Detailed Bio-data

CIRRICULUM VITAE

RAJESH GUPTA
Professor,
M. A. National Institute of Technology (Deemed University)
Bhopal (Madhya Pradesh), India – 462051
Email id – dr.gupta.rjp@gmail.com
Tel– 91-0755-4912175(R), 8989207018(M), 91-0755-4051627
Fax – 91-0755-2670562

Date of Birth: July 1, 1963

1. CAREER OBJECTIVE

Teach engineering and conduct research in thermo-fluid mechanics and related technologies.

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2. PROFESSIONAL EXPERIENCE

Academics and Research: 20 years

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3. ACADEMIC QUALIFICATIONS

Ph.D.Thermal Engineering (MANIT, Bhopal, 2012)

Thesis Title: Fluid Flow and Combustion Modeling in Single Pan Wood Stove

Area of Specialization: Heat Transfer and computational combustion.

M.Sc.Engg., Mechanical Engineering (University of New Brunswick, Canada, 1993)

Research Topic: A Linear Analysis of Homogeneous Curved Shear Flow.
Simulation of homogeneous turbulence in curved duct was carried out to analyze the effects of curvature on sheared turbulence by using “Rapid Distortion Theory”.

M.Sc., Applied Mathematics (Technical University of Nova Scotia, Canada, 1990)

Research Topic: Hydrodynamic Loading of Offshore Structures.
A linear wave diffraction problem was solved by using finite element method to evaluate the wave loads exerted on the offshore structures.

B.E., Mechanical Engineering (M.A. College of Technology, Bhopal, 1984)

Major Project: A CPM/PERT Analysis for Manufacturing of 210 MW Steam Turbine.

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4. Research Publications:

International Journals: Published (38)
National Journals: Published (02)
International Conferences: Published (14)
National Conferences: Published (04)

5. Thesis Guided

Ph.D. Completed (05), Ongoing (02)
M.Tech Completed (40)

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6. Awards & Recognition

National Science and Engineering Research Council (Canada) GRA, Sept 1990-Dec 1993
National Science and Engineering Research Council (Canada) GRA, Jan 1989-Aug 1990
National Merit Scholarship, July 1979-April 1984
Junior Research Fellowship in Engineering (CSIR), July 1984-April 1986

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7. Administrative Responsibilities

1. Liaison Officer to Barakatulah University, Bhopal (June, 1995- September, 1997) for examination purpose.
2. Warden MV Bhawan (H.No. 5), 2004 - 2007.
3. Senior Warden (12/03/2009 to 11/03/2010)
4. Exam Coordinator (April 2006 to March 2007)
5. Result Coordinator (September 2007 to March 2010)
6. Convener stock verification committees since 1995
7. Coordinator, Networking in TEQIP-I
8. In charge, Computational Fluid Dynamics Laboratory since Sept 2012
9. In charge, Heat & Mass Transfer Laboratory since Sept 2012
10. Member, UG Admission committee, July 2014-August 2016.
11. Coordinator, Procurement in TEQIP-II, May 2012-April 2016.
12. HOD, Chemical Engineering, MANIT, Bhopal, July 8, 2015 to Feb 16, 2016
13. Coordinator, TEQIP-II, since May 2016
14. Coordinator, TEQIP-III, since July 19, 2017
15. Vice-Chairman, Co-operative Store MANIT, Bhopal since Jan 2013.
16. Members selection committee UPSC March 5-12, 2018
17. Member selection panel project research assistants in AMPRI, Oct 2018.
18. Expert for RFP evaluation for GATE training under TEQIP-III (March 27-28, 2018)

Consultancy/Testing Work

- Evaluation of anti-condensation paint (Rs. 80,000.00) for BHEL, Bhopal, April 2008
- Testing of prototype of Crimped pin type heat exchanger (Rs. 40,000.00) Shrao Engg Works, Bhopal, June 2011

- Testing of prototype of L-pin type heat exchanger (Rs. 40,000.00) for Fitwell Corporation, Bhopal, Aug 2011
- Technical advice to Madhya Pradesh Bhoj Open University, Bhopal for a DG set (Rs. 10,000.00), Feb 23, 2012.
- Testing of prototype of Crimped pin type air cooler (Rs. 57,500.00) JBL, Engineering Pvt Ltd, Bhopal, October 2016
- Testing of prototype of Crimped pin type air cooler (Rs. 69,000.00) LVHE Pvt Ltd, Hardwar Feb 2017
- Testing of prototype of Crimped pin type heat exchanger (Rs. 69,000.00) Shrao Engg Works, Bhopal, March 2020
- Testing of prototype of Crimped pin type heat exchanger (Rs. 88,000.00) Bansal Laboratories, Bhopal, June 2020
- Testing of prototype of Crimped pin type heat exchanger (Rs. 88,000.00) Narbada Electrographites, Bhopal, Dec 2020

Projects Undertaken

- Numerical investigation of piston bowl geometry and swirl ratio on spray, performance and emission from diesel engines, World Bank-MHRD, GOI Joint project (TEQIP-II), 21 Lakhs, April 2014-June 2015.
- Emission Reduction by using Jatropha & Turpentine Oil Blend as Alternative Fuel in Diesel Engine, World Bank-MHRD, GOI Joint project(TEQIP-II), 10 Lakhs, April 2015-March 2016.
- Emission Reduction by using Linseed & water emulsion in Diesel Engine, World Bank-MHRD, GOI Joint project (TEQIP-II), 16 Lakhs, Jan 2016, ongoing.
- Flow Simulation in a Single Pan Wood Stove, MHRD, GOI, Rs. 14 Lakh, April 2010 (Completed).
- Development of CFD Laboratory, MHRD, GOI, Rs. 20 Lakh, April 2011(Completed).
- Up gradation of CFD Laboratory, MHRD-MANIT In house Scheme, Rs. 27 Lakh, July 2011
  (Completed).

