
## Dr. D.B. Jani (PhD)

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## Designation:

Associate Professor
Department of Mechanical Engineering,
Government Engineering College, Dahod.
Gujarat Education Service (Class - I),
Gujarat Technological University, GTU, Ahmedabad.

## Postal Address:


Dr. D.B. Jani,
Associate Professor,
Department of Mechanical Engineering,
Government Engineering College,
Jhalod Road,
Dahod - 389151.
State - Gujarat
Country - India
Postal code - 389151.

## Educational Qualifications:

| Educational Qualification | Board / University | Specialization | Year of Passing | % Marks |
|---|---|---|---|---|
| B.E. | Bhavnagar University | Mechanical Engineering | 1999 | 70.00 |
| M.E. | Gujarat University | Mechanical Engineering (IC / Auto) | 2009 | 72.00 |
| PhD | Indian Institute of Technology, IIT Roorkee | Thermal Engineering | 2017 | A |

## PhD. Thesis title:

"Performance study of a solid-desiccant vapor compression hybrid air-conditioning system"

## Software Exposure:

MATLAB, TRNSYS, Trans-Build, FORTRAN, C.

## Academic Experience:

| From | To | Designation | Organization |
|---|---|---|---|
| 07-08-2000 | 08-03-2001 | Temp. Lecturer | M.S. University of Baroda, Vadodara. |
| 09-03-2001 | 02-12-2004 | Adhoc Lecturer | Government Engineering College, Modasa. |
| 02-12-2004 | 25-01-2007 | Lecturer | Government Engineering College, Modasa. |
| 25-01-2007 | 20-09-2012 | Lecturer | L.D. College of Engineering, Ahmedabad. |
| 21-09-2012 | Continue | Associate Professor | Government Engineering College, Dahod. |

## Research area:

- Solid desiccant cooling
- TRNSYS (Transient System Simulation)
- Artificial Neural Network (ANN)
- Exergy analysis
- Modeling and Simulation
- Thermal System and Design
- Renewable Solar energy
- Second law analysis of thermal system
- Air-conditioning and Refrigeration
- Applied Thermodynamics
- ANSYS

## Reviewer in journals:

- Energy
- Energy and Buildings
- Applied Energy
- Renewable and Sustainable Energy Reviews
- Applied Thermal Engineering
- Energy conservation and Management
- International journal of refrigeration
- Sustainable Cities and Society
- Journal of the Institution of engineers (India): Series C
- Part E: Journal of Process Mechanical Engineering
- Journal of Thermal Engineering
- International Journal of Exergy
- Renewable energy
- Solar energy

## Teaching engagements:

### UG Level:

- Power Plant Engineering
- Fluid Power Engineering
- Engineering Thermodynamics
- Automobile Engineering
- Internal Combustion Engines
- Refrigeration and Air-conditioning

### PG Level:

- Energy Economics and Management
- Research Methodology

## Skills and knowledge:

- ✓ Industry Knowledge
  - Automobiles, Automation, Refrigeration, Education
- ✓ Tools & Technologies
  - Programming (FORTRAN,C, C++)
  - TRNSYS
  - Matlab
- ✓ Interpersonal skills
  - Public speaking
  - Training
  - University teaching
  - Individual counseling

## Language skills:

1. English (Speak/Read/Write)
2. Hindi (Speak/Read/Write)
3. Gujarati (Speak/Read/Write)
4. Sanskrit (Read/Write)

## Portfolios:

- Nodal Officer - (ACPC) Admissions
- Editor - Institute news letter
- Member - Central purchase committee
- Member – Academic inspection committee of Directorate of Technical Education (DTE)
- Member - FAB LAB committee of Directorate of Technical Education (DTE)
- President - Institute IIC club
- President - ISHRAE Chapter
- Coordinator – Institute IPR cell

