

Curriculum Vitae: WASIM Y. SAMAN

I. PERSONAL INFORMATION:

Present Position: Associate Professor of Mechanical Engineering,
Director, Sustainable Energy Centre, University of South Australia
Director, Institute for Sustainable Systems and Technologies Initiative

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II. ACADEMIC/PROFESSIONAL QUALIFICATIONS:

- Bachelor of Science; B.Sc. (Hons.) Mechanical Engineering, Leeds University, UK, 1970
- Master of Science; M.Sc. Mechanical Engineering, Leeds University, UK, 1971
- Doctor of Philosophy; Ph.D. Mechanical Engineering, Leeds University, UK, 1974
- Member of the International Solar Energy Society, Australian and New Zealand Section
- Member of the International Association for Solar Energy Education
- Member of the Australian Institute of Refrigeration, Air Conditioning and Heating
- Member of the Australian Institute of Energy

III. CAREER SUMMARY AT UNISA (1993- present)

- Course Coordinator for 3 Thermofluid Engineering courses in 1993, 4 courses in 1994 and 3 courses in 1995-1999, 4 courses in 2000-2003, 5 courses in 2004 including transnational programs.
- Principal Supervisor of 8 Ph D students (3 completed), 4 Master students (2 completed) and over 50 final year project students.
- Research Degrees Coordinator, 1995-2004
- Contributing to the establishment of structured programs for research degree candidates in the School and Division as Research Degrees Coordinator, member of the Divisional Research Management Committee and a focus group for developing the research degree coordinator position description.
- Co-editor of proceedings of an international congress. Published over 100 journal articles, invited papers and refereed technical papers in national and international conference proceedings.
- Supervisor of 2 research funded Research Fellows, 2 Research Engineers, 3 Adjuncts and a number of Research Assistants.
- My research endeavours have led to the development of a number of solar and energy efficient heating, cooling and lighting prototypes which are finding their way to commercialisation and a methodology for evaluating energy consumption in houses being used in some housing developments.
- Developed strong links with a number of organisations and institutions such as the World Renewable Energy Network, the International Solar Energy Society, the Arab Science and Technology Foundation and universities in India, United Arab Emirates, New Zealand and Germany.
- Established strong links with several manufacturers, the energy utilities, Government and the building industry.
- Chair of the local branch of the Australian and New Zealand Solar Energy Society (1995- 2002), and member of its Australasian Committee.

- A key organiser of the 2001 Solar World Congress in Adelaide.
- Leader/supervisor of 19 externally funded research projects totalling \$1 850 000 in cash plus \$424 000 internal funding for innovative teaching, research and infrastructure support.
- Program Director for the Associate Diploma in Mechanical Engineering, 1994.
- Chair of the School of Engineering Research Committee, 1998-1999.
- Member of the Faculty of Engineering Research & Research Degrees Committee, 1995-1996, the Faculty of Engineering and the Environment Research Committee, 1996-1999. Member of the Division of ITEE Research Management Committee and its Research Degrees Subcommittee since 2000.
- Involved in School administration including acting Head of School and signatory for 26 weeks, member of School Executive since 2000, chair/member of a range of School committees including, School Advisory Committee, Research Committee since 1995, Marketing Committee.
- Initiator and coordinator of the Engineering Challenge Scheme for High School students, 1994-1999.
- Founding Director of the Sustainable Energy Centre, which encompasses the University activities in this area. Director (jointly) of the Institute for Sustainable Systems and Technologies Initiative.
- Contributor to the University's exercise in determining its future directions in science and technology, which commenced in 1999. This established the environment as one of the University four pillars.
- Member of the external review of the professional disciplines that underpin environmentally sustainable development in the Division of ITEE.
- A member of University, State, national and international working groups and committees involved in various aspects of energy and sustainability.
- Initiator and Executive Director of the South Australian Solar Car Consortium which involves the University working, in partnership with high schools and a TAFE college, to build solar cars for participation in the World Solar Challenge in 1999, 2001 and 2003.

