

## Curriculum Vita



**NAME** : **Dr. R. SARAVANAN**

**DESIGNATION** : **Professor**

Address : Institute for Energy Studies  
Department of Mechanical Engineering  
Anna University, Chennai – 600 025  
INDIA

**CONTACT NO :** :

OFFICE : 91 44 22357607 / Mobile : 91 9176794329

FAX NO. : 91 44 22353637

Email : rsaravanan@annauniv.edu

### **I. EDUCATION :**

Course	Specialization	Institution	Rank	Year of Completion
UG	Mechanical	Madurai Kamaraj University	I	1989
PG	Industrial Refrigeration and Cryogenic Engineering	Kerala University	I with Dis.	1992
Ph.D	Solar Cooling Technologies	IIT Madras, Chennai	-	1999

### **II. EXPERIENCE:**

a) Teaching:

Sl.No.	Position	Institution	Period
1.	Lecturer	MCE, Trichy	1991-1992
2.	Teaching and Research Associate	IIT Madras, Chennai	1994-1998
3.	Lecturer	CNRSE, Anna University	1998-2001
4.	Asst. Professor	DME, Anna University	2001-2009
5.	Professor	DME, Anna University	2009 onwards

b) Industry / R & D : 1992-1994 – IS&SR, IIT Madras

### III. RESEARCH / CONSULTANCY

1. Research Area : Absorption cooling and heating systems  
Cogeneration and waste heat recovery  
Energy conservation and management
2. Research Guidance :

#### **Ph.D - No.of students guided :**

Sl. No.	Name	Title	Year of Award	Status
1	S.N. Murugesan	Studies on HFC based Vapour Absorption Heat Transformer for Process Heat generation	2002	Completed
2	S. Arivazhagan	Studies on half-effect absorption cooling system using R134a-DMAC as working fluid	2007	Completed
3	P.K. Pratapchandran	Pretreatment processes for enhanced bio-mechanization of MSW	2007	Completed
4	N. Anbazhagan	Biomass based cooling systems for cold storage applications	2008	Completed
5	B. Vijarajan	Studies on Thin Layer Drying of Bagasse	2009	Completed
6.	S.Sekar	Studies on Vapour Absorption Heat transformer for water distillation	2011	Completed
7	C.P. Jawahar	Studies on NH <sub>3</sub> -H <sub>2</sub> O based air cooled GAX absorption cooling systems	2011	Completed
8	Vallem Ramesh	Reliability assessment studies on biomass cogeneration power plant	2012	Completed

#### **2.2. M.S - No.of students guided :**

1	J.Arun Kumar	Studies on PEM Fuel cells using various alcohols for low power applications	2006	Completed
---	--------------	---	------	-----------

### 3. Research Projects :

Sl. No.	Title	Sponsoring Agency	Amount Rs.(Lakh)	Co-Investigator (If any)	Duration / Status
1	Design and Development of Biomass based cold storage systems for Rural Area Applications	MNES, New Delhi	9.52	S.Renganarayanan	(2000-2002) Completed
2	Studies on methanol based absorption cooling systems	UGC, New Delhi	0.30	-	(2002) Completed
3	Design and Development of Half-Effect Vapour Absorption Cold Storage systems using new working fluids for low potential heat sources	DST – SERC, New Delhi	8.70	-	(2003-2006) Completed
4	Development of Single Pressure Refrigeration System using Bio-gas as Energy Input	MNES, New Delhi	10.90	S.Renganarayanan	(2004-2006) Completed
5	Flow boiling heat transfer studies of an Ozone Friendly Energy Efficient HFC / HC refrigerant mixture with mineral oil as Lubricant	DST, GOI	16.90	D.Mohanlal	(2005-2008) Completed
6	Eco-Friendly vapour absorption heat transformer for water purification	UGC, New Delhi	9.91	-	(2005-2008) Completed
7	R134a-DMAC air-cooled absorption cooling systems	DST - SERC, New Delhi	34.84	-	(2006-2009) Completed
8	Biogas refrigerator for urban, semi urban and rural areas	MNRE, New Delhi	11.00	-	(2009-2011) Completed
9	Development of low carbon technologies for combined cooling and drying of agricultural products	UGC New Delhi	65.00	S. Iniyan A.Elaya Perumal	(2010-2014) In Progress
10	Simultaneous production of combined power and cooling	MOI, Spain	IC*	Prof. Alberto Coronas and team, URV Spain	(2010-2012) Completed
11	Development of New Working Fluids, Components and Configurations for HP Absorption Heat Pumps	MoE, Spain	IC*	Prof. Alberto Coronas and team, URV Spain	(2012-2015) In Progress