## Professional Institutions Member:

- Life Member of Indian Society for Technical Education
- Indian Society for Heat & Mass Transfer (ISHMT), Member
- Institution of Engineers (India), Member
- Indian Society of Heating Refrigeration and Air conditioning Engineers (ISHRAE)
- International Associate of Engineers (IAENG)

## Expert Lectures:

- Short term training program on ***"Advances in structural and civil engineering"*** at GEC, Dahod on Feb 27, 2018.
- Video conference short term training program on ***"Emerging trends in major thrust area of mechanical engineering"*** at DTE, Gandhinagar on Feb 26, 2018.
- Expert talk on ***"TRNSYS Simulation"*** at NIT, Trichy on March 27, 2021.
- Short term training program on ***"HVAC Systems"*** at Hindusthan College of Engineering and Technology, Chennai on March 27, 2021.
- Short term training program on ***"Recent Trends in Energy and Power System"*** At VIT, Chennai on Sept 09, 2021.
- ISHRAE Madurai Chapter, Tamilnadu on topic ***"Desiccant based dehumidification and cooling systems in HVAC"*** on Oct 01, 2022.

## Committee Members:

- ✓ Technical Program Committee member at the 6th International Symposium on ***"Hydrogen Energy and Energy Technologies (HEET 2023)"*** will be held as a hybrid event on November 10-11, 2023 in Osaka, Japan.
- ✓ National Advisory Committee Member International Conference on "***Thermo-fluids and Manufacturing Science-2022)***" Jan 24-25, 2022 at School of Mechanical Engineering, KIIT Deemed University, Bhubaneshwar, Odisa, India.
- ✓ Organizing Committee Member at the 3rd International Conference on ***"New Energy and Power Engineering (ICNEPE 2023)"***, Nov 24-26, 2023, Zhengzhou, China.
- ✓ International Technological committee member at "***ICCAE- 2018 International Conference***" was organized by School of Civil Engineering and Architecture, Wuhan University of Technology during November 23-25, 2018 in Taiwan.
- ✓ Organizing committee member at ***The Third International Conference on Energy Engineering and Environmental Protection (EEEP2018)*** was held on November 19-21, 2018 in Sanya, China.
- ✓ Organizing committee member at ***5th International Conference on Recent Challenges in Engineering and Technology (ICRCET-18)*** Seoul, South Korea, 19th - 20th July 2018 Organized by Institute for Engineering Research and Publication (IFERP).
- ✓ Program Committee Member by International Conference on "***Sustainable Energy and Environment Sensing***" Cambridge, United Kingdom (U.K.).

## Patent:

- ➢ Industrial Design Registration on "Hybrid Solid Desiccant Apparatus with Air Conditioning System by using Evacuated Tube Solar Collector" has been accepted by the Patent Office, Government of India. (Application number : 365424-001)

## Project:

- ➢ SOIC000937-Solar assisted hybrid solid desiccant vapor compression air conditioning system (Rs. 2,00,000=00/-).

## Awards:

- ***"Best Researcher-2020"*** Award from Sardar Patel Education on September 15, 2020.
- ***"Best Teacher Award-2020"*** on September 5, 2020 from Knowledge Society for Research Innovation.
- RSRI ***"Best E-Lecture Award-2022"*** on 26th August, 2022 organised by REST Labs & REST Society for Research International, Kaveripattinam, Krishnagiri, Tamil Nadu, India.

## Editorial board Member:

- AR Research Publication and Conference World.
- SCIREA Journal of Mechanical Engineering.

## Guide/Supervisor:

- ✓ PhD- 02 (Completed) 06 (Pursuing)
- ✓ M. tech./ M.E. - 10 (Completed) & 01 (Pursuing)

## Doctoral Research:

Performance study on solid desiccant - vapor compression hybrid air-conditioning system.

## Testing & Consultancy:

Testing and calibrations of auto rickshaw mechanical meters, V-Notch tests for submersible pumps, Hydraulic testing of HDPE pipes.

