

# DR. SHAILENDRA NARAYAN SINGH

## Associate Professor

Ph.D(Heat Transfer), M.Sc(Engg.) Heat Power, B.Sc(Engg.) Mechanical

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### **Department of Mechanical Engg. & Mining Machinery Engg.**

**Room no. 220**(First Floor) & Cabin of Computational Fluid Flow and Heat Transfer Lab.

ISM Dhanbad

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### **Educational Qualifications:**

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**Degree:** Ph.D

**University:** IIT Madras

**Specialization:** Heat Transfer (Convection and Radiation Heat Transfer)

**Thesis Title:** **Numerical Investigation of Natural Convection with Surface Radiation in Open Top, Side Vented Cavities.**

**Guide:** Prof. S.P.Venkateshan, HOD/Mech. Engg., IITM

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**Degree:** M.Sc(Engg) & M.Tech

**Year:** 1991 &1993

**University:** BIT Sindri & ISM Dhanbad

**Specialization:** Heat Power & Industrial Engg.

**Thesis:** **On the Studies of Wind Energy Systems( BIT Sindri)**

**Guide:** Prof. R.L.Singh, BIT Sindri.

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**Degree:** B.Sc(Engg.) Mechanical

**Year:** 1987

**University:** BIT Sindri, Ranchi University

**Specialization:** Mechanical Engineering

**Project:** **Fabrication of Composite Wall for Heat Transfer Studies.**

**Guide:** Prof. G.N.Sah, BIT Sindri.

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**Degree:** Intermediate of Science (Mathematics)  
**University:** Science College, Patna (Patna University)  
Year: 1981

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**Degree:** Matriculation, Science (Mathematics)  
**School:** M.L.ACADEMY, LAHERIASARAI (DARBHANGA)  
Year : 1979

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### **Professional Experience:**

Aug 1987- 1990: Lecturer, BIT Sindri

1990 – 1991: Research Associates, BIT Sindri

1993 – 2000: Lecturer & Senior Lecturer, Pune University

**July 2000 – Dec 2003: Research Scholar, IIT Madras**

Feb 2004 –Oct 2004: Assistant Professor, MIT Pune

Oct 2004 – June 2006 : Senior Lecturer, ISM Dhanbad

June 2006- June 2009 : Assistant Professor, ISM Dhanbad

July 2009 – contd.: **Associate Professor at ISM Dhanbad**

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### **Areas of expertise:**

- Computational Fluid Flow and Heat Transfer
  - Computational Fluid Dynamics
  - Conjugate Heat Transfer
  - Heat Exchangers
  - Solar Energy
  - Thermodynamics
  - Thermal Turbo-Machines
  - \* Internal Combustion Engines
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### **Different courses taught at ISM Dhanbad and elsewhere:**

- Heat transfer
  - Advanced Fluid Mechanics
  - Internal Combustion Engines
  - Energy Conversion Equipment
  - Waste Heat Utilization
  - Mechanical Measurement
  - \*\* Applied Thermodynamics
  - \*\* Engineering Mechanics
  - \*\* Engineering Graphics
  - \*\* Operation Research
  - \*\* Elements of Mechanical Engineering
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## Research Interests:

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- \* Numerical and Experimental Flow and Heat Transfer(CFD)
- Natural, forced and mixed convection
- \* Combined natural convection, conduction and surface radiation in cavities.
- \* Pure Mixed Convection
- \* Cooling of Electronic component
- Convective Heat Transfer
- Heat Transfer Enhancement in Heat Exchangers
- Use of CFD software
- Solar Energy

## Important Publications in International Journals since 2004:

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[1] Singh, S.N.. and Venkateshan, S.P., 2004, "Numerical study of natural convection with surface radiation in side-vented open cavities," **International Journal of Thermal Sciences**, **43**, pp. **865-876**.

[2] Singh, S.N.. and Venkateshan, S.P., 2004, "Natural convection with surface radiation in partially open cavities," **International Journal Heat and Technology**, **22(2)**, pp. **57 -64**.

[3] Singh, S.N.. 2008., "Numerical Study of Combined Natural Convection, Conduction and Surface Radiation Heat Transfer in Open Top, Side Vented Cavities" **International Journal Heat and Technology**, **26(2)**, pp. **101 -109**.

[4] Singh, S.N., 2006 " Performance Studies on Longitudinal Fins Solar Air Heater". **Journal of ISM Dhanbad**, **vol.2**.

[5] Singh, S.N..2008., " Experimental Studies on Flow and Heat Transfer in a 2-Pass Solar Air Heater" submitted for review and possible publications in **Solar Energy, Elsevier(2010)**.

[6] Singh, S.N., "Flow and Heat Transfer Studies in a Jet Plate Solar Air Heater" submitted for review and publications in **International Journal of Heat and Mass Transfer, Elsevier**.