\* - Contribution in terms of simulation, modeling, exchange visit only

## 2. Consultancy / Testing :

Sl. No.	Title	Sponsoring Agency / Industry	Amount Rs. (Lakh)	Co-Investigator (If any)	Status
1	Biomass Assessment study – Ponneri Taluk	TEDA, Chennai	0.75	R. Sethu. madhavan S. Renga Narayan	Completed
2	National Biomass Resources Assessment Study – Phase II – III	MNES, New Delhi	22.00	R. Sethu madhavan S. Renga Narayan	Completed
3	Districtwise Biomass Resource Assessment Study in Karnataka State	MNES, New Delhi	17.31	R. Sethu. madhavan S. Renga Narayan	Completed
4	Resource Assessment Study for MSW of Madurai Corporation of TN	TEDA, Chennai	1.65	R. Sethu. madhavan S. Renga Narayan	Completed
5	Integrated Rural Energy Assessment - Javadu Hills – NA Dt.	TEDA, Chennai	2.50	R. Sethu. madhavan S. Renga Narayan	Completed
6	Performance Improvement study of cold storage systems	TANFED, Chennai	0.20	-	Completed
7	Energy Audit study	At various Industries, buildings etc.	6.30	R. Sethu. Adhavan S. Renga Narayan	Completed
8	Replacement of Air conditioning Systems	DDK, Hyderabad Bangalore,	2.00	-	Completed
9	Consultant – Air-conditioning systems	ITC / AAI – Chennai	1.50	-	Completed
10	Replacement of AC systems	DDK, Chennai / DDK Tripathi	4.25	-	Completed
11	Energy Efficiency improvement in Refrigerators	Whirlpool, Pune	3.00	D. Mohanlal	Completed
12	Technical Evaluation	TASMAC, TNMSC	1.00	-	Completed

#### IV ACCOLADES RECEIVED

- 1) **Ramanna Fellowship award** from Department of Science and Technology, Govt. of India for the period of three years : (2007-2010)

The objective of Ramanna Fellowship is to offer continued core financial support to those researchers who have performed excellently well in their ongoing basic research projects of SERC. The Ramanna Fellows would receive a Ramanna Fellowship Rs 5000 per month plus a research grant of Rs. 10 lakh/year for a period of three years. The research grant of Rs. 10 lakh per year will be towards hiring of research manpower, national travel (for self, research staff and scientific visitors for consultation), international travel for self for attending one international conference / school/ workshop/ symposium/ scientific meeting per year, consumables, minor equipments, spares, maintenance support and contingencies.

- 2) **Research grant award** under FAST TRACK SCHEME FOR YOUNG SCIENTISTS from Department of Science and Technology, Govt. of India for the period of three years ( 2002-2005)

The Department of Science and Technology, through Fast Track Scheme for Young Scientists, provides quick research funding to young scientists below the age of 35 years (relaxable by 5 years in the case of SC/ST/OBC, woman and physically handicapped category) to undertake independent research in newly emerging and frontier areas of science and engineering

- 3) **Best paper award** – NCRAC 2009, IIT Madras Chennai – 36

Paper entitled “Evaporative heat transfer coefficient of a HFC/HC refrigerant mixture under varied heat flux condition” (co-authored by B.Raja, D.Mohan Lal) accorded First Price for best paper presented during National Conference on Refrigeration and Airconditioning, Jan 9-11, IIT, Madras, Chennai – 600036

- 4) **Winner of Emerson CUP 2010 and 2011** – Refrigeration & Retail

**The Emerson Cup** is an annual event celebrating and recognizing some of the outstanding and innovative designs in the HVAC (Heating, Ventilating and Air Conditioning) industry. Under the retail and refrigeration category – excellent award confirmed for the project showed the feasible use of generator absorption heat exchange (GAX) based ammonia absorption plant for cold storage applications in rural areas, yielding 35% higher COP and energy savings for the year 2010.

For the year 2011, Cascaded energy plant using ammonia-absorption heat pump cum chiller for pharma industry was selected. The system developed is capable of delivering hot water at 60°C and chilled water at 7°C.