Details of invited talks/expert lecture delivered

- Expert lecture delivered on, “Fundamentals of Heat Transfer”, Advances in Heat and Mass Transfer, Mechanical Engg, MANIT, Bhopal, June 3-7, 2013.
- Expert lecture delivered on, “Simulation of Tranport Processes”, Advances in Heat and Mass Transfer, Mechanical Engg, MANIT, Bhopal, June 3-7, 2013.
- Expert lecture delivered on, “Simulation of Transport Phenomenon”, in STTP on CFD: Basics & Applications, Civil Engg, MANIT, June17-21, 2013.
- Expert lecture delivered on, “Numerical Solution of Partial Differential Equations”, in STTP on CFD: Basics & Applications, Dept of Mathematics, MANIT, June17-21, 2014.
- Expert lecture delivered on, “CFD Basics”, in STTP on Recent Trends and Challenges in Thermal Engineering, at Mechanical Engineering in S.A.T.I.,Vidisha, April 1-5, 2015.
- Expert lecture delivered on, “CFD: Basics”, B.H.E.L., Bhopal, November 26, 2015.
- Expert lecture delivered on, “ANSYS Fluent”, B.H.E.L., Bhopal, December 28, 2015.
- Expert lecture delivered on, “ANSYS Fluent”, B.H.E.L., Bhopal, August 04, 2016.

Details of Technical Session chaired

- Technical session chaired in Intl. Conf. on Industrial, Mechanical and Production Engineering: *Advancements and Current Trends (IMPACT, M.A.N.I.T., Bhopal, India*, Nov 27- 29, 2014.
- Technical session chaired in Intl. Conf. on Bio Fuels and Bio Energy, *jointly organized by M.A.N.I.T., Bhopal, India and WeenTech Energy UK, Feb 23-25*, 2016.

Details of Technical Papers Reviewed

- "Numerical investigation of recirculation of burned gases on CH_4-H_2 diffusion flame in a jet in hot co-flow (JHC) burner", Punit Kumar**,** P Anil Kishan, 1st International ISHMT-ASTFE Heat and Mass Transfer Conference, IHMTC-2015, Paper No. 562, 17-20 December, 2015, Thiruvananthapuram, India
- Characteristics of coherent structures in turbulent swirling hydrogen flames-effect of swirl velocity, Suresh V. Balaji, Ashok De, 1st International ISHMT-ASTFE Heat and Mass Transfer Conference, IHMTC-2015, Paper No. 934, 17-20 December, 2015, Thiruvananthapuram, India
- "Prediction of droplet sizes and distribution formed during impact of slug of liquid on solid surface", A.V. Shelke, B. Gera, R. K. Singh, 1st International ISHMT-ASTFE Heat and Mass Transfer Conference, IHMTC-2015, Paper No. 934, 17-20 December, 2015, Thiruvananthapuram, India
- "Effect of variation of degree of premixing on interacting flames", Uddalok Sen, Chandrachur Bhattacharya , Achintya Mukhopadhyay**,** Swarnendu Sen, 1st International ISHMT-ASTFE Heat and Mass Transfer Conference, IHMTC-2015, Paper No. 1103, 17-20 December, 2015, Thiruvananthapuram, India
- "Experimental research on the diffusion flame formation and combustion performance of forced swirl combustion system for DI diesel engines", Liwang Su, Xiangrong Li, Xu He, Fushui Liu, Paper No. ECM-D-15-03073, J. of Energy Conversion & Management (Elesevier Publication).
- "Modelling study on the effect of piston bowl geometries in a gasoline/biodiesel fuelled RCCI engine at high speed", J. Li, W.M. Yang, D.Z. Zhou, Department of Mechanical Engineering, Faculty of Engineering, National University of Singapore, Singapore 11757, Paper No. ECM-D-15-04338, J. of Energy Conversion & Management (Elesevier Publication).
- "A numerical study on the effect of various combustion bowl parameters on the performance, combustion and emission behaviour on a single cylinder diesel engine", Dhinesh. B, Sabari Rajan. S.A., Isaac Joshua Ramesh Lalvani. J, Parthasarathy. M , and Annamalai. K, Department of Automobile Engineering, Madras Institute of Technology campus, Anna University, Chennai, India, Manuscript Number: ECM-D-16-02491, J. of Energy Conversion & Management (Elesevier Publication).

Membership of Professional Societies

1. Member of the Institution of Engineers (Member No. M-111387)
2. Life member of the ISTE
3. Member of the SAE, India
4. Member of American Mathematical Society (Membership Code:GDRJXA)

5. Member of Combustion Institute (Indian Section) LMC-1239, 2013.

Details of Foreign visit :

- Paper presented in 18th International Conference on Nuclear and Renewable Energy ICNRER- 2016 held during June 6-7, 2016 in New York, USA
- Paper presented Technical Fall Meeting of Eastern Section Combustion Institute of USA, Clemson University, USA, Oct 13-16 2013
- Stayed in Canada from 1989 to 1994. During this period, I earned two degrees and worked on research project funded by NASA, USA.

Details of Social work and multifans activities in the institute

- Member of selection committee for interview for selection of Mechanic C in MP STEP July 1995
- Chair the session at technical paper presentation in TECHNOSERACH 1995.
- Joint-Secretary, Officers-Club MANIT (1996-97).
- Secretary, Officers-Club MANIT (1997-98).
- Organized educational tour for UG students, Feb 21-March 3, 1997.
- Organizing educational tour for UG students, Feb 19-28, 1999.
- Member of Institute cricket team, 1996-98
- Observer on behalf of Professional Examination Board, MP, Nov 1999.
- Observer on behalf of Professional Examination Board, MP, Feb 2000.
- Observer on behalf of Professional Examination Board, MP, April 2000.
- Executive member of Mandir Samiti, MANIT, Bhopal, 2008-2009

