Dr. BHAGWAT SINGH SHISHODIA

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Objective:

To spread knowledge and educate students in the field of science and technology, supporting new research and innovation to contribute in India's development. To pursue this I would like to join an organization that shall lead to my professional and social growth, and in turn, to be a contributing factor in growth of organization as well.

Academic Qualifications:

Ph.D. :	Applied Mechanics Department, Fluid Mechanics (CFD) Group at **Indian Institute of Technology Delhi, Feb- 2017**, (CGPA: 8/10).
Master in Engineering:	Mechanical Engineering, (August 2001), **L. D. Engineering College, Ahmedabad** Gujarat University, India, (First Class with Distinction)
Bachelor of Engineering:	Mechanical Engineering, (July 1999), **Government Engineering College Bhuj,** Gujarat University, India, (First Class with Distinction)

Core Competencies:

Computational Fluid Dynamics: Turbulence modeling, Advance CFD**,** Flow simulations in constrained geometry, Finite volume and finite difference methods.CFD simulations **of human thermoregulation**.

Fluid Mechanics and Fluid Machines: Experimental investigation of various fluid machines especially turbines, flow meters, flow visualization, Pumps and Compressors, Turbines, Fluid Transportation

Thermal Engineering and Cryogenics: Advanced refrigeration, Advanced Air Conditioning, Advanced Thermal System Design, Heat & Mass Transfer Equipments, Cryogenic Systems, Power Plant Technology, Energy Conservation, Thermal System design, Advance Heat Conduction, Advance Heat Convection.

Renewable Energy Sources: Solar power engineering, Wind power, MHD, Geothermal Engineering, Solar Refrigeration system, Hydel power

Skills:

- Innovative, quick learner and Good Problem Solving Skills
- Versatile in Software's listed below:
  - **Statistical analysis using DIC.**
  - Human Thermoregulation Simulations using **ScTetra**,
  - CFD Simulations using **ANSYS**
  - Modeling using **AutoCAD, Gambit**
  - Data Acquisition using **Techplot, GetData, Origin**
  - Fluid flow and Heat Transfer using **Fluent**.
  - **C programming, MATLAB**

Research Experience:

Research Scholar, Applied Mechanics Department, ***Indian Institute of Technology Delhi****, Jan '10-till Date*

Design and optimization of ventilated helmet

Designed new ventilated helmet using Gambit software, Investigated air flow, temperature distribution and relative humidity in the micro climate inside the helmet air gap using CFD simulations using Fluent and ScTetra software. **Impact analysis of newly designed** helmet to meet the safety requirements of BIS using DIC and other software.

Academic Experience: *July '2000- Till Date*

- **Presently working as Professor in a Engineering college (under BTU) at Pali** — **S**ept '18-Till Date
- **Professor and Head -Research Centre**
  Jodhpur Institute of Engineering and Technology, JGI, Jodhpur — Aug '17- Aug '18
- Associate Professor at **Manav Rachna International University**, Faridabad — Nov '14- July '17
- Associate Professor at **Jodhpur Institute of Engineering and Technology** — Jan '07-Dec '09
- Assistant Professor at Jodhpur Institute of Engineering and Technology — July '05-Dec '06
- Assistant Professor at Marwar Engineering College and Research Centre — Oct '03-June '05
- Lecturer at **Sankalchand Patel College of Engineering**, Gujarat — July '00-Sept '03

International Collaboration:

Jan '2011-Sept'2014

Member, UKIERI Sponsored Project, ***Imperial College London & Indian Institute of Technology Delhi*** :
Investigation of Turbulence modelling, CFD Simulation and Design of Ventilated Helmet

Turbulence Modeling and investigation on the best turbulence model to predict the flow in pressure driven, wall bounded internal flow in complex geometries such as air gap of helmet. CFD Simulation of Human Thermoregulation, Numerical Validation of experimental results of 2D and 3D air flows in the air gap of helmet using Fluent and ScTetra to predict best turbulence model to capture air flow in the air gap of helmet. I have also **worked at Imperial College London** on the same project.

