

RESUME of Dr. Prakash Dhamshala

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SUMMARY

Presently working as a professor in the College of Engineering and Computer Science at the University of Tennessee, Chattanooga. Primary area of specialization is in mechanical engineering with emphasis in thermal sciences. Experienced in the design and second law analysis of air conditioning systems, cogeneration, gas and steam powered power plants, shell & tube heat exchangers by Delaware method and air coolers, solar systems, heat pump system with ice storage units and radiant barriers. I have worked on numerical modeling of slag monitors in utility boilers using ANSYS software for thermal and stress analysis, and insulation systems in fossil fuel power plants. I have advised on several projects and theses on the design of ASD heat pumps for commercial applications, modeling, simulation and optimization of thermal systems. Some of the thermal systems considered involved evaporative cooling, desiccant cooling, energy recovery, cogeneration and solar thermal processes. I have also written several computer codes for the design and analysis of some of the above thermal systems. I have extensively revised the curriculum and course structures to meet the ABET 2000 requirements. I have presented several refresher courses for EIT and P.E review classes.

I obtained external funds in excess of \$200,000 from outside agencies, published seven industrial reports and several papers. I have advised nineteen M.S theses and more than one hundred undergraduate projects. I established thermal science lab for senior students and wrote Thermal Science Laboratory Manual for this lab course and also developed the "HEAT" software for heat transfer courses. I have just completed most of the manuscripts for the textbook entitled "**Design and Analysis of Thermal Components and Systems**". This textbook is written for use of senior and graduate students as well as practicing engineers of mechanical and chemical engineering discipline. I have also completed manuscripts for another textbook entitled "**Modern Practices in Design of Air-conditioning and Refrigerated Systems**" and currently compiling the manuscripts for the text entitled "**The Engineering Analysis of Renewable Energy Resources**".

I introduced four new courses to the mechanical engineering curriculum.

I obtained consistently outstanding student evaluations in my teaching career. I was responsible for establishing the ASHRAE student chapter at the UTC and held very successfully the technical paper contest for the last **twenty six years** for this chapter. I hold

P.E. licenses in two different states and obtained a special award for scoring the highest grade on the P.E. exam.

Taught the following courses at NMSU, YSU and UTC:

1. Basic Engineering Science
2. Basic Engineering Science Lab
3. Dynamics
4. Thermodynamics I
5. Thermodynamics II
6. Fluid Mechanics
7. Fluid Mechanics Lab
8. Heat Transfer
9. Air Conditioning and Refrigeration
10. Design of Thermal Components (undergraduate/graduate level course)
11. Design of Thermal Systems (undergraduate/graduate level course)
12. Thermal Science Lab*
13. Probability and Statistics
14. Solar Energy* (undergraduate/graduate level course)
15. Advanced Heat Conduction and Radiation* (graduate level course)
16. Advanced Heat Convection (graduate level course)
17. Advanced Thermodynamics (graduate level course)
18. Heat Exchangers* (graduate level course)
19. Engineering Analysis of Renewable Energy Resources (graduate level course)

* the courses introduced by Prakash Dhamshala into the ME curriculum

Education

Georgia Institute of Technology, Ph.D. (M.E.), September 1978

Dissertation Topic: “ Optimization of Heat Exchangers for Solar Concentrators. “

University of Miami (Florida), M.S. (M.E.), January 1972

Dissertation Topic: “ Wave Analysis of Human Head Helmet System During Impact. “

Sri Venkateswara University (India), B.E. (M.E.), January 1970

The University of Tennessee, Chattanooga, Completed foundation courses in Management, Accounting and Marketing towards MBA degree.

Experience

1981 - Present: Professor, College of Engineering and Computer Science, the University of Tennessee at Chattanooga, Chattanooga, Tennessee. I have been teaching several undergraduate and graduate level courses in mechanical engineering. I advised seventeen graduate theses and more than one hundred undergraduate projects. Many proposals were written on various topics such as energy conservation in buildings, thermal analysis of fossil

fueled power plants, solar energy applications, development of computer codes for thermal components and systems, ASD Heat Pumps for commercial applications, etc. I served on various College and University level committees and serving as advisor to ASHRAE Student Chapter since 1985.

Familiar with ANSYS, MICRO-AXCESS software and TEMA standards and ASME Section VIII and Division 1 code.