## V BOOKS / PATENT (S)

Srikantiah Srinivasa Murthy, Prakash Maiya Manoor, Rajagopal Saravanan, A BUBBLE PUMP ABSORPTION COOLER, Indian patent No. 195424, Awarded in the year 2007

## VI. PUBLICATIONS

**Publications** *h – index : 09, Citation: 254*

International Journals	:	42
Conferences : International	:	30
National	:	24
<b>Total:</b>		<b>96</b>

### a) **International Journal (s) :**

1. R.Saravanan and M.P. Maiya. (1997) Effect of component pressure drops in twofluid pumpless continuous vapour absorption refrigerator, Energy Convers. Mgmt., 38, pp. 1823-1832
2. R.Saravanan and M.P. Maiya. (1998) Thermodynamic Comparison of Water Based Working Fluid Combinations for Vapour Absorption Systems, Applied Thermal Engineering, 18, pp. 553 – 568.
3. R.Saravanan and M.P. Maiya. (1998) Comparison of methanol based working fluid combinations for bubble pump operated vapour absorption refrigerator, International Journal of Energy Research, 22, pp. 715 – 731.
4. Marcus Pfaff, R.Saravanan, M.P. Maiya and S.Srinivasa Murthy. (1998) Studies on bubble pump for a water – lithium bromide vapour absorption cooler, International Journal of Refrigeration, Vol. 21, pp. 452 – 462.
5. R.Saravanan and M.P. Maiya. (1999) Influence of thermodynamic and thermophysical properties of water based working fluids for bubble pump operated vapour absorption refrigerator, Energy Conversion and Management., Vol. 40, pp. 845 – 860.
6. R.Saravanan, R.Sethumadhavan and A.N.Rao. (1999) Water Pumping Windmills in Tamilnadu - A Status Report, International Journal of Wind Engineering, Vol.23, No.5, pp. 319 - 322.

7. Murugesan S N, R. Saravanan and S. Renganarayanan, (2001) Solar pond operated vapour absorption heat transformer using environment working fluids, *International Journal of Ambient Energy* V:22, No.5, pp. 165-173.
8. R.Saravanan and M.P. Maiya. (2003) Experimental studies on bubble pump operated water – lithium bromide vapour absorption cooler, *Applied Thermal Engineering*. Vol: 23, No. 18, pp. 2293-2422.
9. J.Joesph, R Saravanan and S Renganarayanan (2005) Studies on single stage solar desalination system for domestic applications, *Desalination*, Vol. 173, pp. 77-82.
10. S. Arivazhagan, R Saravanan, and S Renganarayanan (2005) Simulation studies on R134a - DMAC based of half effect absorption cold storage systems, *Energy Conversion and Management*, Vol. 46, No. 11-12, pp. 1703-1713.
11. N. Anbazhagan, R. Saravanan and S. Renganarayanan (2005) Biomass based sorption cooling systems for cold storage applications, *International Journal of Green Energy*, Vol.2, No. 4, pp. 325-335.
12. P.K. Pratapchandran, R Saravanan, and S Renganarayanan (2005), Effect of direct thermal pretreatment of Anaerobic digestion of municipal solid wastes, *Asian Journal of Microbiology, Biotechnology and Environmental Sciences*, Vol. 7, No.4, pp. 779 -784.
13. P.K. Pratapchandran, R Saravanan, and S Renganarayanan (2006) Pretreatment processes for enhanced bio-methanization of MSW, *Pollution Research*, Vol. 25, Issue 1, pp.139 -146.
14. H. Jacob Manohar, R Saravanan, and S Renganarayanan (2006), Modeling of steam fired double effect vapor absorption chiller using neural network, *Energy Conversion and Management*, Vol 47, Issues 15-16, pp. 2202-2210.
15. S. Arivazhagan, R Saravanan, and S Renganarayanan (2006), Experimental studies on HFC based two-stage half-effect vapour absorption cooling system, *Applied Thermal Engineering*, Vol.26, Issues 14-15, pp.1455-1462.
16. S. Arivazhagan, R Saravanan, and S Renganarayanan (2006), Comparison of Exergetic performance of HFC based single and half effect absorption cooling systems, *International Journal of Exergy*, Vol.3, Issue 4, pp. 402-418.
17. B. Vijarajan, R. Saravanan and S. Renganarayanan (2007), Studies on Thin Layer Drying of Bagasse, *Int. Journal of Energy Research*, Vol: 31, Issue: 4, 422-437.