## References:


1. Dr. P.K. Jain, Director, Indian Institute of Technology, IIT – BHU.
2. Dr. Manish Mishra, Professor in Mechanical & Industrial Engineering Indian Institute of Technology Roorkee.
3. Dr. P.K. Sahoo, Professor in Mechanical & Industrial Engineering Indian Institute of Technology Roorkee.


## Book Author:

(1) Book Title: "Applications of Solar Energy"

January - 2018, Springer, Singapore.


Springer Nature © 2017 Springer International Publishing AG. Part of Springer Nature on 30-11-2017 having Print ISBN 978-981-10-7205-5.




(2) Book Title: “Advances in clean energy technologies”

September - 2020.


Academic Press is an imprint of Elsevier.





ISBN: 978-0-12-821221-9.


(3) Book Title: “Performance analysis of solid desiccant materials in desiccant wheel”

December - 2022.


LAP Lambert Academic Publishing.

ISBN: 978-620-3-57976-5.

# List of Publications:

## Journals:


[1] Jani, D.B., M. Mishra, and P.K. Sahoo. **2015**. Performance studies of hybrid solid desiccant - vapor compression air-conditioning system for hot and humid climates. ***Energy and Buildings*** 102:284-292.

[2] Jani, D.B., M. Mishra, and P.K.Sahoo. **2016**. Performance prediction of rotary solid desiccant dehumidifier in hybrid air-conditioning system using artificial neural network. ***Applied Thermal Engineering*** 98:1091–1103.

[3] Jani, D.B., M. Mishra, and P.K.Sahoo. **2016**. Performance analysis of hybrid solid desiccant – vapor compression air-conditioning system in hot and humid weather of India. ***Building Services Engineering Research and Technology*** 37:523–538.

[4] Jani, D.B., M. Mishra, and P.K.Sahoo. **2016**. Solid desiccant air conditioning – A state of the art review. ***Renewable and Sustainable Energy Reviews*** 60:1451–1469.

[5] Jani, D.B., M. Mishra, and P.K.Sahoo. **2016**. Performance prediction of solid desiccant - vapor compression hybrid air-conditioning system using artificial neural network. ***Energy*** 103: 618-629.

[6] Jani, D.B., M. Mishra, and P.K.Sahoo. **2016**. Experimental investigation on solid desiccant – vapor compression hybrid air- conditioning system in hot and humid weather. ***Applied Thermal Engineering*** 104:556–564.

[7] Jani, D.B., M. Mishra, and P.K.Sahoo. **2016**. Exergy analysis of solid desiccant - vapor compression hybrid air conditioning system. ***International Journal of Exergy*** 20:517-535.

[8] Jani, D.B., M. Mishra, and P.K.Sahoo. **2017**. A critical review on solid desiccant based hybrid cooling systems. ***International Journal of Air-conditioning and Refrigeration*** 25:1-10.

[9] Jani, D.B., M. Mishra, and P.K.Sahoo. **2017**. Application of artificial neural network for predicting performance of solid desiccant cooling systems- A review. ***Renewable and Sustainable Energy Reviews*** 80:352-366.

[10] Jani, D.B., M. Mishra, and P.K.Sahoo. **2018**. A critical review on application of solar energy as renewable regeneration heat source in solid desiccant – vapor compression hybrid cooling system. ***Journal of Building Engineering*** 18:107-124.

[11] Jani, D.B., M. Mishra, and P.K.Sahoo. **2018**. Performance analysis of a solid desiccant assisted hybrid space cooling system using TRNSYS. ***Journal of Building Engineering*** 19:26-35.

[12] Jani, D.B., K., Bhabhor, and M. Dadi. **2018**. Desiccant cooling – cleaner air conditioning tech of tomorrow. ***Cooling India*** 13(8):38-41.

[13] Jani, D.B., K., Bhabhor, and M. Dadi. **2018**. Desiccant based rotary dehumidifiers. ***Cooling India*** 13(10):22-28.

