

Author/s	Date	Year	Institution	Title	Reference type	Details	Location	Publisher	Copy available	name of copy	Abstract
Crayton, A.	23-24 March 2009	2009	CSE	The Film Photovoltaics based on CdTe/CdS Device Structures Deposited by MOCVD	Conference presentation	Selected Speaker at the Taj Hotel, Chennai, India					
Andrew Clayton	23rd - 27th March 2009	2009	CSE	UK-India Young Scientist Networking Conference	Conference	British Council	Chennai / Kolkata, India				
Bogdanovics, A., Bowen, P.J., Syed, N., Kay, P., Crayford, A., Sims, G., Wood, J.	1-8 January 2009	2009	CSE	Burning Velocities of Alternative Gaseous Fuels at Elevated Temperature and Pressure	Conference Paper	Paper AUA-2009-229, 46th Aerospace Sciences Meeting	Orlando, Florida	American Institute of Aeronautics and Astronautics	Y	pubAConc 0109 Burni velocity.pdf	Presentations were made on current different low carbon technologies and collaborations were made / strengthened from face to face discussions. The authors have undertaken to investigate turbulent burning velocities of alternative gaseous fuels at elevated temperature and pressure using the established burner burner method. The experiments were conducted in the industrial scale High Pressure Optical Chamber (HPOC) at Gas Turbine Research Centre (GTRC) at Cranfield University. Five different gaseous fuels: methane, bio-methane, carbon dioxide mixtures and two methane-hydrogen mixtures were tested. Two different temperatures - 473 K and 673 K, and two different pressures - 3 bars and 7 bars, were chosen which will conduct the experiments. Analysis of measurements made using pure methane indicated that the expected burning velocity trends occurred with temperature and pressure. When compared with the correlations proposed by Peters and Zimont et al. the results reported here showed good agreement. However the burning velocities reported by Kobayashi et al. were somewhat higher. Hydrogen enrichment and carbon dioxide dilution of methane, show some expected trends, but others which require further consolidation and study. In particular it is seen that dilution of methane with carbon dioxide reduces the measured burning velocity. Increasing pressure and temperature in this case have contrasting effects with temperature raising the burning velocity and pressure reducing it. Most interesting is a key factor in determining the feasibility of these devices: fuels in modern fuels are energy systems. The paper presents a microwave drying test used to allow the gravimetric analysis of moisture rich solid waste samples which subjected to microwave heating. The test rig was used to examine the drying characteristics of waste samples, such as particle size, material and initial moisture content. A correlation between initial moisture content and drying characteristics was observed, with dryer samples having higher unit energy consumption in terms of MJ/kg of water evaporated, but reaching lower final moisture content. Results of discontinuous drying profiles suggest potential energy savings, but also a complex relationship between the various factors affecting the conversion of microwave energy to heat and drying of the sample.
Marsh, R., Tamas, J., Griffiths, A.J., Williams, K.P.		2008	CSE	Microwave drying of moisture-rich solid wastes	Conference paper	24th International conference on solid waste technology and management.					
O'Doherty, D.M., Mason-Jones, A., O'Doherty, T., Burns, G.B.		2009	CSE	Considerations of Improved Tidal Stream Turbine Performance Using Double Rows of Counter-Rotating Blades	Conference paper	SUBMITTED TO EWTEC 2009					
O'Doherty, T., O'Doherty, D.M., Mason-Jones, A., Burns, G.B., Owen, J., Wans, Y.		2009	CSE	Experimental and Computational Analysis of a Model Horizontal Axis Tidal Turbine	Conference paper	SUBMITTED TO EWTEC 2009					
Marsh, R., Howlett, S., Griffiths, A.J., Williams, K.P.	Mar-09	Mar-09	CSE	Quantification of products from thermal decomposition of solid wastes	Conference paper	24th International conference on solid waste technology and management.					Pyrolysis is a treatment technology used to thermally decompose solid wastes to give solid, liquid and gaseous products that may be further utilised by energy technologies. The paper examines the use of laboratory scale thermal decomposition of types of waste treated with an organic preservative. The wood waste was sourced from recovered telegraph poles, which present a waste problem in a number of countries, since they are classified as hazardous waste due to the preservative. Experimental apparatus involved a nitrogen purged furnace heated to a range of temperatures, connected to a liquid trap. The liquid trap contained an organic solvent and was used to isolate the products of decomposition, giving a balance of solid, liquid and gaseous products.