18. V. Muthu, R. Saravanan and S. Renganarayanan (2008), Experimental studies on R134a-DMAC hot water based vapour absorption refrigeration systems, *International Journal of Thermal Science*, Vol. 47, PP. 175-181.
19. B. Vijarajan and R. Saravanan (2008), A numerical model of moisture and temperature distribution within a rectangular bagasse layer undergoing drying, *Drying Technology* 26 (6) 749 — 758.
20. M.Saravanan, R.Saravanan and S. Renganarayanan (2008), Energy and Exergy analysis of counter flow cooling towers, *Thermal Science*, 12 (2) 69-78.
21. J. Arun kumar, P. Kalyani and R. Saravanan (2008) Studies on PEM Fuel Cells Using Various Alcohols for Low Power Applications, *International Journal of Electrochemical Sciences*, 3, 961-969.
22. B. Raja, D. Mohanlal and R. Saravanan (2008), Flow boiling heat transfer coefficient of R134a/R290/R600a mixture in a smooth horizontal tube, *Thermal Science*, 12 , (3) 33-44
23. S. Tharves Mohideen, R.Saravanan and S. Renganarayanan (2008), Influence of absorber mass transfer effectiveness on performance of R 134a-DMAC based single, double and half-effect absorption cooling systems, *International journal on Energy Technology and Policy*, 6 (5/6), 566-580.
24. B. Raja, D. Mohanlal and R. Saravanan (2009), Flow boiling heat transfer study of R-134a/R-290/R-600a mixture in 9.52 and 12.7 mm smooth horizontal tubes : experimental investigation, *Experimental Thermal and Fluid Science*, 33, Issue 3, March 2009, Pages 542-550.
25. B. Raja, D. Mohanlal and R. Saravanan (2009), Flow boiling heat transfer coefficient of R-134a/R-290/R-600a mixture in smooth horizontal tubes using varied heat flux method, *App. Thermal Engg.*, 29, Issue 8-9, Pages 1778-1785.
26. A.Rameshkumar, M.Udayakumar and R.Saravanan (2009), Energy Analysis of a 1 – Ton Generator-Absorber-Exchange Absorption-Compression (GAXAC) cooler, *ASHRAE Transactions*, Vol. 115, Part 1.
27. B.Raja, D.Mohan Lal and R.Saravanan (2009), Numerical study on flow boiling heat transfer of refrigerant in horizontal tubes, *Computational Thermal Sciences*, 1, 75-103.
28. Grijila Srinivas, S.Sekar, R. Saravanan and S. Renganarayanan (2009) Studies on water based absorption heat transformer for Desalination using MED, *Desalination and Water treatment*, 1, 75-81



29. B.Raja, D.Krishna Kumar, D.Mohan Lal and R.Saravanan (2009) Influence of nucleation on flow boiling heat transfer coefficient of a refrigerant mixture under varied heat flux condition', *Journal of Engineering Thermophysics*, 3, No. 1, Aug 2009.
30. A.Rameshkumar, M.Udayakumar and R.Saravanan (2009) Heat transfer studies on a GAXAC (generator-absorber-exchange absorption compression) cooler, *Applied Energy* , 86 (10), 2056-2064.
31. B.Raja, D.Mohan Lal and R.Saravanan (2009) A Comparative Study on Flow Boiling Heat-Transfer Coefficient of R-134a and R-134a/R-290/R-600a Refrigerant Mixture, *Heat Transfer Research*, 40 (6), 571-588.
32. B.Raja, D.Mohan Lal and R.Saravanan (2009) Boiling in a Stratified Two-Phase Flow: A Review, *Heat Transfer Research*, 40 (6), 589-612.
33. C.P. Jawahar, B. Raja, R. Saravanan (2010) Thermodynamic studies on NH<sub>3</sub>-H<sub>2</sub>O absorption cooling system using pinch point approach, *International Journal of refrigeration*, 33 (7), 1377-1385.
34. C.P. Jawahar R. Saravanan , 2010 Generator absorber heat exchange based absorption cycle—A review *Renewable and Sustainable Energy Reviews*14 (8) 2372-2382.
35. C.P.Jawahar, R. Saravanan, 2011, Experimental studies on air-cooled NH<sub>3</sub>-H<sub>2</sub>O based modified GAX absorption cooling system, *International Journal of refrigeration*, 34 (3) 658-666.
36. S.Sekar R. Saravanan, 2011, Experimental studies on absorption heat transformer coupled distillation system, *Desalination*, 274 (1-3) 292-301
37. S.Sekar R. Saravanan, 2011, Exergetic performance of eco-friendly absorption heat transformer for sea water desalination, *International Journal of exergy*,8 (1), 51-67.
38. V.Ramesh and R. Saravanan, 2011, Reliability analysis of cogeneration power plant in sugar mill using falut tree analysis, *Energy resources-part A : Recovery, Utilization, and Environmental Effects*, 33 (12) 1168-1183.
39. V.Ramesh and R. Saravanan, 2011, Reliability assessment of cogeneration power plant in textile mill using falut tree analysis, *Journal of failure analysis and prevention*,11, 56-70.
40. C.P. Jawahar, R. Saravanan, Joan Carles Bruno, Alberto Coronas, 2013 Simulation studies on gax based Kalina cycle for both power and cooling applications, *Applied Thermal Engineering*, 50, 1522-1529