1986-1995 Consultant to TVA (Tennessee Valley Authority). Consulted on many feasibility analysis evaluation projects in mechanical engineering ranging from energy conservation, air conditioning refrigeration equipment, heat pump with thermal storage, ground coupled heat pump, evaporative cooling, industrial insulation, thermal modeling of slag monitors and radiant barriers, ASD heat pumps, and desiccant cooling, etc.

1977 - 1981: Assistant Professor, Mechanical Engineering Department of Youngstown State University, Youngstown, Ohio. Taught several undergraduate and graduate level courses in Mechanical Engineering. Advisement of graduate and undergraduate theses. Wrote several research proposals. Served on faculty senate committee and as advisor to ASME student chapter.

1977: Visiting Assistant Professor, Mechanical Engineering Department at New Mexico University, Las Cruces, New Mexico.

1973 - 1976: Graduate Assistant, Mechanical Engineering Department, Georgia Institute of Technology, Atlanta, Georgia. Research experience on the project experimental solar heat supply system with fixed mirror concentrators for the heating and cooling of buildings.

1972 - 1973: Design Engineer. Ronel Corporation, Miami, Florida. Design experience of lumbered trusses for residential and office buildings.

1971: Teaching Assistant, Mechanical Engineering Department at the University of Miami, Coral Gables, Florida. Grading and teaching undergraduate courses.

Publications, Reports, Presentations and Thesis Advisement

1. “ Reaching Zero-Electrical Energy Building by Use of Grid-Connected Hybrid Systems of PV Panels and Wind Turbines” by Prakash Dhamshala, Bhavin Madhu and Madan Nellore, the paper is under Review for Publication in an International Journal.

2. “Economic Comparison of Applications of Near-Zero Energy Components for a Commercial Building” by Prakash Dhamshala, Abstract accepted for presentation at the ASME World Congress Meeting to be held in Vancouver, Canada in November 2010.
3. “Economics Using the Producer Gas from Biomass in a CCHP Unit to Meet the Building Loads of a Commercial Building” by Prakash Dhamshala, Abstract accepted for presentation at the International Renewable Energy Conference to be held in Shanghai, China, in August 2010.
4. “Role of Smart Windows, Efficient Lighting and Evaporative Cooling in Sustainable Building Design” by Prakash Dhamshala, Abstract accepted for presentation at the International Renewable Energy Conference to be held in Shanghai, China, in August 2010.
5. “Thermo-Economic Comparison of Solar Cooling Technologies of Absorption Refrigeration and Liquid Desiccant Cooling Systems” Abstract accepted for Presentation at the International Conference on Sustainability to be held in Phoenix, Arizona in May 2010.
6. “Economic Benefits of Advanced CHP Systems” by Prakash Dhamshala, Proceedings of CLIMA 2005 Congress” in Laussane, Switzerland, October, 2005.
7. “Thermoeconomic Analysis of Cogeneration System for HVAC Applications in Commercial and Industrial Buildings “ by Prakash R. Damshala and James Nathan Pugh M.S thesis completed in May 2004.
8. “Energy Cost Savings with Use of DOAS Systems in Various Cities in U.S” Proceedings of ASME World Congress, Washington D.C, Nov 2003.
9. “Energy Cost Savings due to Use of Energy Recovery System with Dedicated Outside Air Systems (DOAS)”, Seminar presented ASHRAE Annual Meeting in Kansas City, MO June 2003.
10. “A Multi-Purpose Thermal Design Project that Works “ by Prakash R. Damshala and Robert Bailey, published in The International Journal of Mechanical Engineering Education., Volume 30, Number 2, April 2002.
11. “A Computer Design Project for an Energy Recovery System” by Prakash R. Damshala, a paper presented at ASEE southeastern conference held at Charleston, SC in April 2001
12. “Numerical Analysis of Solar Storage (Trombe) Wall for Identifying Optimal Energy Recovery Conditions “ by Prakash R. Damshala and Robert Bailey, a paper presented at ASEE southeastern conference, April 2000 at Blacksburg,

Virginia.