Key Responsibilities:

- Worked as **Professor and Head- Research Centre** at JIET Group Of Institutions, Jodhpur.
- Previously worked as Dy. Head of Mechanical Department at JIET Jodhpur, managing administration at departmental level
- Member Central Admission committee for Engineering and Medical Admission in Gujarat Subject Coordinator and Lab Coordinator at MRIU: Fluid Machines and Fluid Mechanics, Thermal Engineering, Heat Transfer
- Establishment of many labs such as Fluid Machine Lab, Thermal engineering Lab, Refrigeration and Air Conditioning Lab in Engineering colleges.
- Member Academic Council (Departmental at MRIU)

Leadership Skills/ Contributions to Professional Societies/Technical Committees:

- Life member of ISTE
- Member American Society of Mechanical Engineering (ASME)
- Life member International Association of Engineers (IAEng)
- Recipient of Teaching Assistant Fellowship at IIT Delhi (2010-2014)
- Recipient of **Volvo Research Foundation Grant** (2012), (2013), (2014)
- Recipient of Award at National Science exhibition (1995)
- Won **First Prize** in Departmental poster presentation competition held at **IIT Delhi**

List of Publications (Conferences and Journals):

Journal:

- **Shishodia, B. S**., Sanghi, S. and Mahajan, P., 2018, " Computational and subjective assessment of ventilated helmet with venture effect and backvent." **International Journal of Industrial Ergonomics, Vol. 68, pp 186-198, Journal of Elsevier. (SCI)**
- **Shishodia, B. S**., Sanghi, S. and Mahajan, P., 2017, "Numerical Investigation of Ventilation and Human Thermoregulation for Predicting Thermal Comfort of a Rider Wearing Ventilated Helmet". **Journal of Fluids Engineering, Vol. 139(6), Journal of ASME. (SCI)**
- **Shishodia**, **B. S.,** Sikri, S., Sanghi, S. and Mahajan, P., 2018, "Air flow, heat transfer and impact study of ventilated and non-ventilated full-face motorcycle helmet". **International Journal of Crashworthiness, Vol.23(2), 124-133, Taylor & Francis. (SCI)**

Chapter of Book:

- **Shishodia, B. S**., Sanghi. S. and Mahajan, P., 2016, "Redesigning of Motorcycle Helmet for Improved Air Ventilation Using Numerical Simulations", **Fluid Mechanics and Fluid Power – Contemporary Research**, Chapter 60, pp 625-635, **Springer**. **(Scopus)**
- Rawat A., **Shishodia B.S., 2019,** Onsite Technical and Economic Performance Evaluation of PWT (Pipeline Welding Technology): A Comparative Analysis with CRC-Evans Welding Technology. In: Kumar M., Pandey R., Kumar V. (eds) **Advances in Interdisciplinary Engineering**. Lecture Notes in Mechanical Engineering.. Chapter 10, pp 85-95, **Springer, Singapore (Scopus)**

Papers in Prominent Conferences:

- **Shishodia, B. S**, Sanghi, S. and Mahajan, P., 2013, "A Comparative Study of Turbulence Models Performance for the Study of Air Flow in Helmets" International conference on Helmet Performance and Design, **Imperial College London, UK.**
- **Shishodia, B. S**., Sikri, S., Sanghi, S. and Mahajan, P., 2014, "Air Flow, Heat Transfer and Impact Study of Ventilated and Non-Ventilated Full Face Motorcycle Helmet", **International Crashworthiness Conference (ICRASH2014), Sarawak, Malaysia. 25-28 Aug.**
- **Shishodia, B. S.**, Sanghi, S. and Mahajan, P., 2014, "A Parametric study of different Turbulence Models Performance for the Study of Air flow in Helmets" **5th International** and 41st National conference on **Fluid Mechanics and Fluid Power, Indian Institute of Technology Kanpur, India.**

- Sikri, S., **Shishodia, B, S**., Mahajan, P. and Sanghi, S., 2014, "Performance Comparison of Motorcycle Helmet shell of Different Materials" **International Crashworthiness Conference (ICRASH2014) at Sarawak, Malaysia. 25-28 Aug.**
- **Shishodia B.S.** and Rawat, A., 2017, " Design and Optimization of Cryogenic Transfer line for Tokamak", **IEEE** International Conference on Quality, productivity, Reliability, productivity, Optimization and Modeling (ICQPROM) 2017, At MRIU, Faridabad, India.
- **Shishodia B.S** and Baid, M.R., 2005, "Research on latest technologies in human health: an Overview" National Conference on **Emerging computational techniques and their applications**, at M.B.M Engineering College, Jodhpur, 22nd- 23rd Oct 2005.