BOOKS PUBLISHED

1. "Analysis of Pulse Jet Engine: An Experimental Approach", Shashank Ranjan Chourasiya, R.M. Sarviya and Rajesh Gupta, Lambert Academic Publications ISBN: 978-613-7-32416-5, Germany, 2018
2. NOx Reduction of a Methanol-Diesel Blended Diesel Engine, Dinesh Kumar Soni and Rajesh Gupta, Lambert Academic Publications ISBN: 978-613-7-75493-1, Germany, 2018
3. High Reynolds Number Flow Over An Elliptical Cylinder, Manish Kumar Rawat and Rajesh Gupta, Lambert Academic Publications ISBN: 978-613-8-38734-3, Germany, 2018

BOOK CHAPTER PUBLISHED

1. Numerical Investigation of Split Injection Strategy on Performance and emission characteristics of Diesel Engine, Ankit Kesharwani and Rajesh Gupta, Advances in IC Engines and Combustion Technology Editors A.K. Gupta, H.C. Mongia, Pankaj Chandna, Gulshan Sachdeva, Springer 2021, ISBN 978-981-15-5995-2, pp. 751

LIST OF PUBLICATIONS

International Journal

1. "Numerical analysis of performance of tube heat exchanger with center-perforated tapered twisted tape", Ajeet Yadav, Rajesh Gupta & Manish Kumar Mohit, Energy

Sources, Part A: Recovery, Utilization, And Environmental Effects, v. 47(1), pp. 16–30, 2025 (SCIE).

2. Influence of fin length and width on flow and heat transfer performance of miniature heat sinks Manish Kumar Mohit, Rajesh Gupta, Case Studies in Thermal Engineering v. 54, 104057, 2024 (SCIE).

3. "Numerical investigation of the performance of rectangular micro-channel equipped with micro-pin-fin", Manish Kumar Mohit and Rajesh Gupta, Case Studies in Thermal Engineering v. 32, 101884, 2022 (SCIE).

4. "High pressure direct fuel injection as a solution for performance enhancement in two-stroke spark-ignition engine", Deshmukh, G.K., Rehman, A. and Gupta, R, Energy Sources, Part A: Recovery, Utilization, and Environmental Effects, 2021, pp.1-10. (SCIE)

5. "Effect of high-pressure fuel injection on two-stroke spark-ignition engine performance", ,Deshmukh, G.K., Rehman, A. and Gupta, R., Maejo International Journal of Science and Technology 2020, 14(3), pp.261-271. (SCIE)

6. "Performance Enhancement of Two-Stroke Spark-Ignition Engine using High-Pressure Fuel Injection", Deshmukh, G.K., Rehman, A. and Gupta, R., J. Chinese Society of Mechanical Engineers, 2021. (SCIE)

7. "Experimental Investigations of a Compression-Ignition Engine Fuelled with Transesterified-Jatropha Biodiesel Diesel Blend", Deshmukh, G.K., Rehman, A. and Gupta, R, Mehran University Research Journal of Engineering and Technology, 2021, 40(3), pp.474-481. (ESCI)

8. "Combustion and Emission Characteristics of a Compression-Ignition Engine fuelled with Transesterified-Jatropha Biodiesel-Diesel Blends", Deshmukh, G.K., Rehman, A. and Gupta, R., Intl. J. Renewable Energy Research (IJRER), 2021, 11(2), pp.899-907. (ESCI)

9. "Impact of Temperature on the Spray Characteristics of Jatropha Curcas Biodiesel and Diesel Fuel Blends", Deshmukh, G.K., Rehman, A. and Gupta, R., Journal of Testing and Evaluation, 2021, 49(6). (SCIE)

10. "Numerical Simulation on Effect of Spray Cone Angle on Emissions in Diesel-Engine using AVL-FIRE", Deshmukh, G.K., Rehman, A. and Gupta, R., International Journal of Engineering and Advanced Technology (IJEAT), 2020, 9(4), pp. 1595-1599. (Scopus)
11. "Numerical investigation of injection parameters and piston bowl geometries on emission and thermal performance of DI diesel engine", Ikhtedar Husain Rizvi, Rajesh Gupta, SN Applied Sciences. 2021, 3:626. (Scopus)

12. "Evaluation of performance and emission characteristics of a diesel engine using split injection", Kesharwani, A., Gupta, R., Journal of the Brazilian Society of Mechanical Sciences and Engineering, 2020, 42(6), 331

13. “Temperature, Heat Distribution and Performance Analysis in A Variable Compression Ratio Internal Combustion Engine”, Dinesh Kumar Soni, Rajesh Gupta, Rahul Kumar Singh, International Journal of Recent Technology and Engineering (IJRTE), 2020, 8(5), pp.4825-4829. (Scopus)

14. “NOx Reduction of CI Engine operated with Flaxseed oil biodiesel emulsions with Water”, Avinash Kumar Namdeo, Rajesh Gupta, International Journal of Advanced Science and Technology, ISSN No. 2005- 4238(P); 2207- 6360(E), 28(2019) 19, pp. 944 – 952. (Scopus)

15. “Performance and Emissions of CI Engine operated with Linseed Oil Biodiesel-Diesel blends under Varied Compression Ratio”, Avinash Kumar Namdeo, Dr. Rajesh Gupta, International Journal of Mechanical and Production Engineering Research and Development (IJMPERD), ISSN No: 2249- 6890 (P); 2249- 8001, 9 (2019) 2, pp. 871-878. (Scopus).

16. “Potential of Linseed oil Biodiesel as fuel for CI-Engines in India”, Avinash Kumar Namdeo, Rajesh Gupta, International Journal of Scientific & Technology Research, ISSN No: 2277-8616, International Journal of Scientific and Technology Research, 9(2) 2020 2510–2515.

