://doi.org/10.1016/j.icheatmasstransfer.2021.105590 [SCI & IF: 6.782]. (Elsevier ISBN 0735-1933). 14/9/2021
5. **Singh, P.**, Mahanta, P. and Kalita, P., 2020. Numerical study on the gas-solid hydrodynamics and heat transfer in a rotating fluidized bed with static geometry dryer. *International Journal of Heat and Mass Transfer*, 153, p.119666. https://doi.org/10.1016/j.ijheatmasstransfer.2020.119666 [SCI & IF: 5.584]. (Elsevier ISBN 0017-9310). Date: 21/03/2020.
6. Yang, X., Lin, Q., **Singh, P.**, Riaz, F., Agrawal, MK., Alsenani, TR., Xia, GL., Abdelmohimen, MAH., 2023. Evaluating the proficiency of a novel solar evacuated tube collector. *Applied Thermal Engineering*. <https://doi.org/10.1016/j.applthermaleng.2023.120311>.
7. **Singh, P.**, Mahanta, P. and Kalita, P., 2022. Experimental investigation of paddy drying characteristics in a slitless rotary fluidized-bed dryer. *Drying Technology*, pp.1-13. Dio:10.1080/07373937.2021.2018700. Taylor and Francis [SCI & IF: 4.452]. 24/12/2021.
8. **Singh, P.**, Kalita, P. and Mahanta, P., 2020. Numerical study of the hydrodynamics and heat transfer characteristics of gas-solid in a slit-less rotating fluidized bed in static geometry. *Journal of Thermal Analysis and Calorimetry*, 141(6), pp.2647-2656. doi.org/10.1007/s10973-020-10070-w. [SCI & IF: 2.73]. (Springer ISBN 1388-6150). 4/8/2020
9. **Singh, P.**, Kalita, P. and Mahanta, P., 2020. Experimental study of food grain drying in a gas-solid vortex reactor. *Drying Technology*, pp.1-13. Dio:10.1080/07373937.2020.1835948. [SCI & IF: 4.452]. (Taylor and Francis ISBN: 1532-2300). 23/10/2020.
10. Yadav, IJ., **Singh, P.**, Chauhan BS., 2023. Numerical analysis of gas-solid hydrodynamics and heat transfer characteristics in a multi-stage fluidized bed temperature-stabilizer. *Journal of Thermal Analysis and Calorimetry (Springer)*. (accepted).
11. Guedri, A.K., **Singh, P.**, Riaz, F., Inayat, A., Shah, N.A., Fadhl, B.M., Makhdouma, B.M., Akbar Arsalanloo, A., 2023. Solidification acceleration of phase change material in horizontal latent heat thermal energy storage

system by using spiral fins. **Case Studies in Thermal Engineering**, Vol. 48, ISSN 2214-157X.

12. Agrawal M.K., Mishra, P., **Singh, P.**, Deb, RK., Mohammed KA., Kumar S., Kumar G., 2023. A short review on process capabilities and future scope of incremental sheet forming. **Advances in Materials and Processing Technologies**. [doi.org/10.1080/2374068X.2023.2168288](https://doi.org/10.1080/2374068X.2023.2168288) (ISSN 2374-0698).
13. Agrawal, M.K., **Singh, P.**, Yadav, AK, 2023. Eexperimental study of a rapid rate biofuel production in a cyclone type reactor. <https://doi.org/10.1016/j.matpr.2023.01.31>. **Materials Today Proceedings: Elsevier**.
14. Yadav, IJ., **Singh, P.**, Agrawal, MK. 2023. Granular material drying and energy analysis of a scaled-up rotating fluidized bed dryer of fixed geometry. <https://doi.org/10.1016/j.matpr.2023.02.122> **Materials Today Proceedings: Elsevier**.
15. Yadav, IJ., **Singh, P.**, Chauhan, BS., 2023. Numerical and experimental analysis of a gas-solid vortex reactor with waste heat utilizer. **Journal of Thermal Analysis and Calorimetry (under review)**.
16. **Singh, P.**, 2023. Enhancement of electric energy conversion efficiency of PV/T Solar Panel by Cooling and Waste Energy Storage using PCM paraffin. *Solar Energy*. (Communicated).

#### **International conferences**

17. Yadav, I.J., **Singh, P.**, Chauhan, B.S., Abhinay, A., 2023. Experimental study of granular drying in a rotating fluidized bed in static geometry dryer with waste heat recovery. In the 9th International Symposium on **Hydrogen Energy, Renewable Energy and Materials (HEREM 2023)** October 13-14, 2023, Bangkok, **Thailand**, ISSN: 1867-4941/ Print ISSN: 0930-8989.
18. **Singh, P.**, Prasad, A., Agrawal, A., and Mahto, B., 2023 Experimental investigation of a rapid rate cyclone type transesterification reactor. The 9<sup>th</sup> International Symposium on **Hydrogen Energy, Renewable Energy and Materials (HEREM 2023)** October 13-14, 2023| Bangkok, **Thailand**, ISSN: 1867-4941/ Print ISSN: 0930-8989.
19. Purkayastha, R., **Singh, P.**, Mahapatro, A., Kumar, A. and Mahanta, P., 2021. Experimental Investigation of Paddy Drying in Rotating Fluidized Bed in Static Geometry. In Proceedings of **International Conference on Thermofluids** (pp. 591-600). Springer. [https://doi.org/10.1007/978-981-15-7831-1\\_55](https://doi.org/10.1007/978-981-15-7831-1_55) (978-981-15-7831-1). 23-25 Jan. 2020.