IV. HIGHLIGHTS OF CAREER BEFORE JOINING UniSA:

1971-1974	Leeds University Research, and part time teaching.
1975-1977	State Company for Oil Projects/Iraq Design and Site Engineer implementing oil pipelines.
1977-1992	Academic in 2 universities and the Solar Energy Research Centre/Iraq Involved in a wide variety of teaching, research and community service activities, including: <ul style="list-style-type: none"> • Teaching and developing courses in thermofluid engineering • Developing postgraduate programs • Developing 6 new teaching laboratories • Supervisor of Master and Ph D theses • Deputy head of department and convenor of college council • Co-founder of the Solar Energy Research Centre • Leader of a number of research programs in collaboration with international organisations • Project director of 2 solar building projects including the largest solar air conditioning application and the first grid connected solar system in the Middle East • Adviser to local industry in developing new air conditioners and solar hot water systems • Managing Editor: Journal of Solar Energy Research, 1983-1989 • Co-organiser of 2 regional conferences.
1992-1993	Visiting Fellow/ Melbourne University and RMIT Involved in joint industry research projects on energy recovery, storage and air conditioning systems and supervision of research students.

V. POSITIONS HELD:

1999- present	Associate Professor, School of Advanced Manufacturing and Mechanical Engineering
1999- present	Director, Sustainable Energy Centre
1997- present	Executive Director, South Australian Solar Car Consortium
1996- 1998	Senior Lecturer, School of Engineering, University of South Australia
1993-1995	Lecturer, School of Manufacturing & Mechanical Engineering University of South Australia
1992-1993	Visiting Fellow, Melbourne University, and Royal Melbourne Institute of Technology
1990-1992	Associate Professor, Mechanical Engineering Department Nahrain University, Baghdad
1983-1989	Senior Researcher, Solar Energy Research Centre, Baghdad
1981-1983	Scientific Researcher, Solar Energy Research Centre, Baghdad
1981	Associate Professor, Mechanical Engineering Department University of Technology, Baghdad
1975-1981	Lecturer, Mechanical Engineering Department University of Technology, Baghdad
1975-1977	Engineer, State Company for Oil Projects, Baghdad
1971-1974	Tutor, Mechanical Engineering Department Leeds University

VI. EDUCATIONAL DEVELOPMENTS AND PRACTICE:

1. COURSE DEVELOPMENT:

Long and varied teaching experience covering fluid mechanics, thermodynamics, heat transfer and other basic engineering courses at all undergraduate levels. The titles of the courses taught include:

- * Sustainable Energy System Design
- * Fluid and Energy Engineering
- * Energy Conversion and Management
- * Fluid and Energy Engineering
- * Renewable Energy Technology
- * Thermofluid Engineering 1
- * Thermofluid Engineering 2
- * Thermofluid Engineering 3
- * Thermofluid Engineering 4
- * Engineering Mechanics (statics and dynamics)
- * Mechanical Engineering programs for Electrical, Chemical and Control Engineering students, including Engineering Mechanics, Thermodynamics, Heat Transfer, Mechanics of Materials

2. SUPERVISION OF RESEARCH STUDENTS:

Supervised 4 Master of Engineering students and 8 Ph D students. Completed theses under my supervision are 4 Ph D and 2 Master. The topics covered are:

- development of multi-stage heating, dehumidification and cooling systems
- roof integrated passive solar heating system
- high pressure gas compression
- thermal comfort

- closed cycle internal combustion engines
- phase change thermal storage systems

3. CURRICULUM DEVELOPMENT:

- Responsibility for upgrading the thermofluid engineering stream during the major review of the 2 degree programs offered by the School of Manufacturing and Mechanical Engineering, University of South Australia in 1994.
- Member and acting leader of the Bachelor of Engineering for Mechanical and Manufacturing Engineering Stream team which carried out all stages of development of the Stream and its specialisations as part of the new Bachelor of Engineering Programs offered by the University of South Australia in 1997.
- Proposed and developed a new course, Renewable Energy Technology, which was offered in 1996 as an elective final year course for several engineering programs and a broadening undergraduate education course for other students. The course was developed in collaboration with academic staff from the faculties of Engineering, Applied Science and Art, Architecture and Design.
- Provided leadership in the development of current Mechanical and Manufacturing Engineering programs which have been described by the School Advisory Committee as modern in content and responsive to industry needs. In addition to contributing to the overall structure of the revised engineering programs, I was instrumental in restructuring their energy content with emphasis on the environmental implications of energy use. The courses emphasise the energy system concept and introduce energy management to enable graduates to become energy managers in their workplace.
- Introduced substantial web material for three of my courses to assist in making the learning process more flexible.

