

## Curriculum Vitae

Dr. BANKER NITIN D.

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### **Career Objective**

To pursue career in Teaching and Research in the area of Conventional and heat operated refrigeration, Thermal management solutions using phase change materials, Compressed gas energy storage and Solar thermal energy. I am keen in pursuing my activity in highly productive, interactive and learning environment, where I can use best of my knowledge.

### **Educational Qualification**

2007- PhD in Mechanical from Indian Institute of Science, Bangalore.

2003- Master of Engineering in Mechanical from Indian Institute of Science, Bangalore with First Class division.

2001- Bachelor of Engineering in Mechanical from M.S. University, Baroda with First Class division.

### **Scholastic Achievements / Scholarships / Awards**

- Completed a research project of Rs. 13.87 Lacs from SERB, DST under Fast Track Young Scientist-Engineering Science Scheme. (2014 to 2017).
- Ph.D. students: guided (2)
- Published two Indian Patents.
  1. Publication number- 19/2020  
Title: AN ENERGY EFFICIENT AIR CONDITIONING SYSTEM AND METHOD THEREOF
  2. Publication number- 20/2020  
Title: AN IMPROVED GAS TURBINE POWER PLANT
- Received “National Doctoral Fellowship” from AICTE during PhD.
- Received financial assistance from Indian National Science Academy (INSA) and DST for attending international conference (Carbon 2004) in Brown University, Rhodes Island, USA, 11-16 July, 2004.

- Filed two invention disclosures at Emerson Innovation Center, Pune.
- Reviewer of many reputed Journals such as Applied Energy, Energy and Buildings, Applied Physics Letters, Journal of Applied Physics, Journal of the Brazilian society of mechanical sciences and engineering and Journal of the institution of engineers (India): series-C.
- *Invited Lecture:* Banker, N. Role of Energy Storage in Power Generation Through Solar PV in India. Advances in Power Generation from Renewable Energy Sources (APGRES-2020), Government Engineering College, Banswara, Rajasthan, March 6-7, 2020.
- *Invited Lecture:* Banker, ND. Electricity Generation through Solar Energy in India. International Certificate/Value Added Course on “Energy Management for Sustainability”, Short Term Course, November 2020 to January 2021, IIC and T&P Cell of J C Bose University of Science and Technology YMCA, Faridabad, Haryana.

### Professional Experience

- Working as an Associate Professor in the School of Engineering and Applied Science, Ahmedabad University, Gujarat from April 4, 2019.
- Worked as an Assistant Professor in the Department of Mechanical Engineering, Shiv Nadar University, Dadri, UP from April, 2013 to April, 2019 (6 years).
- Worked as a Technical Lead in the R&D division of Emerson Climate Technology at Emerson Innovation Center, Pune from May, 2011 to March, 2013 (1 year and 11 months).
- Worked as a Lead Engineer in CFD group in John Deere India Pvt. Limited, Pune from August, 2006 to May, 2011 (4 years and 9 months).

### Publications

#### A. Journal Papers:

1. **Banker ND**, Srinivasan K and Prasad M., Performance analysis of activated carbon + HFC 134a adsorption coolers, Carbon, 2004, Vol. 42 (1):117-127. (IF- 7.08).
2. Saha BB, El- Sharkawy II, Chakraborty A, Koyama S, **Banker ND**, Dutta P, Prasad M and Srinivasan K, Evaluation of minimum desorption temperatures of thermal compressors in adsorption refrigeration cycles, Int. J. Refrigeration, 2006, Vol. 29 (7):1175-1181. (IF- 3.23).