Public Outreach (Symposium / Workshops):

- **Shishodia, B.S**., Sanghi, S. and Mahajan, P., 2015, "Numerical investigation of venturi effect in full face motorcycle helmet for improving ventilation in helmet", International Symposium on Transportation Planning and Safety, **IIT Delhi, Delhi**.
- **Shishodia B. S.,** Sanghi, S. and Mahajan P**.** "Design of Ventilated helmet and study of it on the effects of it on human thermoregulation" Joint Workshop on under UKIERI on Helmet design hosted by **IIT Delhi and Imperial College London** at, IIT Delhi, 2014
- **Shishodia B. S.,** Sanghi, S. and Mahajan P**.** "Study of Turbulence Model for Ventilated helmet" Joint Workshop under UKIERI on Helmet design hosted by **IIT Delhi** and **Imperial College London** at, IIT Delhi, on 6th Feb 2013.
- Key note Speaker at **"International Workshop on CFD and Its applications"** at JIET Jodhpur**,** 19th March to 23rd March 2018.

Thesis and Dissertation

- **Shishodia, B.S**., 2017, "**Design and optimization of air ventilation system for improved heat transfer characteristics in helmets**" Doctoral Thesis, Applied Mechanics Department, Indian Institute of Technology Delhi, India.
- **Shishodia B. S., 2001.** " **Design of Cryogenic Cooling System for Tokamak** ", Master's Dissertation, Mechanical Engineering Department, L D College of Engineering Ahmedabad, India.

Funded Research Projects/ Consultancy/ Sponsored Projects:

Sr. No.	Title of R & D Project	Completed/ ongoing	Funding Agency	Amount In Lakhs (INR)
i.	Design of Ventilated helmets	2012-14 (Completed)	British Council- UKIERI	17 Lakhs
ii	AAHAN 1.0- The Solar Car	2017-18 (Completed)	Aadarsh Credit Cooperative Society, Ahmedabad	12.5 lakh

Books Published:

- **Shishodia, B.S**., 2017, " Bio-mechanics of Wheel-Chair " **Lambert Academics Publication, Germany**, **(ISBN No.** 978-620-2-07158-1)
- **Shishodia, B.S**., 2017, " Heat Transfer and its Experiments " **Shiv Publications, Rajasthan, India, (ISBN No.** 978-93-84585-12-9)
- **Shishodia, B.S**., 2017, " Fluid mechanics and Its Experiments " **Shiv Publications, Rajasthan, India, (ISBN No.** 978-93-84585-13-6)

Research Guidance:

- **PhD Guidance: Co- Supervisor :** Dynamic Analysis of Inflatable material based membrane structure under thermal Environment, **PhD Awarded** Mr. Manish Bafna on 28th May 2018 by Jodhpur National University, Jodhpur
- **PhD Guidance: Co- Supervisor :** Rapid Prototyping and optimization of Product design through different Rapid Protyping processes. , **PhD Underway** Mr. Arun Gaur, (Reg No 12/Ph.D/017), Manav Rachna International Institute of Research and Studies, Faridabad, Haryana.
- **M.Tech Supervisor:** Convective Heat transfer Analysis of Co-Eccentric Heat Exchanger: An Experimental And Numerical Study, Mr. Sandeep Gupta to Rajasthan Technical University, Kota. May 2018.
- **M.Tech Supervisor:** Development of Compact and Easy to Integrate Heat Exchanger module for solar Thermal Storage Tank, Mr. Pawan kumar Bissa to Rajasthan Technical University, Kota. May 2018.

Patents Filed:

1. Shishodia B. S., "Design of Clone Segway"
   Indian patent Application No: 201711002465
   (Ref App No: E-2/1770/2017-DEL) and is published in 32/2019 Journal dated 09/Aug/2019 by Indian Patent Authority
2. Shishodia B. S., "Design Solar Powered Vapor Absorption Refrigeration System"
   Indian patent Application No: 201611040110
   (Ref App No: E-2/1769/2017-DEL)
3. Shishodia B. S., "Design of Shell and Conical-Spiral-Helical Coil Heat Exchanger
   Indian patent Application No: 201811003023
   (Ref App No: E-1/3323/2018-DEL)
4. Shishodia B. S., " Security System for Electric Cars"
   Indian patent Application No: 201811002969
   (Ref App No: E-1/3240/2018-DEL)
5. Shishodia B. S., "Self locking Arrangement for the Hub and Axle for Four Wheelers"
   Indian patent Application No: 201811005572
   (Ref App No: E-1/5980/2018-DEL) and is published in 33/2019 Journal dated 16/Aug/2019 by Indian Patent Authority