4. CONTRIBUTION TO TRANSNATIONAL PROGRAMS:

Contributions to the Bachelor of Engineering transnational program in Mechanical and Manufacturing Engineering included:

- Production of a comprehensive study guide for Energy Conversion and Management
- Teaching the course in flexible mode with face-to-face component 6 times in Singapore.
- Contributed to the program accreditation process by the Institution of Engineers, Australia, 2002

5. INNOVATIVE TEACHING ACTIVITIES:

Completed a project funded by the innovative teaching and learning grant with \$5 000 funding and in kind support from the Flexible Learning Centre. The project involved the production of 10 video recordings to assist students, working in small groups, in completing their practical components of thermofluid engineering courses. The videos produced have been used by hundreds of students in 3 courses.

6. RESEARCH DEGREES:

As Research Degrees Coordinator, I have been responsible for developing and getting approval for two offshore Ph D programs offered by the School in Taiwan and Singapore. This involved discussions with School staff and University committees on the course details and particularly developing suitable teaching and learning arrangements to ensure quality control.

In my role as Research Degrees Coordinator responsible for over 30 candidates at any one time between 1995 and 2004, I have been at the forefront in developing an induction program and methodologies for following the progress of research degrees candidates. This included compiling a postgraduate student handbook; follow up procedure and structure for new students to ensure that they have sufficient resources and support to enable them to proceed with their research program in a timely fashion. In developing the induction procedure and structured program on a Division wide basis, the model developed at the School of AME was one of two models used as exemplars.

7. OTHER EDUCATIONAL ACTIVITIES:

- Gave public talks on a regular basis on energy in housing, renewable energy applications and energy management to government, building industry and many other organisations.
- Lectured in a short course on Remote Area Power Supply to a group of Vietnamese engineers at Mawson Lakes in 2001.
- Presented a half-day course on Solar and Energy Efficient Air Conditioning in Sharjah, United Arab Emirates in 2001.
- Invited to contribute to a one-day course on Solar Air Conditioning to participants of the World Renewable Energy Congress in Cologne, Germany in 2002.
- Designed and delivered a short course on Energy Management for Industry and Business through the Environmental Training Steering Committee in 2004.
- Supervised 8 exchange students from European universities who each spend a semester in Adelaide.
- Supervised the winner of the Energy Prize awarded by the Australian Institute of Energy (Adelaide group) for excellence in energy related student projects, 1995, 1997 and 1998.
- Supervised the 2001 winner of the Australian and New Zealand Solar Energy Society prize for the best final year student project in Australian/New Zealand Universities in renewable energy.

VII. RESEARCH ACHIEVEMENTS:

1. MAJOR RESEARCH PROJECTS:

Leader of multi-disciplinary teams of researchers, engineers, research students and industry partners in carrying out a number of projects. My research achievements have focussed on the following 2 areas in the last 12 years:

1.1 Solar/Energy Efficient Heating and Cooling Systems:

I have been involved in the development of a wide range of heating and cooling systems in collaboration with local industry. The development methodology comprises mathematical modelling and optimisation, testing major components under controlled conditions, system optimisation, design, construction and testing and prototype in-situ monitoring. The main outcomes in this area are:

- Development of a combined two-stage heating/evaporative cooling system: The project has resulted in developing a domestic prototype, which is competitive with reverse cycle air conditioners. The system is being redesigned optimised and tested by a Ph D student.
- Development of a new phase change thermal storage system for heating and cooling applications: A completed Ph D project and ongoing work have specified a number of suitable materials for both heating and cooling applications and demonstrated the advantages of integrating them into air conditioning system in reducing equipment size, energy cost and peak demand. A number of specific applications are being investigated. In recognition of our international expertise in this area, the second Australasian Symposium for Thermal Energy Storage is being held in Adelaide in 2005.
- A heat pump system for milk cooling and water heating in a farm: This is a completed project carried out in collaboration with ETSA. The project demonstrated a new system designed by SEC for combined water heating and milk cooling which reduced energy cost in the Flaxley Agricultural Centre to about a third. The system has potential applications in many other industries.
- Roof-integrated solar space heating system: This project is being carried out in collaboration with the SA Housing Trust and BlueScope Steel. It is being implemented through a current Ph D student and 2 other researchers. After modelling and testing the collector in the laboratory, the collector has been integrated into a roof, which was monitored at the University. The first prototype was installed in a Housing Trust home in 2003 together with a phase change storage system. The second prototype installation is underway.
- Solar liquid desiccant system for dehumidification and cooling: This project is the subject of a completed Ph D project. The results have demonstrated the viability of such a system for humid

regions. A prototype is being developed in collaboration with a visiting Fellow from Kassel University, Germany.

- Cooling of photovoltaic modules (a current project, jointly carried out with Dr. Stewart Martin): The performance of solar modules is lowered at higher temperatures, the project investigates a number of alternatives for reducing the solar cell temperature using ventilation and thermal storage materials.

1.2 Evaluation of Energy Consumption in Housing:

As energy use in housing contributes considerably to greenhouse gas emission, a scoresheet for evaluating and reducing energy use and greenhouse gas emission in housing has been developed. This project has resulted in a simple methodology for evaluating energy consumption and greenhouse gas emission in houses at the design stage. It is being used by two major housing developments at Mawson Lakes and Northgate. The project involves computer modelling, detailed monitoring of 6 homes, monitoring gas and electricity consumption of whole areas, evaluation of residents' views and attitudes to energy and environmental issues, analysis of baseline energy consumption of housing in South Australia and human factors affecting energy consumption and conservation in houses. The project team includes Monica Oliphant, John Boland and Lachlan Mudge. External support is provided by the Australian Greenhouse Office, Energy SA, ETSA Utilities, AGL and Origin Energy. A number of subsequent applications of the methodology are currently under discussion both nationally and internationally.

2. RESEARCH GRANTS:

Starting from a modest base, the total external cash funding received between 1994 and 2004 amounts to over \$1.85 million plus \$424 000 internal support. Below are some of the more significant grants:

- A \$7 000 University of South Australia Research Development grant was awarded in 1994 for the optimisation of thermosiphon heat exchangers for heat recovery/evaporative air conditioning systems.
- Principal supervisor of two Energy Research and Development Corporation Postgraduate Awards of \$130 000 total value awarded to Frank Bruno to carry out research work on a novel driven natural gas micro-compressor and Martin Belusko to develop a roof integrated solar heating and natural cooling system.
- Principal investigator in a \$30 000 Dairy Research and Development Corporation grant awarded to the Energy and Engines Research Group in 1994 and was completed in 1996. The project aim was to determine the comparative performance of different milk cooling systems on a single farm.
- A \$129 500 energy research grant was awarded by the South Australian State Energy Research Advisory Committee (SENRAC) in 1995-1997 for the "Development of a combined two-stage heating /evaporative cooling system". The project aims to produce a prototype energy efficient air conditioning system. It was carried out in collaboration with two local manufacturers with additional contributions in cash and kind amounting to \$18 000 per annum. The project is continuing in 2002-2004 with \$ 30 000 SENRAC funding and industry support.
- A \$107 000 energy research grant was awarded by SENRAC in 1996-1998 for the "Development of a heat pump system for water heating and milk cooling in a farm". The project is being carried out in collaboration with ETSA Corporation and the Flaxley Agricultural Centre with additional contributions in cash and kind amounting to \$14 800 per annum.
- A \$16 000 small ARC grant, \$97 000 SENRAC grant and \$15 000 research development grant with \$5 000 contribution from ETSA Corporation were awarded in 1997- 2000 in support of "Development of phase change storage system for heating and cooling applications".
- A \$43 000 SENRAC grant was awarded in 1998-1999 for the "Development of an inexpensive solar domestic water preheater". The work was carried out with support from Beasley Industries.