13. "Electronic ASHRAE Handbook" presented at the monthly meeting of ASHRAE regional chapter meeting for professional development credits, February 2001.
14. "Thermoeconomic Analysis of a CHP System by Iterative Numerical Techniques" by Prakash R. Damshala, Transactions of ASHRAE February 2000, Vol 106, Part 1.
15. "Evaluation of Centrifugal Chillers" presented at the monthly meeting of the ASHRAE Regional Chapter for professional development credits, February 2000 .
16. "Global Warming and Air Pollution" Presented to the Lion's Club Group, Hyderabad, India, June 1999.
17. "Thermodynamic and Thermoeconomic Optimization of Combined Heat and Power System by P. R. Damshala and Zeeshan Khan, M.S. Thesis, June, 1998.
18. "Multi-Purpose Design Project for Engineering Students of Coming Century," by P. R. Damshala, a paper presented at ASEE Annual Meeting in June 1997, at Milwaukee, WI.
19. "A Comprehensive Heat Transfer Design Experiment," by P. R. Damshala, a paper presented at ASEE Annual Meeting in June 1997 at Milwaukee, Wisconsin.
20. "An Experimental Design Project in Fluid Mechanics," by P. R. Damshala, a paper presented at ASEE Annual Meeting in June 1997 at Milwaukee, Wisconsin.
21. "Computer's Role in Efficient Design of Heat Exchanger for Energy Recovery" by P.R. Damshala, a paper presented at ASEE Annual Meeting in June 1997 at Milwaukee, Wisconsin.
22. "Computer's Role in Effective Design in Electronic Cooling " by P.R. Damshala, a paper presented at ASEE Annual Meeting in June 1997 at Milwaukee, Wisconsin.
23. "Investigation of Opportunities to Reduce Energy Consumption and Costs in a School Building Using Detailed Computer Simulation Program," by P. R. Damshala and Chinnakaruppan Sathappan, M.S. Thesis, May 1996.
24. "Computer Modeling for Thermal and Stress Analysis of Slag Monitor for Utility Boilers," by P. R. Damshala, March 1995.

25. "Computer Modeling of Phase Change Materials for Optimum Results," by P. R. Damshala and Pornpimo Vongsansunee, M.S. Thesis, August 1995.
26. "Impact of Alternate Refrigerant on Evaporator Design and Analysis of Compact Heat Exchangers," by P. R. Damshala and Parag Dadeech, M.S. Thesis, April 1994.
27. "Comparative Analysis of Four Different Heat Pumps for Maximum Energy Cost Savings," by P. R. Damshala and A. Udaipurwala, M.S. Thesis, April 1992.
28. "Assessment of ASD Heat Pumps for Commercial Applications," by P. R. Damshala, a report submitted to TVA, February 1992.
29. "Fabrication, Instrumentation and Development of Data Acquisition System for Thermal Experiments," by P. R. Damshala and B. H. Farlett, M.S. Thesis, April 1990.
30. "Components of Energy Conservation in Residential Buildings," by P. R. Damshala and M. Kazemian, April 1989.
31. "Broad-Based Assessment of Asbestos Insulation Substitutes for Steam Lines in Fossil Fuel Power Plants," by P. R. Damshala, EPRI Report, April 1989-RP1266-50.
32. "Modeling of Slag Monitor and Water Tubes in Utility Boilers," by P. R. Damshala and G. P. Sasmal, report submitted, TVA, May 1989.
33. "Industrial Insulation for Steam Lines of Fossil Fuel Power Plants," by P. R. Damshala and Jerry D. Fourroux published in Power, May 1988 issue.
34. "Introduction to Computer Era Through HVAC Education," by P. R. Damshala, published in ASHRAE Transactions 1987, Vol. 93, Pt. 1 and also presented in Winter Annual Meeting of ASHRAE in New York on January 18, 1987.
35. "Simulation of Solar Ponds with Simple Atmospheric Insolation Model." by P. R. Damshala and T. Eldridge; M.S. Thesis, April 1987.
36. "Economic Impact of Ice Storage Systems on Building Energy Costs," by P. R. Damshala and B. Ghorbani, M.S. Thesis, April 1986.
37. "Evaluation and Simulation of Solar Augmented Heat Pump Water Heating System," by P. R. Damshala and R. Steele, M.S. Thesis, April 1986.
38. "Optimization of Power Production from Salt Gradient Solar Ponds," by P. R. Damshala and C. Amin, M.S. Thesis, April 1983.

