

RESUME

Personal Information

Name: Dr. Pradeep Kumar Sahoo
Father's Name: Suryamani Sahoo
Date of birth: 15.06.1967
Nationality: Indian
Marital Status: Married with one child
Passport No: H8257260 (Valid upto 11/04/2020)

Address for Communication

Present

Associate Professor
Department of Mechanical & Industrial Engineering
IIT Roorkee, Roorkee – 247667, India
Email: sahoofme@iitr.ernet.in
<http://www.iitr.ac.in/~ME/sahoofme>

Permanent

Chandipur, Po. Rasulpur
Dist. Jajpur,
Odisha, India
Pin – 755034

Educational Qualification:

- 1996** *Ph. D.* (Cryogenic Engineering), Indian Institute of Technology, Kharagpur – 721302, India.
- 1991** *M. Tech.* (Machine Design), Institute of Technology, Banarus Hindu University, Varanasi – 221 005.
- 1989** *B. Sc. Engineering* (Mechanical), College of Engineering and Technology, Orissa University of Agriculture and Technology, Bhubaneswar, Orissa

Areas of Interest

Refrigeration and Air-conditioning (Particularly use of solar energy and other low grade energy for air conditioning), Thermodynamics, Thermoeconomics (Exergy analysis; economic analysis; evaluation and optimization of thermal systems), Fluid Mechanics, Computational Fluid Dynamics.

Subjects Taught

- Thermodynamics – I
- Thermodynamics –II
- Solar Energy
- Energy Conversion
- Refrigeration and Air Conditioning System Design
- Fluid Mechanics
- Cryogenic Systems

Professional Membership

- Life member, Indian Society of Heat and Mass Transfer (ISHMT)
- Life Member, Indian Society of Heating & Air-Conditioning Engineers (ISHRAE)
- Member International Solar Energy Society (ISER)
- Member ASHRAE

International Activity

- Reviewer for International Journal of Energy
- Reviewer for International Journal Applied Thermal Engineering
- Reviewer for International Journal of Exergy
- Chaired a session at the International Exergy Energy and Environment Symposium 01, Izmir, Turkey 2003.
- Co-Chaired a session at the 5th International conference on heat transfer, Fluid Mechanics and Thermodynamics, pp KM1-1-6, Sun City, 1-4July 2007

Knowledge of Software

- FLUENT
- MATLAB
- Programming in C++
- Design Builder (Simulation for Building Energy Calculations)

Experience

S.No	Designation & Organization	From	To	Duration	
1	Associate Professor, IIT Roorkee	01.02.08	Cont.		
2	Senior Lecturer (Equivalent to Asst. Prof) University of Botswana, Gaborone	01.08.06	31.1.08	1 yr months	6
3	<i>Assistant Professor</i> Indian Institute of Technology, Roorkee	20.7.01	31.7.06	5 y 11d	
4	Lecturer Indian Institute of Technology, Roorkee	20.7.98	19.7.01	3 Yrs	
5	<i>Lecturer</i> ITER, Utkal University, Bhubaneswar	1.7.97	15.7.98	1yr, 15 d	
6	<i>Design Engineer</i> Superior Air Products Limited, New Delhi	26.5.96	10.6.97	1yr, 15 d	

