MECHANICAL ENGINEERING DEPARTMENT
INSTITUTE OF TECHNOLOGY, GURU GHASIDAS VISHWAVIDYALAYA
KONI, BILASPUR, CHHATTISGARH - 495009

E-MAIL pankajkgupta@gmail.com

PANKAJ KUMAR GUPTA

ADDRESS: **Associate Professor**
Mechanical Engineering Department
Institute of Technology
School of Engineering & Technology
Guru Ghasidas Vishwavidyalaya
Koni, Bilaspur, Chhattisgarh - 495009

DATE OF BIRTH: July 9, 1975

EDUCATION

Ph.D. (Nov 2006) Specialization **:** **Computational Fluid Dynamics**	**INDIAN INSTITUTE OF TECHNOLOGY DELHI** Department of Applied Mechanics Cumulative GPA: 9.5 out of 10.0
MS (Research) (July 2001) Specialization **:** **Computational Fluid Dynamics**	**INDIAN INSTITUTE OF TECHNOLOGY DELHI** Department of Applied Mechanics Cumulative GPA: 9.32 out of 10.0
B.E. (1996) **Project :** **Structural Dynamics Analysis using Finite Element Methods**	**UNIVERSITY B. D. T. COLLEGE OF ENGINEERING, KUVEMPU UNIVERSITY** Department of Mechanical Engineering First Class with Distinction Degree Conferred: Jan, 1997

PROFESSIONAL CAREER

WORK EXPERIENCE: 17.25 years

Teaching Experience - 13 years

Research Experience - 3 years

Industry Experience - 1 yr 3 months

AWARDS

High Value Research Assistantship (HVRA)	**Recipient of the HVRA amongst top 5% of research scholars in IIT Delhi** for the year 2003-2006

AREAS OF EXPERTISE

CFD Applications **IC Engine Combustion** **Solar Thermal Applications**	• Finite Element methods • Two-phase Flow and Erosion Modelling • Rotating passages and pump casings modeling

TEACHING INTERESTS

Finite Element Method	Numerical Methods	Advanced Fluid Mechanics
Heat Transfer	Mechanics of Fluids	Internal Combustion Engines
Thermodynamics	Turbomachinery	Fluid Machinery
Two-Phase Flows	Energy Conversion Systems	Renewable Energy

IT EXPOSURE

Platforms	Windows OS, Red hat Linux 9.0
Software	FORTRAN 90, FLUENT, ANSYS, DESIGN MODELER, CFX, ABAQUS, SOLIDWORKS
Tools	TECPLOT, MS Applications, MATLAB, MATHEMATICA, MATHCAD

ONGOING PROJECTS

1. Development of low cost single family solar cooker, Co-**Principal Investigator**, *Collaborative Research* sponsored by TEQIP-III, CSVTU, Bhilai.
2. Investigation of erosion characteristics in pipe bends for dense particulate slurry flow, **Co-PI**, *Collaborative Research* sponsored by TEQIP-III, JNTU Hyderabad.

WORKSHOP/SEMINAR/SHORT-TERM COURSE

1. Several Workshops/Seminars in the University Teaching Department, CSVTU, Bhilai.
2. Delivered expert lecture on "Turbulence Modeling" in Short Term course on **Experimental and Computational Fluid Mechanics for Engineering and Basic Science (ECFMEBS - 2016)** organized by the Department of Mechanical Engineering, NIT – Raipur (CG) from **7th Nov. 2016 to 11th Nov. 2016.**
3. Delivered expert lecture on "Slurry Flow Modeling" in Self-sponsored Short-Term Course on **Modeling using Computational Fluid Dynamics and MATLAB** organized jointly by Chemical Engineering and Mechanical Engineering departments at NIT Raipur, Chhattisgarh from June 27 – July 1, 2016.

4. Delivered expert lecture on "Computational Fluid Dynamics and Applications" in AICTE-sponsored FDP on **FEM and CFD using ANSYS 14 and ABAQUS** organized by CSIT, Durg from 16th – 29th December, 2013.
5. Delivered expert lecture on "Modeling dense particulate flow through rotating channel" in National Workshop on Computer Applications in Solids, Fluids and Thermal Sciences organized by MVGR College of Engineering, Vizianagaram, March 23rd-24th, 2007.
6. Member, Organizing Committee, National Workshop on Computer Applications in Solids, Fluids and Thermal Sciences, MVGR College of Engineering, Vizianagaram, March 23rd-24th, 2007
7. Member, Central Organizing Committee, All India Conference on Intelligent Systems AICON-2014, CSIT, Durg, April 25th-26th, 2014.
8. Member, Central Organizing Committee, All India Conference on Sustainable Product Development AICON-2015, CSIT, Durg, April 24th-25th, 2015.
9. Attended short-term QIP course on Alternative Fuels and Low Emission Engines organized by Centre for Energy Studies, Indian Institute of Technology Delhi, New Delhi, May 1999.