- A \$60 000 SENRAC grant was jointly awarded with Dr. Stewart Martin in 1998-2004 for "Reducing the operating temperature of solar modules".
- A \$19 000 small ARC grant was awarded in 2000 for the development of a dehumidification/air conditioning system using liquid desiccants.
- A \$59 000 SENRAC grant was awarded in 2000-2004 for devising a program for evaluating, regulating and monitoring energy consumption in a major housing development.
- A \$58 000 ARC SPIRT grant and a \$70 000 SENRAC grant were awarded for 2000- 2002 for the development of roof integrated heating, cooling and ventilation system. This is being supplemented by \$20 000 cash support from the South Australian Housing Trust.
- A \$131 000 Household Greenhouse Action grant plus \$60 000 from the Mawson Lakes Development were awarded in 2001-2004 for developing a greenhouse gas reduction scoresheet.
- A \$ 86 000 ARC linkage grant was awarded in 2004 for developing a roof heating system integrated phase change storage. Industry cash contribution is \$20 000 from Blue Scope Steel

3. PUBLICATIONS:

My major international publication is co-editing the Proceedings of the 2001 Solar World Congress. My tally of publications is 27 journal articles, mainly in top international journals and some in a local specialised journal, 7 invited papers and 55 papers published in refereed regional and international conference proceedings. The journals and conference proceedings in which my papers have been published cover all regions of the world. The publications are detailed at the appended list.

4. CONFERENCE PARTICIPATION:

Papers presented, sessions chaired in the following regional/international congresses/conferences:

- Australian and New Zealand Solar Energy Society Conference, Fremantle, (1993)
- Fifth Australasian Heat and Mass Transfer Conference, Brisbane (1993)
- World Renewable Energy Congress III, Reading, UK (1994)
- ISES Solar World Congress, Harare, Zimbabwe (1995)
- International Symposium on Energy, Environment & Economics, Melbourne (1995)
- Australian Institute of Refrigeration, Air Conditioning and Heating International Conference, Adelaide, (1996)
- 5th International Heat Pipe Symposium, Melbourne (1996)
- Australian and New Zealand Solar Energy Society Conference, Darwin, (1996)
- Australian and New Zealand Solar Energy Society Conference, Canberra, (1997)
- Australian Institute of Refrigeration, Air Conditioning and Heating International Conference, Sydney, (1998)
- Australian and New Zealand Solar Energy Society Conference, Christchurch, New Zealand (1998)
- World Renewable Energy Congress, Perth (1999)
- ISES Solar World Congress, Israel (1999)
- Australian and New Zealand Solar Energy Society Conference, Geelong, (1999)
- World Renewable Energy Congress VI, UK (2000)
- Regional World Renewable Energy Network Conference, Sharjah, United Arab Emirates (2001)
- ISES Solar World Congress, Adelaide, Australia (2001)
- World Renewable Energy Congress VII, Germany (2002)
- ISES Solar World Congress, Sweden (2003)
- ANZSES Solar Conference, Melbourne (2003)
- First Australasian Symposium on Thermal Energy Storage, Auckland, New Zealand (2003)
- World Renewable Energy Congress VIII, USA (2004)

5. OTHER RESEARCH RELATED ACTIVITIES/ACHIEVEMENTS:

- External and internal examiner for 9 Ph D and 4 Masters theses.
- Invitations to deliver a keynote paper in a regional WREN conference on solar and energy efficient heating and cooling systems in Sharjah, United Arab Emirates in 2001.
- Refereed numerous journal and conference papers and 3 ARC funding applications.
- Membership of 9 international conference committees.

VIII. KNOWLEDGE APPLICATION:

1. APPLICATION OF RESEARCH OUTCOMES:

1.1 Energy Consumption for Buildings:

The scoresheets to evaluate energy consumption and greenhouse gas emission in dwellings is currently in use by the Mawson Lakes and Northgate major housing developments as a means for evaluating and regulating energy consumption. The scoresheet evaluates the house design features, heating, cooling and hot water systems and other components of energy consumption. The implementation of this system also involves a survey questionnaire, educational and monitoring components. The use of the methodology is reducing the primary energy use by 35 to 50% in currently built homes. It is estimated that this will reduce the carbon dioxide emission from South Australian homes by about 10 000 tonnes per year.