List of Publications

Journals

1. V. C. Mariani, L. dos S. Coelho, and P. K. Sahoo, Modified differential evolution approaches applied in exergoeconomic analysis and optimization of a cogeneration system, *Expert Systems With Applications*, **Inpress**
2. K. Kulkarnia, **P. K. Sahoo**, M. Mishra, Optimization of Cooling Load for a Lecture Theatre in a Composite Climate in India, *Energy and Building*, *Inpress*.
3. H. C. Thakur, K.M. Singh and P. K. Sahoo. Phase Change Problems using MLPG Method. *Numerical Heat Transfer, Part A: Application*, 2011, 59 (6), 438 – 458
4. Nandan, G., Kumar R., **Sahoo P. K.**, Chatterjee, B., Mukhopadhyay D., and Lele, H.G., Experimental investigation of a completely voided pressure tube of Indian PHWR under heat up condition, *Nuclear Engineering and Design*, **2010, Vol 240, 3504–12.**
5. H. C. Thakur, K.M. Singh and P. K. Sahoo. MLPG analysis of Nonlinear Heat Conduction in Irregular Domains. *Computer Modeling in Engineering & Sciences*, 68(2), 117-150, 2010.
6. Nandan Gopal, Sahoo P K, Kumar Ravi, Chatterjee B, Mukhopadhyay D, Lele H G, “Thermo-mechanical behavior of Pressure Tube of Indian PHWR at 20 bar Pressure”, *International Journal of Aerospace and Mechanical Engineering*, 5 (1), 2011, pp. 209-217.
7. Nandan Gopal, Sahoo P K, Kumar R, Chatterjee B, Mukhopadhyay D, Lele H G, Experimental investigation of sagging and ballooning for a completely voided pressure tube of Indian PHWR. *Engineering Letters*, 18(3), 2010, pp. 1-6.
8. Thakur, H., Singh, K. M., and Sahoo, P. K., Meshless Local Petrov-Galerkin Method for Nonlinear Heat Conduction Problems, *Numerical Heat Transfer, Part B: Fundamentals*, 2009, Part B, Vol: 59, 393-410.
9. Khan Md. K., Kumar R., and **Sahoo P. K.**, Performance Prediction of Adiabatic Capillary Tubes by Conventional and ANN approaches – A Comparison, *ASHRAE Transactions*, 2009, Vol. 115, Part-1, pp. 93 -105.
10. Khan Md. K., Kumar R., and **Sahoo P. K.**, Flow Characteristics of Refrigerants Flowing through Capillary Tubes – A Review. *Applied Thermal Engineering*, 2009, Vol. 29 (issues 8-9). Pp. 1426-1439.
11. Khan Md. K., Kumar R., and **Sahoo P. K.**, Experimental investigation on the flow of R-134a through adiabatic and diabatic capillary tubes. *ASHRAE Transactions*, 2009, Vol. 115, Part-1, pp. 92 -93.
12. Khan Md. K., Kumar R., and **Sahoo P. K.**, Experimental Investigation on Diabatic Flow of R-134a Through Spiral Capillary Tube. *International Journal of Refrigeration*. 2009, Vol. 32 (2), pp. 261-271.
13. Khan Md. K., Kumar R., and **Sahoo P. K.**, Experimental and Numerical Investigations of the Flow of R-134a Through Lateral Type Diabatic Capillary Tube. *International Journal of HVAC&R Research ASHRAE*. 2008, Vol. 14, issue 6, pp. 871-904.