[14] Jani, D.B., M. Mishra, and P.K.Sahoo. **2018.** Investigations on effect of operational conditions on performance of solid desiccant based hybrid cooling system in hot and humid climate. ***Thermal Science and Engineering Progress*** 7:76-86.

[15] Bhabhor, K.K., D.B. Jani. **2021.** Performance analysis of desiccant dehumidifier with different channel geometry using CFD. ***Journal of Building Engineering*** 44:103-21.

[16] Bhabhor, K.K., D.B. Jani. **2022.** Progressive development in solid desiccant cooling: A review. ***International Journal of Ambient Energy*** 43(1):992-1015.

[17] Jani, D.B. **2023.** Review on Recent development in Desiccant Cooling. ***International Journal of Energy Resources Applications*** 1(2): 1-12.

## Conferences:

[1] Jani, D.B., Mukesh R. Zala, Anishkhan Pathan. **2011**. Study of friction and wear reduction techniques in piston rings in IC engines. ***Proceedings of National Tribology Conference***, IIT, Roorkee, Dec 8-10, pp. 1-5.

[2] Patil, M.Y., D.B. Jani, Ajit Chavda. **2011**. To increase utilization of tyre industry using lean methodology. ***Proceedings of National Tribology Conference***, IIT, Roorkee, Dec 8-10, pp. 1-5.

[3] Jani, D.B., Mukesh R. Zala, Uttam R. Bhuva. **2012**. EGR as an $NO_x$ reduction technique in diesel fuelled IC engine – A review. ***Proceedings of 1st National Conference on Thermal, Fluid and Manufacturing Science (TFMS-2012)***, C.K. Pithawala Institute of Technology and The Institution of Engineers (India) South Gujarat Local Centre, Surat, Jan 20-21, pp. 236-239.

[4] Jani, D.B., Mukesh R. Zala, Vivek S. Khadalia. **2012**. Effect of EGR rate and injection timings on the performance and emissions in diesel engine – A review. ***National Conference on Technology and Management (NCTM-2012)***, Sankalchand Patel College of Engineering, Visnagar, Jan 20-21, pp. 1-6.

[5] Dodiya, Alpeshkumar L., D.B. Jani. **2012**. A design optimization and analysis composite drive shaft of an automobile using different composite materials. ***National Conference on Advances in Engineering and Technology (SPANDAN-2012)***, Yeshwantrao Chavan College of Engineering (YCCE), Nagpur, Feb 28-29, pp. 1-5.

[6] Dodiya, Alpeshkumar L., D.B. Jani. **2012**. A design, analysis and optimization of composite drive shaft of an automobile. ***National Conference on Advances in Engineering and Technology (NCAET-2012)***, Kalol Institute of Technology and Research Centre, Kalol, Mar 9-

10, pp. 1-6.

[7] Jani, D.B., M. Gwalwanshi, M. Mishra, and P.K.Sahoo. **2013**. Solid desiccant cooling - an overview. ***Proceedings of the International Conference on Advances in Chemical Engineering (ACE-2013)***, IIT, Roorkee, Feb 22-24, pp. 1-5.

[8] Jani, D.B., M. Mishra, and P.K.Sahoo. **2013**. Simulation of solar assisted solid desiccant cooling systems using TRNSYS. ***Proceedings of the 22th National and 11th International ISHMT-ASME Heat and Mass Transfer Conference (ISHMT-ASME-2013)***, IIT, Kharagpur, Dec 28-31, pp. 1-7.

[9] Jani, D.B., M. Mishra, and P.K.Sahoo. **2015**. Numerical simulation of rotary desiccant dehumidifier for hybrid solid desiccant – vapor compression air-conditioning system. ***The proceedings of the 24th IIR International Congress of Refrigeration***, Yokohama, Japan, Aug 16-22, pp.1-8.