Marsh, R., Howlett, S., Griffiths, A.J., Williams, K.P.	31-12	31-12	CSE	Advanced Thermal Treatments - A waste managers Guide	Conference paper	22nd International conference on solid waste technology and management.					The expression 'Advanced Thermal Treatment' (ATT) is used to describe thermal processing technologies for wastes that is different from conventional mass burn systems. Some of these technologies use little or no oxygen, resulting in pyrolysis, whereas others use very high process temperatures. A common factor to all of these processes is that they tend to be used with certain and occasional waste management industry. This paper will present a user friendly guide as to the current state of the ATT industry from a UK perspective, showing the principles of operation of these systems and how best they might be employed in future from a waste management scenario. As with any emerging technology, there will be problems, which are discussed along with some potential solutions.
G J Sims, S.I. Mistry, J.P. Wood, P. Bowen, A Crayford		2008	CSE	A Study into the auto-ignition Characteristics of Hydrocarbon Fuels with application to Gas Turbines	Conference paper	Proceedings of ASME Turbo Expo 2008 Power for Land, Sea and Air GT2008	Berlin	ASME	Y		The design of a premix duct is heavily reliant upon knowledge of the auto-ignition delay time for a given fuel-air mixture and operating range. An experimental investigation into the auto-ignition characteristics of alternative gaseous fuels has been carried out and the results compared against those for the conventional fuel. Gaseous fuels derived from sources such as bio-gas and refinery wastes were successfully compared against datum fuels of natural gas and methane - whilst among the liquid fuels - 100% kerosene and grade 2 diesel were tested and compared. The experimental results were obtained using a rig equipped with a generic premix duct and operated at GT relevant conditions. For the gaseous fuels no ignition events were detected within the maximum test section residence time of 130ms. Therefore, a kinetic scheme previously validated at GT relevant conditions was used to evaluate effects of temperature, pressure and equivalence ratios for the gaseous fuels under investigation. In general gaseous fuels showed longer ignition delay times at temperatures < 900K and no differences were found between diesel and kerosene. Therefore, the results under test conditions are useful in the comparison.
Morito, M., Bowen, P.J., Kay, P.J., Crayford, A.P., Gilbert, R., Sappington, S.	8-10 September 2008	2008	CSE	On the quantitative analysis of vapour fuel fractions of spark ignition DI sprays by use of LIF	Conference paper	Proceedings of ILASS 2008 Sep. 8-10, 2008	Osaka, Japan	ILASS Paper ILASS08-A118	Y	pubAConc 0109 Burni velocity.pdf	Laser Induced Exciplex Fluorescence is a diagnostic technique that generally separates fluorescence signals from laser and vapour phases of a spray, providing temporal and spatial resolution of both species simultaneously. The technique is based on the model proposed by Mehta [1] which requires two tracers to act as an electronic donor and acceptor pair forming an Excimer and occasionally a triplet state. The tracers are excited by laser light at a certain wavelength. This reaction is followed by phase and produces a red-shifted fluorescence which allows characterisation of the phase. Measurements of the vapour phase are performed by tracking the fluorescence signal of the monomers. A mixture of methylamine (TEA) and benzene in acetone was chosen as the fuel as it has very similar properties to the mid-boiling point fractions of gasoline and is expected to facilitate its separation efficiently. TEA and benzene form an excimer complex upon excitation of a 345nm exciting the fourth harmonic at wavelength 266nm. Two intensified CCD cameras were used to record the results as fluorescence images. Some preliminary experimental results of a transient spray from a nozzle are shown in comparison with observations of the
Evans, P.S., Mason-Jones, A., O'Doherty, T., O'Doherty, D.M., Woodriddle, C.		2008	CSE	The utilization of ADPC and CFD to investigate the feasibility of siting a tidal stream turbine in the inner Bristol Channel UK	Conference paper	ECSSA Symposium (2008)					
Marsh, R., Casey, V., Griffiths, A.J., Williams, K.P.		2008	CSE	Assessing the feasibility of waste-derived fuels with high moisture contents	Conference paper	23rd International conference on solid waste technology and management.					This paper is concerned with looking at the feasibility of utilising low Calorific Value (CV) solid wastes and process residues as a viable fuel source. Moisture content of waste-based fuels is a key factor in determining net CV, consequently moisture rich materials such as petroleum based refinery wastes have been investigated. This research is based on the study of the best thermal processing routes, given the possible moisture contents of the material. Admixing with waste materials of higher CV was also considered to allow the feedstock could be enhanced to meet the minimum required energy content of a number of industrial processes including cement kiln, incinerator and Advanced Thermal Treatment (ATT) technologies. The energy balance of drying these materials prior to utilisation was considered. Practical aspects including soot reduction and characterisation were evaluated, since these materials are often difficult to process and their atmospheric release.