39. "Optimization of Point-Focusing Distributed Receiver Solar Thermal Electric System using a Simple Solar Insulation Model," by Prakash R. Damshala, and M. Akbari, M.S. Thesis, August 1983.
40. "Influence of Rankine Fluid/Cycle and the Regional Solar Insulation on the Solar Rankine Systems," by P. R. Damshala, and K. Choudhary, M.S. Thesis, April 1981.
41. "Optimization of Heat Exchanger for Solar Concentrators," presented at the National Forum of Solar Cooling and Heating, Miami Beach, Florida, December 1976, and also published in the proceedings of the conference.
42. Contribution of "Experimental Solar Heat Supply System with Fixed Mirror Concentrators for the Heating and Cooling of Buildings," final report presented to ERDA, 1975.

Text Books

1. "Modern Practices in Design of Air Conditioning and Refrigeration Systems" by Prakash Dhamshala , March 2006, the manuscripts is under review for publication as a text, however is used as text for two years for a senior course.
2. "Design and Analysis of Thermal Components and Systems" by Prakash Dhamshala. January 20003 Part of the Manuscripts is completed for publication as a text, however used as text for many years.
3. "Thermal Science Laboratory Manual " August 1994 by Prakash R. Dhamshala.
4. "The Engineering Analysis of Renewable Energy Systems" compiling the Manuscripts for publication as a textbook.

Software Development

1. "Heat" software developed by Prakash R. Damshala to accompany the Thermal ScienceLab Manual. It is also designed to be used in other thermal science courses.
2. A Research Tool to Perform Transient Thermal and Economic Analysis of Building Energy Costs using hourly weather data.
3. A software to assist in selection of insulation for replacement of Asbestos on Steam Lines of Fossil Fuel Power Plants developed for an EPRI project.
4. A software to perform Thermoeconomic Analysis of CHP (Combined Heat and Power) Systems.

5. Building Transient Energy Analysis to estimate the building loads, energy consumption using the hourly weather data for any city in the world.

Research Grants

1. " Survey of Literature for Development of Knowledge Based Expert System For HVAC Applications," Prakash Damshala, CECA Grant of \$2,500 in Summer of 1986.
2. " A Proposal for Preparing a Plan for UTC Operation of the TVA Non-Convection Solar Pond as an Energy Engineering Field Laboratory," James Cunningham, Prem Chopra, Prakash Damshala, James Hiestand, and Ron Cox. TVA Grant of \$10,000. Contract No. TV-48192A, Task No. UTC-86015.
3. " Development of Simple Model for Radiant Barrier Insulated Systems," Prakash Damshala, TVA Grant \$48,089 for 1986-87 academic year. Contract No. TV-48192A, Task No. UTC-86016.
4. Contractual work with TVA for research work on "Insulations, Thermal Storage, Desiccant Cooling, End-use Energy Storage Options. Refractories In Cyclone Boilers, and Numerical Modeling of Slag Monitor Probe," \$50,000 until the end of September 1988.
5. "Broad-Based Assessment of Asbestos Insulation Substitutes for Steam Lines In Fossil Fuel Power Plants," Grant from EPRI for \$39,820 contract 1988-RP1266-50.
6. Contractual work with TVA for graduate assistantships, \$10,000 January 1988.

"Assessment of ASD heat pumps for Commercial Applications," TVA Grant \$10,564 for 1991-92 Contract No. TV-85688V, Task No. UTC-394-536.
7. "Computer Simulations on Slag Monitor," TVA Grant \$23,922 for 1992-93, Contract No. TV-85688V, Task No. UTC-394-598.
8. "Fabricating and Testing an Energy Recovery Test Module" ASHRAE Grant \$5,000 for Senior Design Projects
9. "Power and Thermal Conditioning Auxiliary Power Unit (APU) for Class 8 Trucks" \$ 680,000 Proposal submitted for grant to NTRCI, July 2006.

Professional Societies

Member of Professional Development Committee, ASHRAE 2006-'07
Vice-Chair of ASHRAE Task Committee 5.5, Air-to-Air Energy Recovery
Member of ASHRAE System's Handbook (2004) Committee since 2000.
Member of ASME
Member and Faculty Advisor of ASHRAE Student Chapter
Chairman of Promotion and Tenure Committee for the College of Engineering and Computer Science at the University of Tennessee, Chattanooga

Registration

Professional Engineer, State of Ohio

Professional Engineer, State of Tennessee (Active)

Awards

Received special award for scoring the highest grade in the P. E. examination for the state of Ohio.

Listed in Who's Who Among America's Teachers in 2000, 6th edn , Volume 2.

Hobbies

Tennis, Bridge and Television