14. Khan Md. K., Kumar R., and **Sahoo P. K.**, Experimental Study of the Flow of R-134a through an Adiabatic Helically Coiled Capillary Tube, *International Journal of HVAC&R research*, 2008, Vol. 14, issue 5, pp. 749-762.
15. Khan Md. K., Kumar R., and **Sahoo P. K.**, An Experimental Study of the Flow of R-134a inside an Adiabatic Spirally Coiled Capillary Tube. 2008, *International Journal of Refrigeration*, 2008, Vol. 31, issue 6, pp. 970-978.
16. **Sahoo, P.K.**, Exergoeconomic Analysis and Optimization of a Cogeneration System Using evolutionary Programming, *Applied Thermal Engineering*, 2008: Vol 28, pp 1580–1588.
17. Khan Md. K., Kumar R., and **Sahoo P. K.**, A homogenous flow model for adiabatic helical capillary tube. *ASHRAE Transactions*, 2008, Vol. 114, pp 239-249.
18. Khan Md. K., Kumar R., and **Sahoo P. K.**, Flow characteristics of refrigerants flowing through an adiabatic spiral capillary tube, *International Journal of HVAC&R research*, *ASHRAE*, 2007, Vol. 13 (5), pp 731-745.
19. Misra, R. D., **Sahoo¹, P.K.**, and Gupta, A., "Thermoeconomic Evaluation and Optimization of an Aqua-Ammonia Vapour-Absorption Refrigeration System", *Int. J. Refrig.*, 2006: Vol 29, pp 459-71.
20. Alok Chaube, **P.K. Sahoo¹**, and S.C. Solanki "Analysis of Heat Transfer Augmentation and Flow Characteristics due to Rib Roughness over Absorber Plate of a Solar Air Heater". *Renewable Energy*, 2006: Vol 31, pp 317-331.
21. Misra, R. D., **Sahoo¹, P.K.**, and Gupta, A., "Thermoeconomic Optimization of a LiBr/H₂O Absorption Chiller using Structural Method", *ASME: Journal of Energy Resources Technology* 2005; Vol 127, pp 119-124.
22. Misra, R. D., **Sahoo¹, P.K.**, and Gupta, A., "Thermoeconomic Evaluation and Optimization of a Double-Effect H₂O/LiBr Vapour-Absorption Refrigeration System", *Int. J. Refrig.* Vol 28, pp 331-343, 2005.
23. **Sahoo¹, P.K.**, Misra, R. D., and Gupta, A., "Exergoeconomic Optimization of an Aqua Ammonia Absorption Refrigeration System", *Int. J. Exergy.*, Vol.1 (1), pp 82-93, 2004.
24. Misra, R. D., **Sahoo¹, P.K.**, and Gupta, A., "Thermoeconomic Optimization of a Single Effect H₂O/LiBr Absorption Chiller System", *Int. J. Refrig.*, Vol.26 (2), pp 158-169, 2003.
25. Misra, R. D., **Sahoo¹, P.K.**, and Gupta, A., "Application of the Exergetic Cost Theory to the LiBr/H₂O Vapour Absorption System", *Energy-Int. J.*, Vol.27 (11), pp 1009-1025, 2002.
26. **Sahoo, P.K.** and Sarangi, S., "A New Technique for the Analysis of Torque Tube Heat Exchangers of Superconducting Generators", *Cryogenics*, Vol. 36, pp 343-49, 1996.
27. **Sahoo, P.K.**, Venktarathnam, G., Sarangi, S., and Suryanarayana, T. "Design Analysis of Current Leads for Superconducting Generators", *Indian Journal of Cryogenics*, Vol.18 (1-4), pp.211-216, 1993.

1. Nandan, G., Kumar R., Sahoo P. K., Chatterjee, B., Mukhopadhyay D., and Lele, H.G., Study of Ballooning of a Completely Voided Pressure Tube of Indian PHWR Under Heatup Condition, **Nuclear Engineering and Design, Elsevier, 2010.**
2. Sahoo, P.K., B. Wolduamlak, K. M. Singh, Exergoeconomic Optimisation of a Cogeneration System Using Exergy Splitting Method, **Applied Thermal Engineering, Elsevier, 2010.**

Conferences

1. R Sahoo, **P K Sahoo**, Impact of different glazing systems on cooling load of a detached residential building at Bhubaneswar, India, 10th International Conference on Enhanced Building Operations, Oct. 26-28, 2010, Kuwait City.
2. Nandan, G., Kumar R., **Sahoo P. K.**, Chatterjee, B., Mukhopadhyay D., and Lele, H.G., Experimental Investigation of Sagging and Ballooning in LOCA for Indian PHWR, ICME 2010, June 30-July 2, 2010, London
3. Misra RD, **Sahoo P K**, Thermoeconomic Optimization of a single effect H₂O/LiBr Absorption Chiller System Using Evolutionary Programming, Proceedings of the Fourth International Exergy, Energy and Environment Symposium (IEEEES-4), American University of Sharjah, Sharjah, April 19-23, 2009.
4. Khan Md. K., Kumar R., and **Sahoo P. K.**, Performance Prediction of Adiabatic Capillary Tubes by Conventional and ANN approaches- A Comparison, *ASHRAE winter conference, Chicago, January 24-28, 2009*
5. Khan Md. K., Kumar R., and **Sahoo P. K.**, Experimental investigation on the flow of R-134a through adiabatic and diabatic capillary tubes. *ASHRAE ASHRAE winter conference, Chicago, January 24-28, 2009*
6. Misra RD, **Sahoo P K**, Thermoeconomic optimization of a vapour compression refrigeration system using evolutionary programming, National Conference of Refrigeration and Air Conditioning (NCRAC), January 8-10, 2009, IIT Madras.
7. Khan, M.K., Kumar, R., **Sahoo, P.K.**, An Experimental Investigation on Straight and Coiled Adiabatic Capillary Tubes, National Conference of Refrigeration and Air Conditioning (NCRAC), January 8-10, 2009, IIT Madras.
8. **Sahoo, P.K.**, Liquid Desiccant Cooling System for Air Conditioning – A Review, National Conference on Recent Advances in Mechanical Engineering, December 20-21, 2008, NIT Silchar, Assam, India
9. Nandan, G., Kumar R., **Sahoo P. K.**, Chatterjee, B., Mukhopadhyay D., and Lele, H.G., Thermo-Mechanical Response of Pressure Tube During Degraded Cooling Condition Event in a Pressurised Heavy Water Reactor, 19th National & 8th ISHMT – ASME Heat and Mass Transfer Conference January 3-5, 2008, JNTU, Hyderabad.
10. Khan Md. K., Kumar R., and **Sahoo P. K.**, Experimental investigation on the performance of R-134a flowing through a straight capillary tube under adiabatic and diabatic flow conditions. 19th National & 8th ISHMT – ASME Heat and Mass Transfer Conference January 3-5, 2008, JNTU, Hyderabad.