1.2 Energy Efficient Heating and Cooling Systems:

The development of a wide range of energy efficient heating and cooling systems has been proposed and developed in collaboration with local industry. The range of activities includes the development of a new thermal storage system, optimisation of components, mathematical modelling and design of new systems, laboratory testing and on site monitoring. Locations of prototype testing include a residential and an office building and a dairy farm. Several of the developed technologies are in the prototyping stage. The prototype heat pump system for milk cooling and water heating has proven its viability through monitoring. The prototype roof-integrated heating/storage system has been installed in a home in 2003.

2. MAJOR CONSULTANCY WORK:

- Testing and optimising thermal properties of a new wall building system.
- Various consultations for companies regarding pumps, bearings/lubricants, thermal insulation, heat exchangers and energy conservation.
- Thermofluid design calculations for the encapsulation of nuclear waste at the Maralinga site for AMEC Mayfield.
- Carrying out a comprehensive energy audit for a minerals processing complex including a village in the Northern Territory.
- Monitoring the thermal and energy performance of a new primary school designed using some environmental sustainability principles and comparison with a conventional school building.
- Monitoring a number of heating systems in Housing Trust homes and providing advice on the most suitable for large-scale installation.
- Contributing to the design of a solar air conditioning system for a building in a remote Australian location.
- Developing a virtual display in the SA Museum which introduces renewable energy and quantifies the reductions of greenhouse gas emissions due to solar, wind and biogas energy systems in the State. The project is being carried out in collaboration with the Capital City Committee and energy SA.

3. KNOWLEDGE APPLICATION AT UniSA:

- Representing the University in some external committees and working groups such as the Environmental Cluster and the Waste Management Committee.
- Working with the Services Unit on an energy audit for the Mawson Lakes and City West Campuses, which resulted in making savings in energy costs and facilitated the University joining the Greenhouse Challenge program.
- Working with the Property Unit and the architects of the Library extension building to integrate a number of environmentally sustainable elements into its construction as a part of Blueprint 2005 projects.
- Collating academic staff responses and offering advice to senior management on the proposal of the National Union of Students to sign the Charter on Environmental Sustainability.
- Offering advice on the process of auditing sustainability activities within the University
- Membership of the steering group set up by the School of International Business to develop courses for professionals in the environment area in collaboration with the Environmental Protection Agency.

4. CONTRIBUTIONS TO LOCAL ORGANISATIONS:

- Organising and participating in a one-day workshop to bring together industry and researchers in waste management and nominating specific projects for research funding. This was done through me representing UniSA in the local Waste Management Committee.
- Founding member of the Renewable Energy Industry Network, a forum for manufacturers involved in solar and wind energy, organised by Business SA and a member of a steering committee of a project to diagnose barriers impeding the growth of this industry in the State.
- Continuous discussions with State Government ministers and public servants through the Premier and Cabinet, Energy, Planning, Transport, Primary Industries and Resources portfolios, on policy issues regarding energy or advice on feasibility of specific issues.
- Giving technical advice to individuals and companies regarding energy initiatives or products.
- Responding to requests from schools and community groups to carry out demonstrations or give talks on sustainable energy or solar cars.
- Placing several students and recent graduates in full time employment in the energy industry.
- Assisting the Investigator Science Centre in developing a number of elements of a sustainability tour which is regularly taken by school students using SEC installations through their Science @ Work program.
- Media interviews on radio, television and in local papers and magazines on energy issues and the achievements of SEC, the South Australian Solar Car Consortium and the Solar Energy Society