17. “Influences of dual bio-fuel (Jatropha biodiesel and Turpentine oil) on single cylinder variable compression ratio diesel engine”, Pankaj Dubey and Rajesh Gupta, J. of Renewable Energy 115 (2018) 1294-1302. (Sci Indexed)

18. “Application of nano emulsion method in a methanol powered diesel engine”, Dinesh Kumar Soni and Rajesh Gupta, Energy 126 (2017) 638-648. (Sci Indexed)

19. “Numerical analysis of flow dynamics for two piston bowl designs at different spray angles”, Dinesh Kumar Soni and Rajesh Gupta, Journal of Cleaner Production, 149 (2017) 723-734. (Sci Indexed)

20. “Effects of dual bio-fuel (Jatropha biodiesel and turpentine oil) on a single cylinder naturally aspirated diesel engine without EGR”, Pankaj Dubey and Rajesh Gupta, Applied Thermal Engineering 115 (2017) 1137–1147. (Sci Indexed)

21. “Study of the performance and emission characteristics for a dual fuel powered single cylinder diesel engine”, Pankaj Dubey and Rajesh Gupta, Int. J. of Automotive and Mechanical Engineering (IJAME) ISSN: 2229-8649 (Print); ISSN: 2180-1606 (Online); Vol. 13, Issue 2 pp. 3373 - 3388, September 2016. (Scopus indexed)

22. “Emission Reduction by using Linseed & Turpentine Oil Blend as Alternative Fuel in Diesel Engine”, Narendra Kumar Yadav, Rajesh Gupta and Pankaj Dubey, International Journal of Engineering Research & Technology ISSN: 2278-0181 , Vol. 5 Issue 05, May-2016.

23. “Effects of piston bowl geometry on combustion and Emission characteristics on diesel engine: A CFD case study”, Chetan S. Bawankar and Rajesh Gupta, IJRET: International Journal of Research in Engineering and Technology eISSN: 2319-1163 pISSN: 2321-7308, Vol.05 Issue: 07, Jul-2016.

24. “Optimization of methanol powered diesel engine: A CFD approach”, Dinesh Kumar Soni, Rajesh Gupta, J. Applied Thermal Engg. v. 106 (2016), pp. 390-398. (Sci Indexed)

25. “Numerical investigation of emission reduction techniques applied on methanol blended diesel engine”, Dinesh Kumar Soni, Dr. Rajesh Gupta, accepted in Alexandria Engineering Journal v. 55 (2016), pp. 1867-1879 (Sci indexed)

26. “Emission Control Using Methanol, Ethanol And Butanol In Diesel Engine: A Comparison Through CFD Simulation”, Dinesh Kumar Soni, Rajesh Gupta, IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE) e-ISSN: 2278-1684, p-ISSN: 2320-334X, Volume 12, Issue 6 ver. VI (Nov. - Dec. 2015), PP 17-23, DOI: 10.9790/1684-12661723. (Indexed in Copernicus Internationals)

27. “Comparison of performance and emission characteristics of diesel and diesel-water blend under varying injection timings”, Dinesh Kumar Soni, Rajesh Gupta, International Journal of Engineering, Science and Technology, Vol. 7, No. 4, 2015, pp. 49-59 (AJOL)

28. “Numerical investigation of piston bowl geometry and swirl ratio on emission from diesel engines”, Abdul Gafoor C.P., Rajesh Gupta, Energy Conversion and Management, v. 101 (2015) 541–551. (Sci Indexed)

29. “Performance Analysis of an Air Operated Micro-turbine”, Aman Saraf, Anshul Sungra, Rajesh Gupta, J. of Sustainable Manufacturing & Renewable Energy, v. 3, pp. 129-138, 2015, ISSN 2153-6821.

30. “Turbulent Flow over an elliptical Cylinder”, Manish Rawat, Dinesh Kumar Soni, Rajesh Gupta, Intl. Journal of Scientific Engineering and Technology, Special Issue, 2014, ISSN : 2277-1581, pp. 58-62. (Google Scholar, DOAJ, EDLIB, DRJI, JIFactor)

31. “A numerical study of methane-air premixed flame in a diverging micro-channel”, Mohit Gupta, Rajesh Gupta, Indian J. App. Res, v. 3(9), pp. 217-221, 2013, ISSN - 2249-555X. (Copernicus Internationals, Google Scholar, DOAJ, Citeseer)

32. “High Reynolds number flow over cylinders: A Review”, Manish Rawat, Dr. Rajesh Gupta, Dr. R.M.Sarviya, Intl. J. of App. Res. in Engg & Mgmt., Vol. 2 (6), June 2013, ISSN 2319 - 4847 . (Google Scholar)

33. “Performance Analysis of a Pulsejet Engine”, S. R. Chaurasia, Rajesh Gupta and R.M. Sarviya, Intl. J. Engg Res & Appl, v. 3(4), pp.605-609, 2013, ISSN: 2248-9622. (Copernicus Internationals, Google Scholar, DOAJ, Citeseer)

34. “Simulation of non-premixed natural gas flame”, Rajesh Gupta and Ashish Puriya, Intl. J. of Science and Research, Vol. 2(5), pp. 97-100, 2013, ISSN: 2319-7064.

35. “Cold Flow Simulation in a CI Engine”, Vivek Nema, Rajesh Gupta and A. Rahman, Intl. J. Comput. Sci & Engg., vol. 3(1), pp. 9-19, 2013, ISSN 2249-4251.

36. “Numerical simulation of flow around an elliptical cylinder at high Reynolds numbers”, Manish Rawat, Dr. Rajesh Gupta, Dr. R.M.Sarviya, Intl. J. Fluids Engg, Vol. 5 (1), pp. 29-37, 2013, ISSN 0974-3138.

37. “Mathematical Analysis of Inclined Ground Heat Exchanger”. Rajesh Gupta and Dinesh Soni, Global Journal of Mathematical Sciences vol. 5(1), pp. 31-46, 2013, ISSN 0974-3200.

38. “Design, Development and Testing of Low Capital and Operational Cost Shrub Cutting Machine” R. K. Mandloi, Rajesh Gupta and A. Rehman, J. of Rang. Sci., 2011, Vol. 1 (2):121-124.