3. **Banker ND**, Prasad M, Dutta P and Srinivasan K, Performance studies on mechanical + adsorption hybrid compression refrigeration cycles with HFC 134a, *International Journal of Refrigeration*, 2008, Vol. 31(8): 1398-1406. (IF- 3.23).
4. **Banker ND**, Prasad M, Dutta P and Srinivasan K , Activated carbon + HFC 134a based two stage thermal compression adsorption refrigeration using low grade thermal energy sources, *Applied Thermal Engineering*, 2009, Vol. 29 (11-12): 2257-2264. (IF- 3.44).
5. **Banker ND**, Prasad M, Dutta P and Srinivasan K, Development and transient performance results of a single stage activated carbon – HFC 134a closed cycle adsorption cooling system, *Applied Thermal Engineering*, 2010, Vol. 30 (10): 1126-1132. (IF- 3.44).
6. **Banker ND**, Prasad M, Dutta P and Srinivasan K, Experimental results of an activated carbon–HFC 134a adsorption cooling system for thermal management of electronics, *Applied Thermal Engineering*, 2011, Vol. 31 (10): 1607-1612. (IF- 3.44).
7. Varuneswara RP, **Banker ND**, Thermodynamic Assessment of a Gas Turbine Power Plant Integrated with an Adsorption Refrigeration System, *Applied Thermal Engineering*, 2017, Volume 117: 577–583. (IF- 3.44).
8. Dandotiya D and **Banker ND**, Numerical Investigation of Heat transfer Enhancement in Multi-tube Thermal Energy Storage Heat Exchanger Using Fins. *Numerical Heat Transfer, Part A: Applications*, 2017, Vol. 72 (5), pg. 389-400. (IF- 2.4).
9. Dandotiya D and **Banker ND**, Performance Enhancement of a Refrigerator using Phase Change Material based Condenser: An Experimental Investigation, *International Journal of Air-conditioning and Refrigeration*, 2017, Vol. 25 (4), pg. 1750032- 1750040. (CiteScore- 1.93).
10. Varuneswara Reddy Panyam, Veda Sai Kolla, Lokesh Palawat, Ayush Sahu and **Banker ND**, Performance Comparison of a Vapor-Adsorption Cycle-Based Gas Turbine Inlet Air Cooling System for Different Refrigerants, *International Journal of Air-conditioning and Refrigeration*, 2018, Vol. 26 (1), pg. 1850002-1850011. (CiteScore- 1.93).
11. Rakesh Singhai, Harender Sinhmar and **Banker ND**, Effect of Aspect Ratio of Heliostat on Cost of Energy from Solar Power Tower Plants, *Arabian Journal for Science and Engineering*, 2020, 45, pp. 877–890. (IF- 1.71). <https://doi.org/10.1007/s13369-019-04105-0>
12. Ashwath Vaidhyanathan and Banker ND, Theoretical and Experimental Modeling of Phase Change Material based Space Heating using Solar Energy, *International Journal of Air-conditioning and Refrigeration*, 2020, 28 (2), pp. 2050016-1 to 2050016-12. <https://doi.org/10.1142/S2010132520500169>
13. Rakesh Singhai, Nitin D. Banker, Harender Sinhmar, Sarthak Jain and Shikhar Kulshresth, Effect of Aspect Ratio of Heliostats on Optical Efficiency of Solar Tower Power Plant- An Experimental Analysis, *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 2020, Online available. (IF-0.894). DOI: 10.1080/15567036.2020.1751745

14. Dandotiya D., and Banker N. D., Theoretical study of Energy Saving through Redesign of Water Distribution Arrangement in a medium-rise Residential Building. ASME. J. Eng. Sustain. Bldgs. Cities, 2020, 1(3), pp. 031002-1 to 031002-5. <https://doi.org/10.1115/1.4047618>
15. Nitin. D. Banker, Devendra Dandotiya, Sai Vamsi Reddy Morthala, Mahesh Gaddam and Sridhar Kakileti, Evaluation of Minimum, Maximum and Optimum Source Temperature for Solar Powered Adsorption Refrigeration System, Arabian Journal for Science and Engineering, 2020, 45, pp. 9735–9745. (IF-1.71) <https://doi.org/10.1007/s13369-020-04865-0>
16. Shikhar Agarwal, Vansh Anand, Nitin D Banker, Pratibha Biswal, Experimental Studies on Space Heating using Phase Change Material (PCM), Energy storage, 2020, Special issue. Doi: <https://doi.org/10.1002/est2.209>
17. Devendra Dandotiya, Nitin. D. Banker, Energy Efficiency Improvement of a Refrigerator Integrated with Phase Change Material based Condenser, ASME. J. Energy Resour. Technol., 2020, 143 (8), pp. 082105-1 to 082105-7. doi: <https://doi.org/10.1115/1.4048871>