5. CONTRIBUTIONS TO THE INTERNATIONAL COMMUNITY:

- Member of ISES Working Group for international and regional conferences.
- Member of the World Renewable Energy Network (WREN) International Steering Committees for the World Renewable Energy Congresses in Reading, UK, 1992, Colorado, USA, 1996, Florence, Italy, 1998, Brighton, UK, 2000, Cologne, Germany, 2002 and Colorado, USA, 2004.
- Chair of the technical program committee for the Solar World Congress held in Adelaide in 2001.
- Delivered invited papers in WREN Congresses in UK in 2000 and Germany in 2002
- Contributed to a pre-congress workshop on solar heating and cooling in Germany in 2002.
- Member of International Steering Committees for WREC regional conferences in Perth, 1999 and Sharjah, 2001.
- Delivered a keynote paper and a half-day workshop on energy efficient air conditioning in a regional WREN conference in the United Arab Emirates in 2001.
- Member of a group of international experts invited to develop plans for a state of the art building for a solar energy centre in Sharjah University, United Arab Emirates.
- Invited to contribute to a conference held in the Emirates to determine strategies for research in the Arab world organised by the Arab Science and Technology Foundation. Presented a review paper on the use of solar energy for power generation and water desalination.
- Delivered talks on research activities at a number of Indian Universities in 2001.
- Hosted researchers from Germany, Korea and Iran.

IX. LEADERSHIP:

1. LEADERSHIP ROLES IN SCHOOL AND DIVISION

- Member of the Divisional Board, its Research Management Committee and Research Degrees Subcommittee.
- Deputising for Dean, Research and Chair, Research Degrees Subcommittee on a number of occasions
- Member of the selection panel for the position of Dean Research in the Division of ITEE
- Member of the ARC Small and ATN grants panel on 3 occasions.
- Program Director for the Associate Diploma in Mechanical Engineering, 1994.
- Chair of the School of Engineering Research Committee, 1998-1999.
- Member of the Faculty of Engineering Research & Research Degrees Committee, 1995-1996, the Faculty of Engineering and the Environment Research Committee, 1996-1999. Member of the Division of ITEE Research Management Committee and its Research Degrees Subcommittee since 2000.
- Involved in School administration including Acting Head of School and signatory for over 26 weeks, member of School Executive since 2000, Chair/member of a range of School committees including, School Advisory Committee, Research Committee since 1995, Marketing Committee.
- Research Degrees Coordinator 1995-2004.
- Acting member of the Early Year Commonality Group and Stream Team leader in the stage 2 submission of the Bachelor of Engineering of Mechanical and Manufacturing Engineering Stream in the restructuring of engineering programs.

2. LEADERSHIP ROLES IN FORMULATING THE UNIVERSITY TEACHING AND RESEARCH STRATEGIES:

- Contributor to the University's exercise in determining its future directions in science and technology, which commenced in 1999. This established the environment as one of the University four pillars and sustainability as a priority area for immediate expansion of teaching and research in the University academic profile.
- Initiator and coordinator of the Mechanical & Manufacturing Engineering Challenge Scheme, which started in 1994. The state wide scheme aims to introduce high achieving high school students to engineering by giving teams of selected students the opportunity to carry out research projects at the University. The scope of the Scheme was widened in 1997 to cover all disciplines in the new School of Engineering.
- Member of the external review of the professional disciplines that underpin environmentally sustainable development in the Division of ITEE.
- Director of the Institute for Sustainable Systems and Technologies Initiative (jointly with Jerzy Filar). The initiative is funded by UniSA through the Enhanced Thematic Priorities scheme and aims to build on current strengths of the Agricultural Machinery Research and Design Centre, Centre for Industrial and Applied Mathematics, Sustainable Energy Centre and Transport Systems Centre to establish a new Research Institute in the Division of Information Technology, Engineering and the Environment

3. ESTABLISHMENT OF THE SUSTAINABLE ENERGY CENTRE:

- Initiator and leader of the Sustainable Energy Research Group, which was established in 1996 as a nucleus for the Sustainable Energy Centre.
- Initiator and founding Director of the Sustainable Energy Centre (SEC) as a University funded research centre. The Centre provides a focus for Energy activities and was recognised as one of the University of South Australia's funded Research Centres in 1999

4. ISES SOLAR WORLD CONGRESS:

My role as one of the main organisers of the 2001 International Solar Energy Society (ISES) Solar World Congress included being involved in the following:

- Completing the bid documents and budget and taking part in a presentation to the ISES board in July 1995.
- Suggesting and inviting potential members of the Congress Organising Committee and other committees.
- Selecting a professional conference organiser and negotiating terms with the selected company.
- Chair of the Technical Program Committee.
- Planning, follow up and decision making on budget, program and accompanying events
- Organising the technical program details including keynote sessions, parallel technical sessions and specialised forum sessions.
- Handling the paper review process. Over 500 abstracts and full papers were received and reviewed.
- Editing the program booklet
- Liaising with ISES Directors and officers, members of the technical program committee, authors and the referees
- Editing and producing the Book of Abstracts
- Co-editing the Congress Proceedings
- Overseeing the Congress financial transactions and final accounts.