[10] Jani, D.B., M. Mishra, and P.K.Sahoo. **2015**. Experimental investigations on hybrid solid desiccant – vapor compression air-conditioning system for Indian climate. ***The proceedings of the 24th IIR International Congress of Refrigeration***, Yokohama, Japan, Aug 16-22, pp.1-9.

[11] Jani, D.B., M. Mishra, and P.K.Sahoo. **2015**. Effect of regeneration temperature on the performance of solid desiccant and vapor compression hybrid air-conditioning system. ***The proceedings of the 4th National Conference on Refrigeration and Air Conditioning (NCRAC-2015)***, IIT, Chennai, Oct28-30, pp. 1-9.

[12] Jani, D.B., M. Mishra, and P.K.Sahoo. **2015**. Exergy analysis of solid desiccant – vapor compression hybrid air-conditioning system. ***Proceedings of the 23rd National Heat and Mass Transfer Conference and 1st International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2015)***, ISRO, Thiruvananthapuram, Dec 17-20, pp. 2-8.

[13] Vyas, Vedant, D.B. Jani, P.K. Brahmbhatt. 2016. A comprehensive study on application of renewable solar energy in thermal power generation. National Conference on Emerging Research Trends in Engineering (NCERTE-2016), VGEC Chandkheda, Institute for Plasma Research (IPR) and CTE Gandhinagar, Ahmedabad, Apr 4-6, pp. 620-625.

[14] Kiran, Bhabhor, D.B. Jani, R.J. Dabhi, D.H. Thakur. **2018**. Recent applications of renewable solar energy in desiccant cooling systems – A review. ***National Conference on Recent Trends in Renewable Energy Application & Research, The Institution of Engineers (India), Gujarat State Centre, Ahmedabad***, February 16-17, pp. 1-5.

[15] D.B. Jani. **2022.** Simulation of solid desiccant assisted cooling systems for hot and humid climates. ***3rd National Conference on "Thermal Fluid and Manufacturing Science" (TFMS-2022) April 18-19, 2022At: C.K. Pithawala College of Engineering and Technology, Surat.***

*[16]* D.B. Jani. **2022.** Mathematical modelling of rotary desiccant dehumidifier. ***International Virtual Conference on "Recent Trends in Applied Mathematics" (ICRTAM - 2022)" on 07th October 2022, ANNA University, Coimbatore, Tamil Nadu, India.***

## List of Training Programs:

| Sr. No. | Course Title | Duration | Organized by |
|---|---|---|---|
| 01 | Introduction to computer, windows, MS-office | May 2000 – June 2000 (2 months) | Directorate of Employment and Training, Gandhinagar and Computer Allied TEC, Bhavnagar. |
| 02 | State level workshop on Computer based diesel engine | Oct 17-18, 2002 | Mechanical Engg. Dept., Government Engineering College (GEC), Modasa. |
| 03 | UGC sponsored refresher course in material science | Nov 16 – Dec 5, 2002 (1 month) | Department of Material Science, S.P. University, V.V. Nagar. |
| 04 | Recent trends in manufacturing technology (RTMT-2K6) | Dec 18-23, 2006 (1 week) | Sankalchand Patel College of Engineering, Visnagar. |
| 05 | Application of Mechatronics in manufacturing and automation | Mar 19-23, 2007 (1 week) | Dept. of Mechatronics and Mechanical Engg., U.V. Patel College of Engineering, Ganpat University. |
| 06 | Advance manufacturing system | May 14-24, 2007 (2 weeks) | B.B.I.T., V.V. Nagar. |
| 07 | Solid modeling and mechanical analysis | May 28-29, 2007 | Mechanical Engg. Dept., L.D. College of Engineering, Ahmedabad. |
| 08 | Modern concepts in air-conditioning design | May 30-31, 2007 | Mechanical Engg. Dept., L.D. College of Engineering, Ahmedabad. |
| 09 | Computational fluid dynamics (CFD) and heat transfer | May 5-9, 2008 (1 week) | IIT Bombay and Mechanical Engg. Dept., L.D. College of Engineering, Ahmedabad. |
| 10 | Advanced engineering optimization through intelligent techniques | Dec 22-28, 2008 (1 week) | Dept. of Mechanical Engineering, SVNIT, Surat. |
| 11 | Hyperform-Hypermesh software training | Jan 5-9, 2009 (1 week) | Dept. of Mechanical Engineering, SVNIT, Surat. |