B. Conference Papers:

1. Srinivasan K, **Banker ND**, Prasad M and Akkimaradi BS, Evaluation of sorption compressor performance from isotherm data: Application to activated carbon + nitrogen/HFC-134a systems, In "Thermally Powered Sorption Technology" (Eds) B.B.Saha, A.Akisawa and S. Koyama., Proceedings of International Seminar on Thermally Powered Sorption Technology, Kyushu University, Fukuoka, Japan, December 4-5, 2003:121-133.
2. **Banker ND**, Rao RR, Prasad M and Srinivasan K, Limits of operating conditions for thermal compressors of Adsorption cryocoolers, National Seminar & Conference on Cryogenics and its Frontier Applications, Bengal Engineering College, India, March 25-27, 2004.
3. **Banker ND**, Prasad M and Srinivasan K, Comparative analysis of single and two stage activated carbon+hfc134a refrigeration systems, International Conference, Carbon2004, Brown University, Rhode Island, USA, July 11-16, 2004.
4. Devendra Dandotiya, R. Aadithya V and **Banker ND**, Energy saving using multi-door in refrigerator, International conference on Polygeneration, Chennai, India, Feb 18-20, 2015.
5. Devendra Dandotiya, Prerit Maheshwari, Harish Samanu and Banker ND (2015), Experimental Investigation of Phase Change Material Storage Integrated with Solar Water Heater to Increase the Average Temperature of Room, Proceedings of the 17th ISME National Conference, Delhi, India, Oct 3-4, 2015.
6. Deepak Malhotra, Zoya Ali, Rajalakshmi A. and Nitin Banker (2015), Optimization of Cold Air Distribution in the Car having Single Passenger, Proceedings of the 17th ISME National Conference , Delhi, India, Oct 3-4, 2015.
7. Dandotiya D and **Banker ND**, Performance Improvement of Gas Turbine Power Plant by Intake Air Passive Cooling using Phase Change Material based Heat