[7] Singh, S.N " Development of empirical correlation of maximum temperature at the left hot wall of the open top, side vented cavities interacting heat due to conjugate natural convection with surface radiation. **under review**, Numerical Heat Transfer ( Francis & Taylor))

## National / International Conference Proceedings:

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[1] Singh, S.N.. and Venkateshan, S.P., 2004, “Interaction of natural convection and surface radiation in a cavity with open top and partial opening on one side” Proc. 6<sup>th</sup> ISHMT-ASME Heat and Mass Transfer conference, Jan 2-5, 2004 held at IGCAR,Kalpkkam, pp. 54 – 61 ( in CD).

[2] Singh, S.N, 2006, “ Performance studies on continuous longitudinal fins solar airheater,” Proc. 1<sup>st</sup> National conference on Advances in Energy Research, Dec 4-5, 2006, held at IIT Bombay, pp 205-210.

[3] Singh, S.N, 2007 “ Numerical Study of Laminar Natural Convection in Closed Cavity Partially Heated from Below”. Proc. of the International Conference on Computer Aided Engineering, Dec 13-15,2007, held at IIT Madras,pp.636-645.

[4] Singh, S.N, 2008 “Combined Effect of Natural Convection and Surface Radiation on Flow and Heat Transfer Studies in Side vented, Open Cavities” Proceedings of 8<sup>th</sup> ISHMT/ASME Heat and Mass Transfer Conference held at JNTU Hyderabad during 03-05 Jan 08, pp.240.

[5] Singh, S.N., 2010 “Numerical Study of Laminar Mixed Convection and Surface Radiation in Open Top, Side Vented Cavities”. Proceedings of 9<sup>th</sup> International ISHMT/ASME Heat and Mass Transfer Conference held at NPCL, Bombay, Jan 4-6,2010, pp.5.

[6] Singh, S.N, 2006, “Monitoring of the influence of the turbulators on heat transfer enhancement in the heat exchanger,” Proc. of National Seminar on COMOAT at ISM Dhanbad , Sept 4-5, 2006,pp. 293-300.

[7] Singh, S.N, 2008, “CFD Study of Laminar Natural Convection in a side Open Cavity Heated from Liner Side in a Jaw Crusher”. Proc. of National Seminar on Crushing, Screening &Conveying (CS&C-2008) held at ISM Dhanbad , Sept 11-12, 2008, pp.181-192.

[8] Singh, S.N, 2010 “**Flow and Heat Transfer Studies in a 2-Pass Solar Air Heater**”. Accepted for publications in Proceedings of 37<sup>th</sup> National 4<sup>th</sup> International Conference on Fluid Mechanics and Fluid Power (FMFP) to be held at IIT Madras during 16-18 Dec 2010.

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## **Current Ph.D. thesis guidance:**

Name of the Ph.D Scholar: Sri Mohit Arora

Title: **Performance Studies on Heat Transfer Enhancement in a Jet Plate and Longitudinal Fins Solar Air Heater.**

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## **Details of Major Sponsored Research Projects:**

MRP: Sponsored by **UGC New Delhi**

**Project Topic:** Performance Studies on Heat Transfer Enhancement in a Jet Plate and Longitudinal Fins Solar Air Heater.

Project cost: Rs. 7 lacs (approx)

**PI: Dr. S.N.Singh**

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## **Memberships in professional societies:**

Life member: **Indian Society for Heat and Mass transfer**

Life Member: **National Society of Fluid Mechanics and Fluid Power** (applied)

Life Member : **Indian Society of Technical Education.**

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## **B.Tech project guided recently:**

Name of the students:

1. Sri Ankit Bagla(9580)
2. Sri Manav Vohra(9899)
3. Sri Shashank Jain(9816)

Topic: **Performance Studies on a 2-Pass Solar Air Heater.**

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## **Short term courses attended:**

Attended 2 weeks Winters School on Modeling, Computing and Simulation in Engineering organised by Dept. of Industrial Mathematics, IIT Madras and Frounhofer Inst. of Industrial Math. Germany.

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## **Administrative responsibilities:**

**Rector:** Boys' Hostel, MIT Pune (1996- June 2000)

**Warden:** Emerald Hostel, ISM Dhanbad, **contd.**

**Tabulator:** Nov 2004- Jan 2010.

**Teacher I/C :** 3<sup>rd</sup> Year ( Mech. Engg.& Mining Mach. Engg.) **contd.**

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## **References:**

1. Prof. S.P.Venkateshan, HTTP Lab., Dept. of Mech. Engg., IIT Madras
  2. Prof. T.Sundarrajan, TDC Lab., Dept. of Mech. Engg., IIT Madras
  3. Prof. B.V.S.S.S Prasad, TTML Lab., Dept. of Mech. Engg., IIT Madras
  4. Prof. C.Balaji, HTTP Lab., Dept. of Mech. Engg., IIT Madras
  5. Dr. V.Raghavan, TDC Lab., Dept. of Mech. Engg., IIT Madras
  6. Dr. B. Premchandran, Dept. of Mech. Engg., IIT Delhi.
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