39. “Fluid flow and heat transfer in a single-pan wood stove”, Rajesh Gupta and N.D. Mittal, Intl. J. of Engg Sci & Technology, v. 2(9), 4313-4325, 2010, ISSN: 0975-5462. (Google Scholar, DOAJ, Citeseer)

40. "Pyrolysis modeling in a wood stove", Rajesh Gupta and N.D. Mittal, Intl. J. Engg Sci & Technology Vol. 2(10), pp. 5088-5098, 2010, ISSN: 0975-5462. (Google Scholar, DOAJ, Citeseer)

41. “The Influence of Linear Mechanisms in the Adjustment of Sheared Turbulence to Flow Curvature”, Holloway, A.G.L. and Gupta, R., J. Phys. Fluids A, v. 5 no. 12, pp. 3197-3206, 1993 (Sci indexed).

National Journal

1. “Aerodynamic analysis of Audi A4 Sedan using CFD”, S.K. Birwa, N. Rathi, R. Gupta, J. Inst. Engrs. India: Ser. C, v. 94 (2), pp. 105-111, 2013, ISSN 2250-0545 (Scopus Indexed)

2. “Hydrodynamic Loading on Large Conical Structures”, Gupta, R. and Rahman, M., J. Assam Sci. Soc, v. 33 (3), pp. 41-65, 1991.

International Conference

1. “Numerical Investigation of Split Injection Strategy on Performance and Emission Characteristics of Diesel Engine”, Kesharwani, A., Gupta, R., Lecture Notes in Mechanical Engineering, 2021, pp. 751–764.

2. “Performance and emission characteristics of linseed & turpentine oil fueled diesel engine”, Narendra Kumar Yadav, Rajesh Gupta, Sushant Bhuvad, Intl Conf. on Smart Technologies for Green and Sustainable Future, MANIT, Bhopal, pp. 146-151, Dec 8-9, 2017.

3. “Performance and emission analysis of Jatropha and turpentine powered variable compression ratio diesel engine”, Rajesh Gupta, Pankaj Dubey, Hradesh Kushwaha, Intl Conf. on Smart Technologies for Green and Sustainable Future, MANIT, Bhopal, pp. 90-96, Dec 8-9, 2017.

4. "Effects of turbulence penetration on valve leakage in nuclear reactor coolant system", Rajesh Gupta, Sagar Paudel, Utkarsh Sharma and Amit Kumar, Intl Conf. on Nuclear and Renewable Energy, New York, USA, June 6-7, 2016.

5. "Performance and emission characteristics of a dual fuel powered single cylinder diesel engine", Pankaj Dubey and Rajesh Gupta, Intl. conf. on Recent Trends in Engineering and Material Sciences (ICEMS-2016), Jaipur National University, 2-IC-1802, pp.192, March 17-19, 2016.

6. "Effect of Spray Angles on Two Piston Bowl Geometry in Terms of Emissions: A CFD Approach" Dinesh Kumar Soni and Rajesh Gupta, Intl. conf. on Recent Trends in Engineering and Material Sciences (ICEMS-2016), Jaipur National University, 2-IC-1771, pp.192, March 17-19, 2016.

7. "Combustion Simulation in A Differentially Heated Diffuser Under Free Convection", Rajesh Gupta, Pankaj Dubey, Gopal Kumar Deshmukh, Intl conf. on Trends in Industrial and Mechanical Engg. ICTIME 2016, M.A.N.I.T., Bhopal (India), 4-6 Feb, 2016.

8. "Comparative Study of Methane-Air and Syn Gas Premixed Flames for Co and CO_2 Emission", Atul Joshi, Rajesh Gupta, *Intl. Conf. on New Frontiers in Chemical, Energy and Environmental Engineering INCEEE-2015,* Chemical Engineering, National Institute of Technology, Warangal (India) March 20-21, 2015.

9. "Performance Analysis of an Air Operated Micro-turbine", Aman Saraf, Anshul Sungra, Rajesh Gupta, Intl. Conf. on Industrial, Mechanical and Production Engineering: *Advancements and Current Trends, M.A.N.I.T., Bhopal, India*, Nov 27-29, 2014.

10. "Performance Analysis of Conventional LPG Cooking Stove", Pulkit Agarwal, Abhishek Anand, Rajesh Gupta, Intl. Conf. on Industrial, Mechanical and Production Engineering: *Advancements and Current Trends, M.A.N.I.T., Bhopal, India*, Nov 27-29, 2014.

11. "A Numerical Study Of Methane-air Premixed Flame In A Micro-channel", Atul Joshi and Rajesh Gupta, International Conference on MEMS and Sensors, IIT Madras, Chennai, India, Dec 18-20, 2014

12. "Turbulent Flow Over an Elliptical Cylinder", Manish Rawat, Dinesh Kumar Soni, Rajesh Gupta, Intl Conf. on Hydraulics, Water resources & Environmental Engineering , MANIT, Bhopal (M.P.) India, Dec 18-20, 2014.

13. "Verification of effects of turbulence penetration on valve leakage in nuclear reactor coolant system", Sagar Paudel, Utkarsh Sharma, Rajesh Gupta, Intl Conf. on Hydraulics, Water resources & Environmental Engineering , MANIT, Bhopal (M.P.) India, Dec 18-20, 2014.

14. "A comparative study of Methane-air and Syn gas premixed flames for NOx formation", Atul Joshi and Rajesh Gupta, Eastern Section Technical Fall Meeting of Combustion Institute of USA, Clemson University, USA, Oct 13-16 2013.

15. "Pyrolysis modeling in a wood stove", Rajesh Gupta, ASME 2008 Heat Transfer Summer conference, Jacksonville, Florida, USA, August 10–14, 2008, ISBN: 978-0-7918-4849-4, *Proc. ASME.* 48494; Heat Transfer, vol. 3:73-85; doi:10.1115/HT2008-56083

16. "Buoyancy Induced Flow in a Heated Diffuser Tube:, Girraj Gupta, Rajesh Gupta and B.S. Bhatia, Second Intl. conf. on Computational Mechanics and Simulations, Indian Institute of Technology Kharagpur, Kharagpur, pp. 1390-1395, Dec 8-10, 2006.