- Exchanger, Proceedings of ASME Gas Turbine India Conference December 7-8, 2017, Bangalore, India.
8. Varuneswara Reddy Panyam, Dandotiya D and **Banker ND**, Gas Turbine inlet Air Cooling using Vapor-Adsorption Refrigeration Driven by Power Plant Exhaust, Proceedings of ASME Gas Turbine India Conference December 7-8, 2017, Bangalore, India.
  9. Ashwath Vaidhyanathan and **Banker ND**, Theoretical Modeling of Phase Change Material based Space Heating using Solar Energy, Proceeding of 6th International Conference on Advances in Energy, December 12-14, 2017, IIT Bombay, Mumbai, India.
  10. Devendra Dandotiya and **Banker ND**, Performance Enhancement of a Single Door Domestic Refrigerator by Incorporating Section Doors inside Refrigerated Space, 12<sup>th</sup> International Conference on Thermal Engineering: Theory and Applications (ICTEA 2019), February 23-26, 2019, Gandhinagar, Gujarat, India.
  11. Abhishek Dahiya, **Banker ND** and Jishnu Bhattacharya, Analysis of Compressed Air Energy Storage System, 12<sup>th</sup> International Conference on Thermal Engineering: Theory and Applications (ICTEA 2019), February 23-26, 2019, Gandhinagar, Gujarat, India.
  12. Rakesh Singhai, **Banker ND** and Harender S, Heliostats for Low Wind Area, 12<sup>th</sup> International Conference on Thermal Engineering: Theory and Applications (ICTEA 2019), February 23-26, 2019, Gandhinagar, Gujarat, India.
  13. **Nitin D. Banker**, Rohit Pilligundla, Harshil Negi, Bhanu Prakash Reddy Bysani and Harender Sinhmar, Thermodynamic investigation of a cogeneration system: a combination of concentrated PV/Thermal and an adsorption refrigeration system, 8<sup>th</sup> Global Conference on Global Warming (GCGW-2019), April 22-25, 2019, Doha, Qatar.
  14. Rakesh Singhai, **Nitin D Banker** and Harender Sinhmar, Experimental Investigation of Wind Loads Acting on the Heliostats of Solar Power Tower Plant and Its Variation with Varying Aspect Ratios, 8<sup>th</sup> Global Conference on Global Warming (GCGW-2019), April 22-25, 2019, Doha, Qatar.
  15. Yogesh Kumar, Arvind K. Rajput and Nitin D. Banker, Influence of couple stress lubricant on the performance of non-recessed geometrically imperfect journal bearing, 6<sup>th</sup> International Conference on Production and Industrial Engineering (CPIE-2019), NIT JALANDHAR, India, June 8-10, 2019.
  16. Shikhar Agarwal, Vansh Anand, Nitin D Banker, Pratibha Biswal, Experimental Study on Space Heating using Phase Change Material (PCM), 11th International Exergy, Energy and Environment Symposium (IEEES-11), July 14-18, 2019, Chennai, India.
  17. Sanchit Agarwal, Darshika Gupta, Devendra Dandotiya and Nitin D Banker, (2019). Energy and exergy analysis of a gas turbine power plant integrated with vapor adsorption refrigeration, Proceedings of the ASME 2019 Gas Turbine India Conference. Volume 1: Compressors, Fans, and Pumps; Turbines; Heat Transfer;

Structures and Dynamics. Chennai, Tamil Nadu, India. December 5–6, 2019. V001T03A012. ASME. <https://doi.org/10.1115/GTINDIA2019-2570>.

18. Abhishek Dahiya, Jishnu Bhattacharya and Nitin D. Banker, (2019), Thermodynamic Analysis and Performance Enhancement of Air and CO<sub>2</sub> based Compressed Gas Storage Systems, Proceedings of the ASME 2019 Gas Turbine India Conference. Volume 2: Renewable Energy: Solar and Wind. Chennai, Tamil Nadu, India. December 5–6, 2019. V002T06A010. ASME. <https://doi.org/10.1115/GTINDIA2019-2489>.
19. Chetan Patil, Devendra Dandotiya, Bhaskar Pal, Nitin Banker, Numerical Analysis of Heat transfer in Aeroengine Turbine Blade using k-epsilon and k-omega SST model, International Conference on Futuristic Trends in Mechanical Engineering (ICOFTIME-2020), Presidency University Bangalore, September 2020.

### PhD Research Work

Title: “**Design and development of an activated carbon+ HFC 134a adsorption refrigeration system**”

Project Advisors:

1. Prof. Pradip Dutta, Professor, Department of Mechanical Engineering, Indian Institute of Science, Bangalore, India.
2. Prof. K. Srinivasan, Professor, Department of Mechanical Engineering, Indian Institute of Science, Bangalore, India.

### ME project work

Title: "Analysis and Development of an Activated Carbon-HFC 134a Adsorption Refrigeration System"

Project Advisor : Prof K. Srinivasan, Department of Mechanical Engineering, Indian Institute of Science, Bangalore.

### Software Knowledge

CFD softwares	AVL-Fire, Ansys Fluent, Ansys CFX
Meshing software	AVL-Fame, Gambit, ICEM CFD, ANSYS Mesher
Cooling packages	KULI
Post processing tool	Ensignt
Other softwares	Matlab

## Personal Details

Date of Birth : September 1<sup>st</sup>, 1979  
Sex : Male  
Nationality : Indian  
Father's Name : Dahyabhai L. Banker