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|---|---|---|---|
| 12 | CCC+ Course | Jan 27 – Feb 10, 2009 (2 weeks) | Computer Engg. Dept., L.D. College of Engineering, Ahmedabad. |
| 13 | Free health check-up camp of hero Honda bike | Feb 24 – Mar 5, 2009 | L.D. College of Engineering and Bikes Auto., Ahmedabad. |
| 14 | Non-destructive testing | Oct 5-9, 2009 (1 week) | Department of Applied Physics, SVNIT, Surat. |
| 15 | World class manufacturing and supply chain management | May 3-7, 2010 ( 1 week) | Production Engg. Dept., S.S. Engineering College, Bhavnagar. |
| 16 | Bio-diesel | June 21-25, 2010 (1 week) | NITTTR, Bhopal. |
| 17 | Advance in automobile engineering | Dec 27 – Jan 1, 2011 (1 week) | Dept. of Mechanical Engg., Institute of Technology, Nirma University, Ahmedabad. |
| 18 | Workshop on high impact teaching skills | July 4-5, 2011 | Dale Carnegie Training Associates and Wipro. |
| 19 | Workshop on mission 10X | July 4-8, 2011 (1 week) | L.D. College of Engineering, Ahmedabad. |
| 20 | Finite element method: A mathematical approach | Apr 30 – May 4, 2012 (1 week) | Mechanical Engineering Dept., C.K. Pithawala College of Engineering and Tech., Surat. |
| 21 | Challenges in measurement of single and two phase flow – recent methods | June 24-28, 2013 (1 week) | Department of Mechanical and Industrial Engineering, IIT, Roorkee. |
| 22 | Heat transfer in chemically reacting systems | Dec 8-12, 2014 (1 week) | Department of Mechanical and Industrial Engineering, IIT, Roorkee. |
| 23 | Two-phase flow, boiling and condensation in conventional and miniature systems | June 1-5, 2015 (1 week) | Department of Mechanical and Industrial Engineering, IIT, Roorkee. |
| 24 | Induction training programme phase - II | May 2-13, 2016 (2 weeks) | NITTTR, Bhopal (Gujarat Extension Centre), Ahmedabad. |

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|---|---|---|---|
| 25 | CAD, advance manufacturing and simulation using NX software | May 16-27, 2016 (2 weeks) | Siemens Centre of Excellence, GEC, Bhavnagar. |
| 26 | Advances in material characterization techniques | May 30 – June 3, 2016 (1 week) | Institute Instrumentation Centre, IIT, Roorkee. |
| 27 | Advances in manufacturing and automation | Jan 1-5, 2018 (1 week) | Government Engineering College, Dahod. |
| 28 | Research method and academic writing | Jan 8-12, 2018 (1 week) | NITTTR Regional Centre, Ahmedabad. |
| 29 | Mathematics for engineering applications | Aug 20-24, 2018 (1 week) | NITTTR, Bhopal. |
| 30 | Advances in Heating, Ventilation, Air-conditioning and Refrigeration | Oct 14-19, 2019 (1 week) | L.D. College of Engineering, Ahmedabad. |
| 31 | NBA accreditation | March 02-06, 2020 (1 week) | NITTTR Regional Centre, Ahmedabad. |
| 32 | Pedagogy and effective use of ICT in engineering and higher education | Aug 9-13, 2021 (1 week) | NITTTR, Bhopal. |
| 33 | Development of Lab Manuals for Outcome based Curriculum | Aug 1-5, 2022 (1 week) | NITTTR, Bhopal. |