11. **Sahoo, P. K.**, and Ketlogetswe C., Exergy analysis of an organic refrigeration cycle, 5th International conference on heat transfer, Fluid Mechanics and Thermodynamics, pp SP1-1-6, Sun City, 1-4July 2007
12. Khan Md. K., **Sahoo¹ P. K.**, and Kumar R., Flow characteristics of HFC-134a in an adiabatic helical capillary tube, 5th International conference on heat transfer, Fluid Mechanics and Thermodynamics, pp KM1-1-6, Sun City, 1-4July 2007
13. Nandan G., **Sahoo¹ P. K.**, Kumar R., Chatterjee, B., Mukhopadhyay D., and Lele, H.G., Experimental investigation of Heat Transfer during LOCA with failure of emergency cooling System, 5th International conference on heat transfer, Fluid Mechanics and Thermodynamics, pp NG1-1-5, Sun City, 1-4July 2007
14. **Sahoo, P.K.**, and Misra, R.D., , "Thermoeconomic Optimization of a Solar Assisted Single Effect H₂O-LiBr Vapour Absorption System", In the Proceedings of the 18th National & 7th ISHMT-ASME Heat and Mass Transfer Conference, IIT Guwahati, pp. 1863-1870, Jan. 4-6, 2006,.
15. Misra, R. D., and **Sahoo¹, P.K.**, Thermoeconomic Optimization of a Double-Effect H₂O/LiBr Vapour-Absorption Refrigeration System using the Exergetic Cost Theory, pp-477-484, ECOS 2005, June 20-22, Trondheim, Norway.
16. **Sahoo¹, P.K.**, and Misra, R. D., Thermoeconomic Evaluation and Optimization of an Aqua-Ammonia Vapour-Absorption Refrigeration System Using Evolutionary Programming, pp-935-943, ECOS 2005, June 20-22, Trondheim, Norway.
17. **Sahoo¹, P.K.**, and Misra, R. D., Thermoeconomic Optimization of a Solar Assisted Vapour-Absorption Refrigeration System, pp-213-225, ICET 2004, December 22-25, Bhubaneswar, Orissa.
18. Alok Chaube, **P.K. Sahoo¹**, and S.C. Solanki "Computational Analysis of Heat Transfer Enhancement Due to Rectangular Ribs in a Turbulent Duct". The 5th International Bi-Annual ASME/JSME Conference at San Diego, United States, July 25-29, 2004, pp 93-99.
19. Alok Chaube, **P.K. Sahoo¹**, S.C. Solanki "Analysis of Heat Transfer Enhancement due to Artificial Roughness" TH-123, 13th National conference of Indian Society of Mechanical Engineers, Dec.29-31, 2003 at IIT Roorkee, India.
20. Alok Chaube, **P.K. Sahoo¹**, and S.C. Solanki, "Computational Investigation of Heat Transfer and Flow-field Characteristics in a 2D Rib Roughened Rectangular Duct" T-31, Proceedings of Fluent CFD conference 2003 for India and South East Asia, Nov 18-20,2003 at Pune, India.
21. Sahoo, P.K., Misra, R.D., and Gupta, A., 2003 "Exergoeconomic Optimization of an Aqua-Ammonia Absorption Refrigeration System", Proceedings of the First International Exergy, Energy and Environment Symposium (IEEEES-1), I. Dincer and A. Hepbasli eds. Ege University, Izmir, Turkey, July 13-17, paper no. 46, pp. 287-292.
22. Misra, R.D., Sahoo, P.K., and Gupta, A., 2003, "Exergoeconomic Evaluation of a Vapour-Compression Refrigeration System," Proceedings of the International Conference on "Emerging Technologies in Airconditioning and Refrigeration", R. S. Agarwal et al., eds., Allied Publishers Limited, New Delhi, Sept. 8-10, pp. 149-159.