17. "The Influence of Linear Mechanisms in the Adjustment of Sheared Turbulence to Flow Curvature", Holloway, A.G.L. and Gupta, R., Xth Canadian Fluid Dynamics Symposium, University of New Brunswick, Saint John, New Brunswick, pp. 52, June 4 – 6, 1992.

18. "Wave Diffraction by a Vertical Cylinder: A Finite Element Analysis", Gupta, R. and Rahman, M., proc. XIth Canadian Applied Math conference, Technical University of Nova Scotia, Halifax, Nova Scotia, pp. 237-245, May 29-June 1, 1990.

National Conference

1. **"**Numerical Simulation of Methane-Air and Syn Gas Premixed Flames: A Comparison of NOx Emission **",** Rajesh Gupta, Atul Joshi and Chetan Bawankar, 24th National Conference on I. C. Engine and Combustion (NCICEC- 2015), UPES, Dehradun, India, October 30-November 1, 2015.

2. "Combined Effect of Initial Swirl and Bowl Geometry on Spray—A Numerical Simulation", Abdul Gafoor C.P. and Rajesh Gupta, 24th National Conference on I. C. Engine and Combustion NCICEC- 2015), UPES, Dehradun, India, October 30-November 1, 2015.

3. "Emissions & Performance Evaluation of Diesel Engine using Diesel Water Blend: A Comparison", Dinesh Kumar Soni and Rajesh Gupta, 24th National Conference on I. C. Engine and Combustion NCICEC- 2015), UPES, Dehradun, India, October 30-November 1, 2015.

4. "Numerical simulation of non-premixed flame of wood volatile - air in a heated vertical diffuser in free convection condition", Gopal Deshmukh and Rajesh Gupta, 23rd National Conference on I. C. Engine and Combustion (NCICEC 2013), SVNIT, Surat, India, December 13-16, 2013.

List of Ph.D. thesis guided

1. Investigation of NOx Reduction Using Water Emulsion in A Methanol-Diesel Blended Diesel Engine, Dinesh Kumar Soni (133116002), April 2017.

2. Emission reduction and performance evaluation of Diesel engine using Jatropha biodiesel and Turpentine oil, Pankaj Dubey (153216001**)**, January, 2021.

3. NOx Reduction & Performance Evaluation of Diesel Engine using Linseed Biodiesel Blends with Water, Avinash Kumar Namdeo (143216007), October, 2021.

4. Performance Enhancement of Two-Stroke Gasoline Direct-Injection Engine using High Injection Pressure, Gopal Kumar Deshmukh (163116010), 2023.

5. "Investigation of hydro-thermal performance of miniature heat sink", Manish Kumar Mohit (183116007), 2025.

List of M.Tech. Dissertation guided:

1. Stress Analysis of Rectangular Plate Having Two Symmetrical Circular Holes Under Uni-axial Tension By Six-Node Triangular Plane Stress & Plane Strain Element. (Charu Lata Mahajan, July, 1996)
2. Numerical Simulation of Fluid Flow in a Differentially Heated Cavity. (M. Rama Gopal, July 2005)
3. Numerical Simulation of Buoyancy Induced Flow in a Heated Diffuser Tube (Girraj Gupta, July, 2006).
4. Numerical Simulation of Laminar Flow through a Constricted Tube. (Bhoopendra Singh, July 2006).
5. Comparison of Stream Function Vorticity Method and Primitive Variable Approach To Predict Flow Field in a Lid Driven Cavity. (Vimal Chand Sontake, July 2006).
6. Performance Evaluation of Various Algorithms for Solving Two-Dimensional Transient Heat Diffusion Equations. (Dhirendra Thakur, July, 2006).
7. Thermo-Hydrodynamics of Mini-Channel Flows: Liquid Crystal Thermography and Numerical Analysis. (Manoj Rao, December, 2006)
8. Influence of Tube Constriction on Heat Transfer Variation: Numerical Simulation. (Deepak Shirdonkar, July, 2008).
9. Study of Misrun Using Simulation. (Rajneesh Kumar Gedam, July, 2010)
10. Computer Simulation of Ring Rolling. (Sandeep Makwane, July, 2010)
11. Simulation of Gravity Driven Water Pool of AHWR using Fluent and CATHRE (Ravish Vinze, July, 2010)
12. Mathematical Analysis of Inclined Ground Heat Exchanger. (Dinesh Kumar Soni, July, 2011)
13. Determination of Convective Heat Transfer Coefficient in Corrugated Heat Exchanger Channels Through Numerical Simulation. (Ankur Jain, July, 2011)
14. Analytical Study of Performance Parameter in Single and Twin Spark Plug. (Surjit Kumar Singh, July, 2011)
15. Investigation of Piston Bowl Geometry and Crank Speed on Compression Ignition Engine using CFD. (Vivek Kumar Nema, June, 2012)
16. Experimental analysis of effect on various inlet conditions on buoyancy induced flow through a vertical circular tube. (Shailesh Kumar Jha, June, 2012)
17. Numerical study of methane and syngas premixed flames under a micro combustor. (Atul Kumar Joshi, July 2013)