Marsh, R., Steer, J., Griffiths, A.J., Williams, K.P.		2008	CSE	Biogas potential and digestion rates of food wastes in anaerobic digestion systems	Conference paper	23rd International conference on solid waste technology and management.					Anerobic digestion is a waste treatment technology that is used to process wastewater sludges and organic wastes for almost 150 years. This technology, although well understood for slurry-like materials is increasing in application for high-solids content food wastes such as kitchen and catering residues. Particular areas of interest include the optimisation of biogas production and the digestion rates of different waste materials, depending on the availability of the organic carbon. In this study a number of food wastes were digested in a continuous operation laboratory experiment and the relative performance of each material examined. Gas production rates and gas compositions were monitored and logged, which were in turn used to calculate biogas potential, performance and suitability of each material in anaerobic digestion systems.
Mason-Jones, A., Evans, P.S., O'Doherty, T., O'Doherty, D.M., Woodriddle, C., Forster, J., Marsh, R.		2008	CSE	Characterisation of a Tidal Stream Turbine Design using CFD and ADPC. World Renewable Energy Conference	Conference paper	Submitted to Proc. Instn of Civil Engineers, Energy	Glasgow				
O'Doherty, T., Mason-Jones, A., O'Doherty, D.M., Burns, G.B., Woodriddle, C., Forster, J., Marsh, R.		2008	CSE	An Assessment of Horizontal Axis Tidal Turbines Sited off the Welsh Coast using ADPC and CFD Analysis	Conference paper	Presented at The British Institute of Oceanography on renewable energies for sustainable living, Sao Paulo.					
Marsh, R.		2008	CSE	Energy from Waste Research at Cardiff University - School of Engineering	Conference paper						
Woodcock, M. Wood, J.P., Miller, N.M., Sims, G.J., Liu, K., Syed, K., Bowen, P., Crayford, A., Savenco, V.	9-13 June 2008	2008	CSE	Detailed internal measurements of a Siemens combustor operating at gas turbine relevant conditions	Conference paper	Proceedings of ASME Turbo Expo 2008 Power for Land, Sea and Air GT2008	Berlin, Germany	ASME	Y	pubAConc 0109 Burni velocity.pdf	The design of a premix duct is heavily reliant upon knowledge of the auto-ignition delay time for a given fuel-air mixture and operating range. An experimental investigation into the auto-ignition characteristics of alternative gaseous fuels and liquid fuels has been carried out and the results compared against those for the conventional fuel. Gaseous fuels derived from sources such as bio-gas and refinery wastes were successfully compared against datum fuels of natural gas and methane - whilst among the liquid fuels - 100% kerosene and grade 2 diesel were tested and compared. The experimental results were obtained using a rig equipped with a generic premix duct and operated at GT relevant conditions. For the gaseous fuels no ignition events were detected within the maximum test section residence time of 130ms. Therefore, a kinetic scheme previously validated at GT relevant conditions was used to evaluate effects of temperature, pressure and equivalence ratios for the gaseous fuels under investigation. In general gaseous fuels were found to have long auto-ignition delay times at temperatures < 900K and no differences were found between diesel and kerosene. Therefore, the results under test conditions are useful in the comparison and design of the combustor, and are therefore ideally suited to the validation of CFD.
Sims, G.J., Mistry, S.I., Wood, J.P., Bowen, P., Crayford, A.	9-13 June 2008	2008	CSE	A Study into the auto-ignition characteristics of hydrocarbon fuels with application to gas turbines	Conference paper	Proceedings of ASME Turbo Expo 2008 Power for Land, Sea and Air GT2008 June 9-13, 2008, Berlin, Germany	Berlin, Germany	ASME	Y	pubAConc 0109 Burni velocity.pdf	The design of a premix duct is heavily reliant upon knowledge of the auto-ignition delay time for a given fuel-air mixture and operating range. An experimental investigation into the auto-ignition characteristics of alternative gaseous fuels and liquid fuels has been carried out and the results compared against those for the conventional fuel. Gaseous fuels derived from sources such as bio-gas and refinery wastes were successfully compared against datum fuels of natural gas and methane - whilst among the liquid fuels - 100% kerosene and grade 2 diesel were tested and compared. The experimental results were obtained using a rig equipped with a generic premix duct and operated at GT relevant conditions. For the gaseous fuels no ignition events were detected within the maximum test section residence time of 130ms. Therefore, a kinetic scheme previously validated at GT relevant conditions was used to evaluate effects of temperature, pressure and equivalence ratios for the gaseous fuels under investigation. In general gaseous fuels were found to have long auto-ignition delay times at temperatures < 900K and no differences were found between diesel and kerosene. Therefore, the results under test conditions are useful in the comparison and design of the combustor, and are therefore ideally suited to the validation of CFD.