23. **Sahoo¹, P.K.**, .S. Chand, and Misra, R. D., "Thermoeconomic Optimization of a Cogeneration System Using Evolutionary Programming", The First International Exergy, Energy, and Environment Symposium, pp 281-86, Ege University, Izmir, Turkey 13-17th July, 2003.
24. B. Pajwani, **Sahoo¹, P.K.** and G. C. Mishra, "Simulation of Pollutant Dispersion from a Point Source Located at Ground Using CFD", The 29th National and 2nd International Conference on Fluid Machines and Fluid Power, pp 725-734, IIT Roorkee, 12-14th Dec., 2002.
25. Misra, R. D., **Sahoo¹, P.K.**, and Gupta, A., "Exergoeconomic Evaluation and Optimization of a Solar Sorption System for Air-conditioning", International Conference on Recent Advances in Solar Energy Conversion Systems, MANIT, Bhopal, 28-29th Sept, 2002, pp 115-125.
26. **Sahoo, P.K.**, "Effect of Supply and Exhaust Location on Air Distribution in a Room-A Numerical Investigation Using CFD", International Conference on Emerging Technologies in Air Conditioning and Refrigeration at New Delhi, 26-28th Sept, 2001.
27. Misra, R. D., **Sahoo¹, P.K.**, and Gupta, A., "Optimization of a LiBr/Water Vaopur Absorption Refrigeration System based on Exergetic Cost Analysis", International Conference on Emerging Technologies in Air Conditioning and Refrigeration at New Delhi, 26-28th Sept, 2001, pp 225-239.
28. **Sahoo, P.K.** and Sarangi, S., Heat Transfer Problems in Superconducting Generators", Presented at Fourth **ISHMT-ASME** Heat and Mass Transfer Conference at Institute of Armament Technology, Girinagar, Pune, 12-14th Jan., 2000, pp. 975-81.
29. **Sahoo, P.K.** and Sarangi, S., "Simulation of a Superconducting Generators", Presented at Fourteenth Cryogenic Symposium at IIT, Kharagpur. *Published in book "Selected Papers on Cryogenic Technology", Ed. Kanchan Chaudhury and Sunil Sarangi, Paper VI-31. pp1-11, 1998.*
30. **Sahoo, P.K.** and Sarangi, S., "Heat Transfer Problems in Superconducting Generators", Presented at Second **ISHMT-ASME** Heat and Mass Transfer Conference at REC Surathkal, Karnataka, 25-28th Dec., 1995, pp. 129-138.

Thesis Guidance

Doctoral Thesis

S. N	Title	Student	Status
1	Thermoeconomic optimization of vapour absorption refrigeration systems	R. D. Misra	<i>Awarded 2004</i>
2	Numerical Analysis of Heat Transfer Enhancement in Artificially roughened Solar Air Heaters	A. Choube	<i>Awarded 2005</i>
3	Study of Heat Transfer and Flow boiling of New Refrigerants in Micro-channels.	Md. Kaleem Khan	<i>Awarded 2008</i>
4	Simulation of Phase Change Material using Mesh-less Techniques	H. C. Thakur	<i>Awarded 2010</i>
5	Simulation of Accidental Coolant Loss in a Nuclear Reactor	Gopal Nandan	<i>Awarded 2011</i>
6	Analysis of Heat Transfer between concentric annulus subjected to high temperature difference.	Kulkarni	<i>Continuing from 2009</i>