20. **Singh, P.**, Mahanta, P., and Kalita, P., 2020. "Study of agricultural product drying in a slit-less rotating fluidized bed dryer with static geometry". ***International Conference on Thermal Engineering and Management Advances (ICTEMA-2020)***, 27-28 June 2020 Jalpaiguri Government Engineering College, Jalpaiguri, West Bengal 735102, India (**Best paper award**).
21. **Singh, P.**, Kalita, P., and Mahanta, P., 2019. "Numerical study of the hydrodynamics and heat transfer of a gas-solid rotating fluidized bed in static geometry dryer". The 2nd ***International Mechanical Engineering Conference (IMEC-2019)*** to from 29th November to 1st December 2019, at National Institute of Technology, Tiruchirappalli, Tamil Nadu.

### **Book Chapters**

22. **Singh, P.**, Kalita, P., Mahanta, P. and Das, H.J., 2021. Study of Granular Food Material Drying in a Pilot-Scale Rotating Fluidized Bed with Static Geometry Dryer. In Recent ***Advances in Mechanical Engineering*** (pp. 555-562). [https://doi.org/10.1007/978-981-15-7711-6\\_55](https://doi.org/10.1007/978-981-15-7711-6_55) (ISBN No. 9811577102). (**07-8/02/2020**) Springer (**11/1/2021**).
23. **Singh, P.**, Kalita, P. and Mahanta, P., 2019. Study of agricultural product drying in a rotating fluidized bed with static geometry. ***Post-Harvest Technology and Value Addition 1***, pp.1-8. ISBN No. 978-93-5396-087-2. (6/12/2019).
24. **Singh, P.**, Kalita, P. and Mahanta, P., 2022. Study of Agricultural Product Drying in a Rotating Fluidized Bed in Static Geometry Dryer With and Without Slits. In ***Advances in Thermofluids and Renewable Energy*** (pp. 443-451). Springer. ISBN: 978-981-16-3496-3, [doi.org/10.1007/978-981-16-3497-0\\_35](https://doi.org/10.1007/978-981-16-3497-0_35). (26-28 Nov. 2020). Springer (**22/10/2021**).
25. Dewangan, S., **Singh, P.**, Agrawal, M.K. and Kumar, S.D., 2023. Analysis of Parametric Study on Weld Properties in TIG Welding. In ***Recent Advances in Mechanical Engineering*** (pp. 717-726). (24th-25th Sep.) [https://doi.org/10.1007/978-981-16-9057-0\\_77](https://doi.org/10.1007/978-981-16-9057-0_77). Springer, Singapore.

### **National Conferences**

26. **Singh, P.**, Mahanta, P., and Kalita, P., 2020. "Numerical study of gas-solid vortex reactor with spiral chimney". 1st online ***National Conference on Recent Trend in Thermal Sciences and Alternate Energy Resources (RTTSAER2020)*** on 1st July 2020, at Government college of Technology, Coimbatore and National Institute of Technology, Arunachal Pradesh.
27. **Singh, P.**, Purkayastha, R., Kalita, P., Mahanta, P., 2018. Development and performance evaluation of an efficient and user-friendly rotating fluidized bed in static geometry (RFBSG) dryer, ***National Conference on Waste to Energy Conversion (WEC-2018)***, December 28-29, 2018, NIT Mizoram, Mizoram.

28. **Singh, P.** And Agrawal, A. "Biodiesel: An alternative Fuel to Reduce Greenhouse Gas with Better Performance of C.I. Engines" **Save Earth Volume-I**, 2010.

### **PhD & M. Tech. Projects**

- Thermal and Hydrodynamic Studies of a Rotating Fluidized Bed Dryer with Static Geometry.
- Design, Development and Performance Evaluation of Cyclone Type Trans-Esterification Set up.

### **Other Services:**

#### **Reviewer:**

- Journal of Thermal Science and Calorimetry **Springer**
- Materials Today Proceedings **Elsevier**
- Mchanica, **Elsevier**

### **Certification completed/Workshop attended**

- One-week workshop on entrepreneurship/startup at IIT Guwahati 2018.
- One-week faculty development program at NIT Jalandhar 2021.
- One-week Teachers training at BIPARD Gaya Bihar 2023.

### **HOBBIES**

Technical modification, writing, listening music, traveling, and social work.

### **REFERENCE**

#### **Prof. Pinakeswar Mahanta**

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