18. Simulation of non-premixed flame of natural gas with different equivalence ratio. (Ashish Kumar Puriya, July 2013)
19. Numerical simulation of high Reynolds number flow around an elliptical cylinder. (Manish Kumar Rawat, July 2013)
20. Simulation of non-premixed LPG and oxygen flame in a 300 kW gas turbine combustor. (Chandra Mohan Kumar, July 2013)
21. Numerical study of buoyancy induced flame through a vertical combustor. (Gopal Kumar Deshmukh, July 2013)
22. Numerical study of methane-air premixed flame in a diverging micro channel. (Mohit Gupta, July 2013)
23. Measurement of performance parameter of pulse jet engine. (Shashank Ranjan Chourasia, June 2013)
24. Numerical investigation of piston bowl geometry and swirl ratio on spray, performance and emission from diesel engines. (Abdul Gafoor CP, June 2015)
25. Measurement of performance and emission characteristics of biodiesel fueled diesel engine. (Ankush Kamde, June 2015)
26. Effects of piston bowl geometry on combustion and emission characteristics of a diesel engine A CFD case study. (Chetan Bawankar, July 2016)
27. Emission reduction by using Linseed and turpentine oil blend as alternative fuel in diesel engine. (Narendra Yadav, August 2016)
28. Performance and emission analysis of double swirl combustion systems in a diesel engine: A comparative study (Harshad Raghuwanshi, June 2017)
29. Performance and emission analysis of a variable compression ratio engine powered with dual bio-fuel blends of Jatropha and turpentine. (Hradesh Kushwaha, June 2017)
30. Designing of heat generator for vapor absorption refrigeration system utilizing exhaust gas of internal combustion engine (Vibha Chaturvedi, June 2017)
31. Effects of piston bowl geometry on combustion and emission characteristics for a Single Cylinder Diesel Engine (Jayank Verma, May 2018)
32. Nox Reduction in Diesel Engine using Rapseed Biodiesel with water emulsion: Numerical Inverstigation (Satyam Gupta, June 2018)
33. Evaluation of Performance and Emission characteristics of a Diesel Engine using Split Injection (Ankit Kesharwani, June 2019).
34. Numerical Investigation of Effects of Injection parameters and piston bowl geometries on performance and emission in DI diesel engine (Ikhtedar Hussain Rizvi, June 2019).
35. Numerical Investigation of Thermal performance of a two-step premixed methance/air micro-combustor (Y. Balashankar, June 2019).
36. Simulation and study on fire dynamic development in two chamber sofa showroom (Yasir Osmani, June 2020)
37. Design & Analysis of Liquefied Petroleum Gas (LPG) Cylinder and effect of thermal loading on cylinder: A Numerical Investigation. (Amrish Kumar Gautam, June 2020).
38. Effects of Fin Locations on Natural Convection around Heated Plate in A Square Enclosure, Neeraj Sahu (192116106), June 2021.
39. Numerical Study of Open Microchannel Heat Sink by Varying Fin Height and Its Orientation, Rewa Prasad Sahu (192116103), June 2021

Title of B.Tech Projects Guided:

1. Study of heat transfer during solidification of a steel ingot: A Finite-difference Approach (1995-96).

2. Design and analysis of diffuser (1995-96)
3. Analysis of growth of semiconductor crystal in the presence of varying thermal boundary condition: A Numerical Approach (1996-97).
4. Design of aerofoil section NACA 23015: A Numerical Approach, (1996-97).
5. Performance, analysis of solar refrigerator (1997-98).
6. Experimental investigation the effect of fluid rotation on heat transfer rate in a double pipe heat exchanger (1997-98).
7. Determination of pressure coefficient along the given aerofoil in a wind tunnel (1998-99).
8. Numerical experiments on naturally convective flow in a differentially heated encloser, (1999-2000).
9. Computer-Aided design of pressure cooking vessels (Debashish Mukherjee, Gourav Goyal, 2004-05).
10. Design and fabrication of shrub cutting machine, (Kumar Gaurav, Anurodh Aharwal, Pranay Kumar, Shyam Lal Mahanand, 2007-08).
11. To determine the drag force and drag coefficient of passenger cars (Bhuvnesh Kumar Tiwari, Alok Kumar, Ankush Mishra, Sourabh Bahaete: 2007-08).
12. Thermal analysis of pressure cooker vessel using software Gambit & Fluent (Dalchand Agrawal, Amit Parsai, Om Prakash Basham: 2008-09).
13. Analysis of various parameters like temperature, pressure, etc. Inside of muffler of a passenger car (B. Abhishek, Abhishek Mishra, Vivek Dwivedi, Yuvraj Mahadik: 2008-09).
14. Improvement in Design and Fabrication and testing of shrub cutting machine (Surya Pratap Singh Chauhan, Abhineet Jain, Anusheel Shrivastava: 2008-09).
15. Design and Analysis of Aero-spike nozzle, (2009-10).
16. Temperature reduction in the interior of car parked in the sun by means of forced convection (Ashwini Gupta, Kavish Agrawal, Abhishek Banerjee, Rohit Das: 2009-10).
17. Simulation and application of study of two phase system using pulsating heat pipe mechanism (Basudev Giri, Shant Saroj, K.K. Pradhan, Murtaza Doriwala: 2009-10).
18. To perform static simulation on single throw crankshaft in the engineering simulation software analysis using finite element method (2009-10).
19. To modify and redesign existing cycle rickshaw (Ajay K. Meena, Akash Shrivastava, Gurav Dhingrolia: 2009-10)
20. Aerodynamic analysis of an airplane (Yash Verma, Gaurav Sehgal, Akash Raj Singh, Aakash Gwande: 2010-11).
21. Design, manufacturing and testing of Aero spike nozzle (Xavier Ekka, Ravi Kumar Sharma, Rahul Billorey, Suhaib Siddiqi: 2010-11).
22. Simulation and experimental validation of pulse jet engine (K. Dinesh Kumar, Prabhat Ranjan Jha, K. Kiran Kumar, K. Swaminathan: 2010-11).
23. The experimental determination of lift and drag forces for different angles of attack on an Aero plane model (Thirumal Rao, Gautam C., P.T. Prasanna: 2011-12).