PUBLICATIONS – JOURNAL PAPERS:

1. Gupta, P.K., 2018, "Numerical insight into multisize particulate flow field through rotating channel," *Progress in Computational Fluid Dynamics* , Vol. 18, No. 5, pp. 277-288 **(SCI)**.

2. Gupta, P.K., 2017, "Role of Centrifugal Force on Solid-Liquid Two-Phase Flow through Rotating Channel," *Progress in Computational Fluid Dynamics*, Vol. 17, Issue 5, pp. 313-325 **(SCI)**.

3. Gupta, P.K. and Patel, R.N., 2017 "A teaching-learning tool for elementary psychrometric processes on psychrometric chart using MATLAB," *Computer Applications in Engineering Education*, Vol. 25, No. 3, pp. 458-467 **(SCI)**

4. Gupta, P.K. (**2016**) Development of low-cost solar cooker, **Carbon Sc. & Tech. Journal**, 8(2), pp. 9-16.

5. Gupta, P.K. (**2016**) Air flow investigations in direct type solar food dryer using computational fluid dynamics, **Carbon Sc. & Tech. Journal**, 8(2), pp. 17-20.

6. Pagalthivarthi,K.V.,Gupta,P.K.,Tyagi,V.,Ravi,M.R.,2011,"CFD Prediction of Erosion Wear in Centrifugal Slurry Pumps for Dilute Slurry Flows,"*International Journal of Computational Multiphase Flows*,Vol. 3, No.4, pp.225 –245. **(SCOPUS Indexed)**

7. Pagalthivarthi, K.V., Ravichandra, J.S., Sanghi, S., Gupta, P.K., 2009,"Wear Prediction in Fully Developed Multi-size Particulate Flow in Horizontal Pipelines," *International Journal of Computational Multiphase Flows*, Vol. 1, No.3, pp.263-282. **(SCOPUS Indexed)**

8. Gupta, P.K. and Pagalthivarthi, K.V., 2009,"Multi-size Particulate Flow through Rotating Channel–Modeling and Validation using Three Turbulence Models," *International Journal of Computational Multiphase Flows*, Vol. 1, No.2, pp.133-160. **(SCOPUS Indexed)**

9. Pagalthivarthi, K.V. and Gupta, P.K., 2009,"Prediction of Erosion Wear in Multi-size Particulate Flow through Rotating Channel," *Fluid Dynamics and Materials Processing*.,Vol.5, No.1, pp.93-122. **(SCOPUS Indexed)**

10. Pagalthivarthi, K.V. and Gupta, P.K., 2008,"Particle Tracking in Rotating Channel Flow," *Indian J. Engg. Material Sciences*, Vol.15, No.5, pp.365-376. **(SCI outside Ph.D. work)**

11. Gupta, P.K. and Pagalthivarthi, K.V., 2007,"Application of MultiFrontal and GMRES Solvers in Multi-size Particulate Flow in Rotating Channels," *Progress in Computational Fluid Dynamics*, Vol. 7, No.5, pp. 323–336. **(SCI on Ph.D. work)**

12. Gupta, P.K. and Pagalthivarthi, K.V., 2007, "Finite Element Modelling and Validation of Multi-size Particulate Flow through Rotating Channel," *Progress in Computational Fluid Dynamics*,Vol.7, No.5, pp. 293-306. **(SCI on Ph.D. work)**

13. Gupta, P.K. and Pagalthivarthi, K.V., 2006, "A Comparative Study of the Effect of Model Lift Coefficient on Particle Trajectory," *Indian Journal of Engg. & Material Sciences*, Vol. 13, No. 4, pp. 293-306. **(SCI outside Ph.D. work)**

14. Pagalthivarthi, K.V. and Gupta, P.K., 2004, "Simulation of Developing Flow Through Rotating Channel Using Q1Q0 Elements," *Progress in Computational Fluid Dynamics*, Vol. 4, No. 6, pp. 285-298. **(SCI outside Ph.D. work)**