5. OTHER LEADERSHIP ROLES:

- Founding Director, Australian Carbon Biosequestration Initiative Ltd.
- Member of international, technical and organising committees for 12 national and international conferences focussing on energy.
- Member of the organising committee for five local and regional conferences and seminars on renewable energy, heating and cooling, energy conservation in buildings, and engineering education.
- Key researcher in the University component of the new bid for the CRC for Sustainable Tourism.
- A founding member of the Renewable Energy Industry Network established by Business SA
- Member of the Steering Committee established for developing environmental education for professionals which was established by the International Business School and the Environmental Protection Agency
- Member of the State Waste Management Committee, which developed and organised a Waste Management Workshop for bringing together industry and researchers.
- Signatory to a letter to the Federal Minister of the Environment lobbying for increased funding on sustainable energy research, along with other leaders of research in this area from 6 other universities
- Speaker in the 2003 University public lecture series “Vision for Environmentally Sustainable Living”
- Invited speaker / lecturer in symposia, seminars / short courses in the following areas:
 - Energy conservation and management
 - Fluid flow in pipes
 - Power plants
 - Modern air-conditioning systems
 - Thermal analysis of buildings
 - Heat transmission through walls and roofs
 - Solar energy and buildings
 - Renewable energy resources
 - Indoor health and comfort
 - Remote area power supply systems
 - Milk cooling technology

6. SOUTH AUSTRALIAN SOLAR CAR CONSORTIUM:

Initiator and Executive Director of the South Australian Solar Car Consortium currently comprising the University of South Australia, Regency Institute of TAFE, Fremont-Elizabeth City High School and Seaton High School. The Consortium was established in March 1997 to enable high school and university students to design and build four state of the art solar cars for participating in the World Solar Challenge. My role as Executive Director has involved:

- Drawing up the Consortium Management Structure including an executive committee, an advisory board and other sub- committees.
- Overseeing the financial management of the Consortium
- Overseeing technical progress through various sub-groups set up for the design and manufacture of specific components and systems
- Overseeing sponsorship and fund raising activities, including contacts with potential and current sponsors.
- Ensuring continuous and effective communication between all members through a public and a technical websites and a newsletter.
- Representing the Consortium in dealing with other organisations and the media.
- Involving the whole of the South Australian community in the project through "adopt a solar cell" campaign and participation in a variety of other community activities.
- Chairing the Consortium Executive Committee meetings.

The Consortium has over a hundred students, staff and other supporters. It has built Ned in 1999 and Kelly in 2001. Both cars have participated in world and local races. Awards include:

- First in the lead acid battery class in the 1999 World Solar Challenge
- Most innovative car in the 2000 SunRace
- Top two seater vehicle in the 2002 SunRace
- Winner of the Chancellor's Community Service award for 2001
- First in the production class and eighth overall in the 2003 World Solar Challenge.

X. PUBLICATIONS

1. BOOKS:

W. Y. Saman and W. W. Charters (Editors). Bringing Solar Down to Earth, Proceedings of The 2001 Solar World Congress, International Solar Energy Society in 4 volumes and on CD, 2003

2. REFEREED JOURNAL ARTICLES:

1. D. Dowson, W.Y. Saman & S. Toyoda. A study of starved elastohydrodynamic line contacts. Proc. Inst. Mech. Engineers, Mechanical Engineering Publications (UK), 1978.
2. N. Motosh & W.Y. Saman. Effect of load variation on film thickness in rigid highly loaded conjunctions. Proc. Inst. Mech. Engineers, Mechanical Engineering publications, 1978.
3. W.Y. Saman & S.K. Adam. Experimental study of thermal performance of direct evaporative air-coolers. Journal of Iraqi Engineers, Volume 25, Number 4, 1980.
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6. TECHNICAL REPORTS:

Author or coauthor of over 100 technical interim and final reports detailing the findings of research projects, collaborative and consultancy work.

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