24. Development of ventilation strategy in diesel engine power plant by using CFD modeling (Pushpendra Singh Patel, Yaser Hussain, Sanchay Lahari, Garima Khare: 2011-12).
25. Design, Analysis and Experimental Validation of a pulse jet engine (Prakhar Dave, Sumit Kumar Birwa, Hardik Umrania, Nikunj Rathi: 2011-12).
26. Determination of heat transfer coefficient for natural convection through vertical pipe (Umakant, Dipesh Mishra, Praveen Kumar, Ashish Ranjan: 2012-13).
27. Space environment and space craft design 2: Thermal subsystems in nano-satellites- A Conceptual Design (Afaque Khan: 2012-13).
28. The simulation and experimental analysis of premixed laminar flames using Bunsen burner technique (Anubhav Soni, Anubhav Mishra, Vikas Chourasia, Vaibhav Shrivastava: 2012-13).
29. Design and fabrication of a micro turbine (Anshul Sungra, Rohit Jain, Prateek Mandhana, Aman Saraf: 2013-14).
30. Coupled structural-fluent analysis of nuclear reactor coolant system (Amit Singh, Sagar Paudel, Utkarsh Sharma, Vikram Talreja: 2013-14).
31. Numerical investigation of combustion in a vertical heated tube with various inlet and Wall Conditions (Umesh Yadav, Nikhil Joshi, Abhishek Anand, Pulkit Agrawal: 2014-15).
32. Combustion improvement on a DI diesel engine using tangential swirling grooves (Rishab Dev Tiwari, Rikku Kumari: 2015-16).
33. Numerical Investigation of Canard missile with Parabolic Nose (Kartik Akojwar, Rishi Dhar: 2016-17).
34. Performance and emission analysis of VCRE engine fueled with Linseed and turpentine oil (Raghvendra Patel, Amar, 2016-17).
35. Numerical simulation for combustion in direct injection diesel engine (2016-17).

. **List of Workshop/ Training program/Summer/Winter School Courses attended** :

1. National seminar on, "Engineering Manpower Recruitment to Meet the Challenges Based on Technology Forecasting", MANIT Bhopal, Feb 24-25, 1995.
2. ISTE course on, "Characterization and Testing of Materials", MANIT Bhopal, July 10-23, 1995.
3. Workshop on, "Institutional Management", MANIT Bhopal, October 10-12, 1995.
4. QIP course on, "Fundamentals and Modeling Aspects of Turbulent Flow", IIT Kanpur, December 4-9, 1995.
5. Workshop on, "Internal Combustion Engines Research - Some Aspects", MANIT Bhopal, March 15, 1996.
6. AICTE course on, "Computer Aided Manufacturing", MANIT Bhopal, June 16-29, 1997.
7. ISTE course on, "Modern Manufacturing Techniques", MANIT Bhopal, July 7-20, 1997.
8. Induction Training Program under INDO-UK RECs project, MANIT BHOPAL, July-Sept, 1997.
9. QIP course on, "Nonlinear Finite Element Analysis", IISC, Bangalore, Nov 17-22, 1997.
10. Quality System Standards-ISO 9001, MANIT, Bhopal, December 18, 1998.
11. QIP course on, "Alternative Fuels and Low Emission Engines", IIT Delhi, May 24-29, 1999.

12. Fluent Training Workshop, Fluent India Pvt Ltd., August 21-24, 2001
13. C.D. Cell Workshop on, "Heat Exchangers Design and Optimization", IIT, Delhi, March 26, 2004
14. SERC school on, "Combustion in Energy Sector", IIT Bombay, June 7-11, 2011.
15. QIP course on, "Computational Combustion", IIT Kanpur, Feb 28-March 3, 2012.
16. Work shop on, Achieving Excellence, MANIT, Bhopal, Nov 9-10, 2012
17. Fuel Cell as an Alternative Back up in Power Tele-Communication, MANIT, Bhopal, Jan 3, 2013
18. IEC 610850 Standard for In-operability and Goose Messaging, MANIT, Bhopal, Jan 4, 2013
19. National Seminar of Burner Design, IITK, Kanpur, July 16, 2013.
20. Academic work shop on, "Design and Management of Change", MANIT Bhopal, Aug 24, 2013.
21. National Seminar on CFBC Boilers: Latest Trends & Advances , IPMA, Bhopal, Aug 26-27, 2013
22. Work shop on, Chemical Reaction Kinetics organized by DHIO Research & Engineering Pvt Ltd, Bangalore, August 30-31, 2013.
23. DST SERB School on, "Combustion Modeling and Diagnostics", IIT, Indore, October 7-11, 2013
24. Residential Training Programme on "Role of ICT in Driving Government Performance", Kanyakumari, October 24-28, 2016.

List of Workshop/ Conferences/Training program/Summer/Winter School Courses organized :

- ANSYS (CFD) Training Work Shop (No. of participants: 40), Funded partially by MANIT, Bhopal, March 14-19, 2011.
- Short term course on Soft Computing Techniques in Computational Fluid Dynamics, (No. of participants: 80), Self-Financed, December 17-21, 2012.
- Short term training program on Modeling of I.C. Engines through ANSYS Fluent, (No. of participants: 40), February 21-25, 2014.
- Short term training program on Computational Techniques for Scientific & Engineering Problems, No. of participants: 50, Self-Financed, May 18-22, 2015.
- Short term training program on Modeling and Analysis of Turbomachines through ANSYS Fluent, (No. of participants: 40), September 21-25, 2016.
- Short term training program on Energy Efficient Technologies, (No. of participants: 80), September 25-29, 2016.
- Work Shop on NBA Accreditation and SAR Filling (No. of Participants 55), October 17, 2016.
- Work Shop on Out Come Based Education (No. of Partcipants 30), Dec 3-7, 2018.

Development of the subject: Computational Fluid Dynamics

- Course Development at UG level: Course on Computational Fluid Dynamics Floated in July 2005.
- Laboratory Development: Developed CFD Laboratory, April 2010.
- Laboratory Development: Up-gradation of Heat Transfer Laboratory, April 2012.
- Heat & Mass Transfer Laboratory Note-book.