41. Dereje S.Ayou, Joan Carles Bruno, Rajagopal Saravanan, Alberto Coronas. 2013, An overview of combined absorption power and cooling cycles, *Renewable and Sustainable Energy Reviews*, 21, (5), 728-748.
42. Dereje S.Ayou, Joan Carles Bruno, Rajagopal Saravanan, Alberto Coronas, Analysis and Simulation of Modified Ammonia-Water Absorption cycle for Power and cooling applications, 2013, *International Journal of Low carbon Technologies*, (Accepted for publication)

## **INTERNATIONAL CONFERENCES**

1. R.Saravanan and M.P. Maiya. Modelling of the bubble pump for a pumpless continuous absorption refrigerator *Proceedings of the Int. Conf. on Advances in Chemical Engineering*, I.I.T. Madras, 155 – 160, 1997
2. R.Saravanan, G. Karthikeyan, S.Renganarayan and A.N.Rao. Simulation Studies on a half-effect vapour absorption refrigeration cycle, *Proceedings of the Int. Conf. on Role of Renewable Energy Technology for Rural Development*, Kathmandu, Nepal, 12-14, 1998.
3. R.Saravanan, G.Karthikeyan, R.Sethumadhavan, S.Renganarayanan and A.N.Rao. Evaluation of Solar Photovoltaic Water Pumping System, *Proc. of the Int. Conf. on Role of Renewable Energy Technology for Rural Dev*, Kathmandu, Nepal, 12 - 14, Oct – 1998.
4. R.Saravanan, G.Karthikeyan, R.Sethumadhavan, S.Renganarayanan and A.N.Rao. Training Programme on Solar Energy Utilization, *Proceedings of Sixth Int. Symposium of Renewable Energy Education*, New Delhi, 26 - 28, Nov 1998.
5. R.Saravanan and M.P.Maiya. Experimental Studies on Two - Fluid Continuous Pumpless Vapour Absorption Refrigerator, 20<sup>th</sup> Int. Congress of Refrigeration, 19-24, Sept.1999, Sydney, Australia
6. S.Murugesan, R.Saravanan and S.Renganarayanan. Upgradation of waste heat using absorption heat transformer with environment friendly working fluids, *International Seminar on Renewable Energy for Poverty Alleviation*, Dhaka Centre, Bangladesh, Nov 26 - 27, 1999
7. R.Saravanan, R.Sethumadhavan and S.Renganarayanan. Energy Generation from Effluent Stream of a Agro Processing Industry through Anaerobic Route, *Millennium International Conference on Renewable Energy Technologies*, I.I.T. Madras, Chennai, Feb 9 - 11, 2000
8. V. Muthu, R. Saravanan, S.Renganarayanan and A. Kalanidhi, Studies on solar operated half effect vapour absorption refrigeration system using environment friendly working fluids, *International Conference on Strategic developments*, Malaysia, KL, Aug 15-17, 2000