15. Pagalthivarthi, K.V. and Gupta, P.K., 2001 "Forces on Particles Entrained in Turbulent Flow through Rotating Channel," *Journal of Mechanical Engg. Research and Developments*, Vol. 22-23, pp. 1-18. **(SCOPUS Indexed)**
16. Pagalthivarthi, K.V. and Gupta, P.K., 2001 "Performance of Eddy Viscosity Model in Rotating Channel Flow," *Journal of Mechanical Engg. Research and Developments*, Vol. 22-23, pp. 37-55. **(SCOPUS Indexed)**
17. Das, L.M., Gulati, R., Gupta, P.K., 2000, "Performance evaluation of a hydrogen-fuelled spark ignition engine using electronically controlled solenoid-actuated injection system," *International Journal of Hydrogen Energy*, Vol. 25, No. 6, pp.569-579. **(SCI before Ph.D. work)**
18. Das, L.M., Gulati, R., Gupta, P.K., 2000, "A comparative evaluation of the performance characteristics of a spark ignition engine using hydrogen and compressed natural gas as alternative fuels," *International Journal of Hydrogen Energy*, Vol. 25, No. 8, pp.783-793.**(SCI before Ph.D. work)**

INTERNATIONAL CONFERENCE PRESENTATIONS/PROCEEDINGS:

1. Gupta, P.K. and Pagalthivarthi, K.V., **2015**, "Dense Multisize Slurry Flow through Rotating Channel: Effect of Flow Reynolds Number," *Proceedings of International Conference on Paradigm Shift in Management & Technology*, PSIMT-2015, April 9-10, 2015, YMCAUST Faridabad, India.
2. Pagalthivarthi, K.V., Gupta, P.K., Ravichandra, J.S., Sanghi, S.,**2015**, "Neural Network Prediction of Erosion Wear in Pipeline Transporting Multisize Particulate Slurry," *Proceedings of International Conference on Paradigm Shift in Management & Technology*, PSIMT-2015, April 9-10, 2015, YMCAUST Faridabad, India

3. Pagalthivarthi, K.V., Gupta, P.K., Tyagi, Vipin, **2011**, "Cost-Effective Modelling and Simulation of Erosion Wear in Slurry Transportation Energy System," *Proceedings of International Conference on Advances in Materials and Materials Processing–2011*, December 9–11, 2011, IIT Kharagpur, West Bengal, India.
4. Gupta, P.K. and Pagalthivarthi, K.V., **2011**, "Multi-size Particulate Flow through Straight Channel–Effect of Changing the Location of Axis of Rotation using CFD," *Proceedings of Int. Conf. on Emerging Trends in Engineering & Technology–2011*, October 20–22, 2011, GIMT Kurukshetra, India.
5. Gupta, P.K. and Pagalthivarthi, K.V., **2011**, "Sensitivity Studies of Modeling Parameters in Dense Particulate Flow through Rotating Channel," *Proceedings of Int. Conf. on Emerging Trends in Engineering & Technology–2011*, October 20–22, 2011, GIMT Kurukshetra, India.
6. Gupta, P.K. and Pagalthivarthi, K.V., **2010**, "Comparison of Three Turbulence Models in Predicting Multi-size Particulate Flow through Rotating Channel," *Proceedings of International Conference on Advances in Mechanical Engineering–2010*, January 4–6, 2010, SVNIT Surat, India.
7. Gupta, P.K. and Pagalthivarthi, K.V., **2006**, "Effect of Diffusive Stress, Lift and Virtual Mass Forces on Multi-Size Particulate Flow through Rotating Channel," *Proceedings of International Congress on Computational Mechanics and Simulation-2006*, December 8-10, 2006, IIT Guwahati, India.
8. Gupta, P.K. and Pagalthivarthi, K.V., **2006**, "Effect of Inlet Concentration on Solid-Liquid Mixture Flow through Rotating Channel," *Proceedings of International Congress on Computational Mechanics and Simulation-2006*, December 8-10, 2006, IIT Guwahati, India.
9. Gupta, P.K. and Pagalthivarthi, K.V., **2006**, "Effect of Particle Size Distribution on Multi-Size Particulate Flow through Rotating Channel," *Proceedings of NCFMFP 3rd National & 3rd International Conference on Fluid Mechanics and Fluid Power*, December 7-9, 2006, IITBombay, India.
10. Gupta, P.K. and Pagalthivarthi, K.V., **2006**, "Convergence Characteristics of Two Numerical Methods– Case Study in Rotating Channel Flow," *Proceedings of* 18th National &7th ISHMT-ASME *Heat and Mass Transfer Conference*, IIT Guwahati, India.
11. Vipin Tyagi, K.V. Pagalthivarthi, M.R. Ravi, Pankaj K. Gupta, **2005**, "Study Of Carrier Phase Flow Behavior In A Two Dimensional Centrifugal Slurry Pump Casing", *5th International Symposium on Multiphase Flow, Heat Mass Transfer and Energy Conversion Xi'an, China, 3-6 July 2005*.
12. Vipin Tyagi, K.V. Pagalthivarthi, M.R. Ravi, Pankaj K. Gupta, **2005**, "Study of Discrete Phase Flow in a 2D Slurry Pump Casing", *5th International Symposium on Multiphase Flow, Heat Mass Transfer and Energy Conversion Xi'an, China, 3-6 July 2005*.
13. Pagalthivarthi, K.V., Ravichandra, J. S., Sanghi, S. and Gupta,P. K., **2005**, "Comparison of Two Strategies in Multi-Size Particulate Flow Computations," *5th International Symposium on Multiphase Flow, Heat Mass Transfer and Energy Conversion Xi'an, China, 3-6 July 2005*.
14. Gupta, P.K. and Pagalthivarthi, K.V., **2005**, "Effect of Model Lift Coefficients on Particle Trajectory," *5th International Symposium on Multiphase Flow, Heat Mass Transfer and*