Masters Thesis

S. N	Title	Student	Co-guide	Status
1	Thermoeconomic optimization of an air conditioning system	J. P. Borugada	---	1999
2	Study of frost growth around a cylinder with varying environmental parameters	L. K. Singh	---	1999
3	Thermoeconomic optimization of vapour absorption air conditioning systems	S. Sahoo	---	2001
4	Simulation of air distribution in a room	R. Katiyar	---	2001
5	Simulation of air pollution using computational fluid dynamics	B. Panjwani	---	2002
6	Simulation of a counter flow solar air heater	Md. K. Khan	R. Kumar	2002
7	Thermoeconomic optimization of a combined power cycle with steam splitting	S. Chand	---	2003
8	Numerical simulation of two-phase flow using VoF method.	S. Padhi	---	2003
9	Simulation of Heat Transfer Processes in Turbochargers (DAAD Exchange Programme)	<i>M. S. Saluja</i>	---	<i>2004</i>
10	Development and Application of an Immersed Boundary Fictitious Domain Solver for Navier-Stokes Equation in Complex Geometry	<i>V. G. Reddy</i>	K. M. Singh	<i>2005</i>
11	Study of Heat Transfer and Flow boiling in a Horizontal Tube.	<i>Saurav V. Jain</i>	R. Kumar	<i>2005</i>
12	A Study of Heat Transfer During Pool Boiling of Water Over a Large Diameter Tube	<i>Manoj B. Pande</i>	R.Kumar	<i>2005</i>
13	Heat Transfer Problems in Nuclear Reactor	<i>G. Venkatrao</i>	---	<i>2006</i>
14	Thermoeconomic Optimization of a Trigeneration System	<i>G. Billuraju</i>	---	<i>2006</i>
15	Thermoeconomic Optimization of a Trigeneration System Using Exergy Splitting Method	<i>M. Wolduamlak</i>	KM Singh	<i>2010</i>

Sponsored Research Projects

S. No.	Title of Project	Funding Agency	Financial Outlay (Rs. in lakhs)	Year of Start & Duration	Name of PI & other investigators	Status
1	Simulation of Fuel Bundle Integrity in accidental Coolant Loss using FEM.	DAE	5.60	2002 (2 Yrs)	Dr.BK Mishra (PI) Dr. PK Sahoo(CI)	Com. 2005
2	Channel Heat Up Experiment-I:Pressure Tube Sagging in Accidental Coolant Loss.	DAE	41.00	2003 (4 Yrs)	Dr. PK Sahoo(PI) A. Gupta (CI)	Completed 2007.
3	Simulation of pollutant Dispersion from a Chimney Using CFD	DST	7.26	2003 (3 Yrs)	Dr. PK Sahoo(PI)	Completed 2008
4	Single Debry Heat up Experiments	DAE	9.98	2008 (1 Year)	Dr. PK Sahoo(PI)	Cont.
5	Debries Bed Heat up Experiments	DAE	38.53	2008 (2 yrs)	Dr. PK Sahoo(PI)	Cont.
Total (Rs. In Lakhs)			102.37			

Consultancy Projects

1	Channel Heat Up Experiments-Accidental Coolant Loss in Nuclear Reactor	DAE	48.53	2004 (4 yrs)	Dr. PK Sahoo(PI) Dr. R. Kumar (CI) Dr. A. Gupta (CI)	Completed 2008
2	Debries Bed Heat up Experiments	DAE	11.24	2008 (3 yrs)	Dr. PK Sahoo(PI)	Cont.
Total (Rs. In Lakhs)			59.77			

References

1. Dr. Sunil Sarangi

Professor and Director

National Institute of Technology, Rourkela

Rourkela, Orissa, India

Email: director@nitrkl.ac.in, sarangiskr@nitrkl.ac.in

2. Dr. Pradeep Kumar

Professor and Head

Department of Mechanical and Industrial Engineering

Indian Institute of Technology Roorkee, India

Email: kumarfme@iitr.ernet.in; hmied@iitr.ernet.in

3. Dr. B. K. Misra

Professor

Department of Mechanical and Industrial Engineering

Indian Institute of Technology Roorkee, India

Email: bhanufme@iitr.ernet.in

4. Dr. C. Ketlogetswe

Head, Department of Mechanical Engineering

University of Botswana, Gaborone, Botswana

Email: ketloget@mopipi.ub.bw