9. S.Selvaraju, R. Saravanan and S. Renganarayanan Solar operated ejector based refrigeration system using environment friendly working fluids: Thermodynamic comparison, *International Conference on Energy Management beyond 2000*, U.P, Lucknow, Oct 19-21, 2000.
10. A. Sadeesh, R. Saravanan and S. Renganarayanan. Optimization of Cold Storage Systems powered by Biomass energy for Rural Area Applications. VII World Renewable Energy Congress, Cologne, Germany. June – July '02.
11. S.Murugesan, R.Saravanan and S.Renganarayanan. Thermodynamic Analysis of Vapour Absorption Heat Transformer Using Environment Friendly Working Fluids, *Proceedings of International Conference on Sorption Heat Pumps*, Chinna, Oct . 2002. PP. 163-168
12. R Saravanan, S Renganarayanan, and R. D Sharama, “ Comparison of Biomass Gasifier based direct fired VARS and DG set coupled VCRS for cold storage applications” *International Conference on New Millennium – Alternative Energy Solutions for Sustainable Development*, 17 – 19<sup>th</sup> Jan 2003, PSG Tech, Coimbatore.
13. S Tharves Mohideen, R Saravanan and S Renganarayanan, Influence of Heat Exchanger effectiveness on HFC based absorption cooling systems, *International Conference on New Millennium – Alternative Energy Solutions for Sustainable Development*, 17 – 19<sup>th</sup> Jan 2003, PSG Tech, Coimbatore.
14. S Pratap Chandran, R Saravanan, S. Renganarayanan, Effect of the direct thermal pre-treatment on anaerobic digestion of municipal solid waste, *Fourth International Conference of ORBIT Association on “Biological processing of organics : Advances for a sustainable society”* 29 Apr -5<sup>th</sup> May 2003, Australia
15. R Saravanan, V. Muthu and S Renganarayanan, Experimental studies on R134a-DMAC based hot water fired vapour absorption refrigeration systems, *International Conference on Emerging Technologies in Air-conditioning and Refrigeration*, Sept 10-12, 2003, New Delhi, India.
16. S. Arivazhagan, R Saravanan, and S Renganarayanan, Simulation studies on compression absorption cycle with R134a-DMAC as working fluids for heating applications, *International Conference on Emerging Technologies in Air-conditioning and Refrigeration*, Sept 10-12, 2003, New Delhi, India.
17. Birendra Kumar Nayak, R. Saravanan and S. Renganarayanan, Energy analysis of building systems, including heating and cooling, *International Conference on Passive and Low Energy Architecture - Built environments and environmental buildings*, 2004, Sept, 19-24, Eindhoven, N.land.

18. S. Arivazhagan, R Saravanan, and S Renganarayanan, R134a-DMAC based half-effect vapour absorption refrigeration system, *International Sorption Heat Pump Conference, June 22-24, 2005*, Denver, CO, USA
19. S. Arivazhagan, R Saravanan, and S Renganarayanan, Experimental studies on both single and half effect R134a-DMAC based absorption cooling systems : A performance comparison, *2<sup>nd</sup> International Conference on Solar Air-conditioning*, Oct 2007, Tarragona, Spain. Paper No. E 29.
20. E. Lakshmanan and R. Saravanan, Studies on biomass gasifier using non-stoichiometric equilibrium model, *Proceedings of the 1<sup>st</sup> International conference on Advances in Energy Research*, IIT Bombay, Mumbai, Dec 2007, pp. 119-125.
21. B.Raja, D.Mohan Lal and R.Saravanan, Evaporative heat transfer coefficient of a HFC/HC refrigerant mixture under varied heat flux condition – low heat and mass flux application, *Int. Refrigeration and Air-conditioning conference at Purdue – 2008*. Paper – 2194, p1-8.
22. B.Vijayaraj, Sanjiv Aurora and R.Saravanan, Mathematical modelling of bagasse drying using low temperature superheated steam, *16th International Drying Symposium (IDS 2008)*, Volume 1, PP. 449-455.
23. G. Rengasamy, R.Saravanan, S. Arivazhagan, K.Sivakumar and C. Narendran, Renewable energy based 40 TR - NH<sub>3</sub>-H<sub>2</sub>O GAX operated absorption cooling system, *Proceedings of ISHPC 2008, Paper No. 085*, Seoul, South Korea.
24. S. Sekar and R.Saravanan, Thermodynamic comparison of water based working fluid combinations for vapour absorption heat transformers, *Proceedings of the 9<sup>th</sup> IEA Heat Pump Conference, 2008*, Paper No. 6.22, Zurich, Switzerland.
25. R. Saravanan, Renewable Energy based sorption heating and cooling systems, *ACRECONF 2009*, Paper No. II – A3, Feb 20-21, 2009, New Delhi, India
26. Velmurugan and R. Saravanan, 2010, Life cycle cost analysis of absorption cooling systems, *ICEBO 2010*, Kuwait III(2)
27. C. P. Jawahar, R. Saravanan, Joan Carles Bruno and Alberto Coronas, 2011, Simulation studies on gas based kalina cycle for both power and cooling applications, *Polygeneration (EPC – 2011)*, Taragonna, Spain4 (a).
28. Dereje S Ayou, R Saravanan, Jona Carlos Bruno and Alberto Coronas, 2012, Analysis and Simulation of Modified Ammonia-Water Absorption cycle for Power and cooling applications, *HPC 2012*, ECN, Netherland, Paper No. HPC 360

29. Dereje S Ayou, J.C. Bruno, D. Salavera, R Saravanan and Alberto Coronas, 2012, New Working fluids for a combined power and cooling Cycle, HPC 2012, ECN, Netherland, Paper No. HPC 400.
30. K.Sivakumar, A.Elayaperumal, R. Saravanan, 2013, Experimental studies on fluidized bed drying of Agro products, International Conference on Energy Efficient Technologies for Sustainability- 2013 (ICEETS'13), IEEE – April 2013.