Energy Conversion Xi'an, China, 3-6 July 2005.

15. Gupta, P.K. and Pagalthivarthi, K.V., **2004**, "Comparison of Zero-equation and k-ε Models in Rotating Channel Flow Prediction," Proceedings of *2nd BSME-ASME International Conference on Thermal Engineering*, 2-4 January 2004, Dhaka.
16. Pagalthivarthi, K.V. and Gupta, P.K., **2004**, "Influence of Shear and Rotation Lift on Particle Motion," Proceedings of *5th International Conference on Multiphase Flows*, May 30 – June 4, Yokohama, Japan.
17. Gupta, P.K. and Pagalthivarthi, K.V., **2003**, "Effect of Lift Force on Particle Trajectories in Horizontal Channel Flow," Proceedings of *48th Congress of ISTAM, an International Meet*, 18-21 December, BIT Mesra, Ranchi, India.
18. Gupta, P.K. and Pagalthivarthi, K.V., **2003**, "Effect of Rotation-Modified Wall Functions in Determining Friction Velocity," Proceedings of *48th Congress of ISTAM, an International Meet*, 18-21 December, BIT Mesra, Ranchi, India.
19. Pagalthivarthi, K.V. and Gupta, P.K., **2003**, "Modeling Impact of Entrained Particles in Rotating Channel Flow," Proceedings of 8th International Symposium on IMPLAST 2003, New Delhi, India.
20. Das, L.M., Gulati, R. and Gupta, P.K., **1999**, "Evaluation of a Solenoid-Actuated Injection System for a Hydrogen Operated Spark Ignition Engine," Proceedings of *6th International Conference on Hydrogen Materials Science and Chemistry of Metal Hydrides*, ICHMS, September 1999, Yalta, Ukraine.

MEMBERSHIP DETAILS

Name of the Body	Membership Type	Membership No.
American Society of Mechanical Engineers	Annual	100766344
Institution of Engineers (India)	Life Member	M-150122-9
American Society of Thermal and Fluids Engineers	Life Member	

REVIEWER WORK:

1. 2018, **one pre-publication review** for Computer Application in Engineering Education
2. 2017, **two pre-publication reviews** for Computer Application in Engineering Education
3. 2017, **one pre-publication review** for International Journal of Naval Architecture & Oceanography
4. 2017, **one pre-publication review** for Fluid Mechanics Research – International Journal
5. 2016, **one pre-publication review** for Computational Thermal Sciences

6. 2016, **one pre-publication review** for Applied Mathematical Modelling

LANGUAGES

- English and Hindi; Sanskrit (Read and write)

HOBBIES

- Reading, Cooking

OTHER ACHIEVEMENTS

- Developed two computational and two experimental set-ups towards enhancing student's learning.
- Special Recognition for grossing highest points in Students Feedback for teaching.
- Awarded certificate of Merit for securing 99% in *PHYSICS* (10+2)
- Other prizes in sports and Extra Curricular activities