## NATIONAL CONFERENCES

1. R.Saravanan, M.P.Maiya and S.Srinivasa Murthy. Theoretical Studies on Bubble Pump for H<sub>2</sub>O - LiBr Vapour Absorption Refrigerator *Conference on Thermal Systems*, BHU, Varanasi, India, (1995), III.3
2. R.Saravanan and M.P.Maiya. Water Based Vapour Absorption Refrigeration Systems. Thermodynamic Comparison *Proceedings of the N S E C*, Calcutta, India, (1996), 92-95.
3. R.Saravanan and M.P.Maiya. Analysis on Vapour Absorption Refrigeration Cycle Using Water Based Quaternary Working Fluid Combinations, *National Conference on Solar Energy - Recent Development*, Thiruvananthapuram (1997).
4. R.Saravanan and M.P.Maiya. Water Based Working Fluid Combinations for Vapour Absorption Refrigeration Systems. A Review on Property Data and Corrosion Inhibition. *21<sup>st</sup> National Solar Energy Convention*, Anna University, Chennai, India (1997)
5. R.Saravanan and M.P.Maiya. Comparison of Water and Methanol Based Working Fluid Combinations for Solar Operated Pumpless Absorption Refrigerator, *22<sup>nd</sup> National Solar Energy Convention*. University of Roorkee, Roorkee, (1998).
6. R.Saravanan, R.Sethumadhavan, and A.N.Rao. Water Pumping Windmills in Tamilnadu - A Status Report, *22<sup>nd</sup> N S E C*, University of Roorkee, Roorkee, (1998)
7. R.Saravanan and S.Renganarayanan. Energy Conservation in Thermal Power Plant - Control Room Air-conditioning by Vapour Absorption Refrigeration Systems, *National Seminar on Energy Conservation in Thermal Power Plants - Recent Trends*, CPRI, Thiruvananthapuram, Oct 1999
8. S N Murugasen, R. Saravanan, S. Renganarayanan, *Thermodynamic analysis on vapour absorption heat transformers using R32-DMAC*, Proceedings on 12<sup>th</sup> ISME Conference, Madras, 2001.

9. S N Murugasen, R. Saravanan, S. Renganarayanan, *Numerical analysis of falling film absorber for absorption heat transformers*, Conference on Thermal Systems, BHU, Varanasi, 2001.
10. A Sadeesh, R Saravanan and S Renganarayanan. Hybrid Heating and Cooling Technologies for a Dairy Industry using Solar and Bio-energy, *National Seminar on Advance Solar Technologies*, Jodhpur, India, Jan 2002.
11. S N Murugasen, R. Saravanan, S. Renganarayanan, *Transport properties prediction for R134a-DMAC combinations*, ISME Conference on Mechanical Engineering, IIT Rookee, Dec 2003.
12. Gilbert F, R Saravanan, S Renganarayanan, Analysis of biogas operated diffusion-absorption cooling systems, Energy Fest 2004, Madurai.
13. Birendra Kumar Nayak, R Saravanan, S Renganarayanan, Energy analysis of building systems, includes heating and cooling, *National Conference Renewable Energy Systems*, May 2004, Calicut
14. Vinod Kumar Basavala, R Saravanan, S Renganarayanan, Exergy analysis of 12 MW multifuel biomass power plant, *National Conference Renewable Energy Systems*, May 2004, Calicut
15. S. Arivazhagan, R Saravanan, and S Renganarayanan, Studies on Solar Cooling Systems using environment friendly working fluids, *National Conference Renewable Energy Systems*, May 2004, Calicut
16. S.M. Ganesh, R. Saravanan and S. Renganarayanan, Comparative studies on CHP systems for process Industries, *Indian Chemical Engineering Congress*, 2005, Dec 14-17, IIT, New Delhi,
17. Vijayakumar.A and R. Saravanan, Energy and Exergy Analysis of Boilers, *National Seminar on Recent Advances in Energy Systems and combustion Processes*, 2007, 264-271, Feb 14-16, BIT, Ranchi, INDIA
18. Haribahaskaran.A and R. Saravanan, Energy and Exergy Analysis of Fuels, *National Seminar on Recent Advances in Energy Systems and combustion Processes*, 2007, 272-281, Feb 14-16, BIT, Ranchi, INDIA.
19. Saravanan.M and R. Saravanan, Energy and Exergy Analysis of Cooling towers, *National Seminar on Recent Advances in Energy Systems and combustion Processes*, 2007, 295-304, Feb 14-16, BIT, Ranchi, INDIA
20. Lakshmanan.E and R. Saravanan, Mathematical Modeling of Entrained Flow coal gasifier using Free Energy Minimization, *National Seminar on Recent Advances in Energy Systems and combustion Processes*, 2007, 341-350, Feb 14-16, BIT, Ranchi, INDIA

21. B.Raja, D.Mohan Lal and R.Saravanan, Evaporative heat transfer coefficient of a HFC/HC refrigerant mixture under varied heat flux condition, National Conf. Ref. and AC., IITM – 2009, Paper P-43. *(Received the Best Paper Award)*
22. B.Raja, D.Mohan Lal and R.Saravanan, Investigation on oil return in an evaporator using HFC/HC refrigerant with mineral oil as lubricant, National Conf. Ref. and AC., IITM – 2009, Paper P-41.
23. C.P. Jawar and R. Saravanan, Performance evaluation of biomass fired ammonia – water absorption cooling system by using artificial neural network, National Conf. Ref. and AC., IITM – 2009, Paper P-40.
24. C.P. Jwahaar and R. Saravanan, 2011, Performance evaluation of air-cooled GAX bases ammonia absorption cooling system using ANN , NCRAC 2011, July 3-5, IIT Madras, B-1.

## **VII SUBJECTS EXPERTISE**

- 1) Sorption heating and cooling systems
- 2) Heat Conversion Systems
- 3) Energy conservation in Buildings and HVAC
- 4) Cogeneration and waste heat recovery systems
- 5) Thermodynamics
- 6) Refrigeration and Air conditioning
- 7) Pinch Point Analysis

## **VIII OTHERS**

1. Administrative :
  1. Asst. Registrar – Finance : From 2000-2007 for Institute for Energy Studies, Anna University, Chennai – 25
  2. Chairman Class Committee : PG & UG Program
  3. Faculty Adviser : ME Energy Engineering
  4. Vice President : Society of Mechanical Engineers : 2003-04
2. Abroad Visited : FRANCE, SPAIN, KOREA, MALAYSIA, SRI LANKA, KUWAIT, USA

Visiting Professor – June-July 2012 – URV, SPAIN

3. Other Notable Contributions:

**(1) Short term course : Conducted over 15 short term programs**

Selected as member to conduct short-term training program on Energy conservation, demand side management and advances in energy conversion for TNEB (Tamilnadu Electricity Board) officials, Organizing Secretary – NCARC 2013

**(2) Certified Energy Auditors**

Certified Energy Auditors from TNEB (Tamilnadu Electricity Board), PCRA (Petroleum conservation research association) and KEB (Kerala Electricity Board)

**(3) Reviewer in International Journals**

International Journal on Refrigeration, International Journal on Thermal Sciences, International Journal on Desalination, Applied Thermal Engineering, Energy, Applied Energy, Water Treatment and Desalination

**(4) Editorial Board Member**

British Journal of Engineering and technology, Energy

**(5) Member in Indian delegation - USAID**

Selected as one of five member delegation to attend the Energy Sector Procurement Training Programme conducted by SARIE / USAID, New Delhi at Sri Lanka – June 2003 / Dec 2003 for Energy Professional Exchange Program.

**(5) Member – Board of Studies**

Anna University, Chennai, Kongu Engineering College - Erode Kumaraguru College of Technology – Coimbatore, PSG tech Coimbatore, CIT - Coimbatore

**(6) Technical Committee Member**

TANHOPE, TASMACH, DDK, TANHVAS Chennai

**(7) Membership in Professional Societies**

- Indian society for Heating, Refrigerating and Airconditioning Engineers (ISHRAE), President local chapter (2010-11), National Chair – Students (2011-2013), Regional Director (2013-2014)
- Indian society for Heat and Mass Transfer (ISHMT)
- Indian society for Technical Education (ISTE)
- American society for Heating, Refrigerating and Air conditioning Engineers (ASHRAE)