D. Lamb, E. W. Jones, V. Barrioz and S. J. C. Irvine		2009	CSE	Ultra-thin Cadmium Telluride Photovoltaics with a Cadmium Oxide TCO	Conference paper	Ultra-thin Cadmium Telluride Photovoltaics with a Cadmium Oxide TCO, D. Lamb, E. W. Jones, V. Barrioz and S. J. C. Irvine, Proceedings of the 5th PV SAT conference, 1-3 April 2009, Wrexham, UK, 136-137.					An unpassivated cadmium telluride (CdTe) solar cell has been fabricated using MOCVD. The 240 nm thick CdTe was grown on a 200 nm thick CdTe substrate with a 79% and an optical bandgap of 2.7 eV. The sheet resistance measured was 15 Ω/sq. The performance of the CdTe was compared with commercially supplied FTO by incorporation into a CdTe/CdS device. The CdTe absorber thickness was 800 nm yielding a conversion efficiency of 6.7 % for the FTO contacting device and 7.0 % for the CdTe/CdS device.
Irvine, S.J.C.	10th February 2009	2009	CSE	Assessing the Welsh Market and Company Base for Establishing a Technology Centre for Solar Energy	Conference paper	Technum Q&TE, St. Asaph, Wales					
Barrioz, V., Lamb, D.A., Jones, E.W., Proskuryakov, Y.Y., Irvine, S.J.C., Durose, K.	1st - 5th September 2008	2008	CSE	Atmospheric-pressure MOCVD dry process for CdTe PV devices and its production scalability	Conference Paper	Proceedings of the 23rd European Photovoltaic Solar Energy Conference, pp.2185-2188.	Valencia, Spain				Although the photovoltaic market is currently dominated by crystalline silicon, recent intensive international research has been focusing on the development of amorphous and polycrystalline thin film solar cells, based on a-Si, CdTe and CIGS, offering more scope for production cost reduction. The potential for PV solar modules has been growing by more than 30 %/yr and this trend is set to continue for the foreseeable future. Despite challenges faced using metallic chemical vapour deposition (MOCVD) for the growth of CdTe on polycrystalline or amorphous substrates, consistent cell efficiencies over 10 % (AM1.5) for contact areas of 25 cm ² using thin film CdTe has been achieved. Generally, CdTe is deposited both commercially and in laboratories using physical evaporation techniques such as close space sublimation (CSS) or other elemental vapour transport. While these processes have fast throughput they lack flexibility in control of dopants when compared to MOCVD. This paper describes recent results using a research scale horizontal MOCVD reactor for depositing the photovoltaic structure in a single run from Cd ₂ Zn ₃ deposition through to the cadmium chloride (CdCl ₂) treatment achieving reproducible and uniform device performance across 400 cm ² areas. This potential for production scalability of such an atmospheric-pressure and dry MOCVD process.
Lamb, D., Irvine, S.J.C., Jones, D.P.	21-26 September 2008	2008	CSE	Infrared transmission in cadmium oxide and potential use in next generation thin film PV	Conference paper	2nd International Symposium on Transparent Conducting Oxides (STCO 2) in Crete					
Lamb, D.	1-6 Sept 2008	2008	CSE	Atmospheric pressure MOCVD Dry Process for CdTe PV Devices and its Production Scalability	Conference presentation	23rd EU PVSEC, Valencia, Spain					
Irvine, S.J.C., Barrioz, V., Rowlands, R.L., Jones, E.W., Lamb, D.A., Durose, K., Proskuryakov, Y.Y.	1-6 June 2008	2008	CSE	Recent developments in the MOCVD of thin film CdTe solar cells	Conference presentation	International Conference on MOVPE (ICMOVPE 14) in Metz, France (evompee XII, 223-226)					
Barrioz, V.	10-13 November 2008	2008	CSE	MOCVD of InV compounds for thin film PV. International Workshop on Advanced Nanotechnology Materials and Thin Films for Industrial Applications	Conference presentation	Nanoproducts & Applications 2008 Held in Nottingham, UK					
Ashmeel, G.		2009	SoC	Molecular diodes and functional molecular wires	Conference Paper	International Conference on Materials and Advanced Technologies 2009					Interest in molecular scale electronics focuses upon non-invasive electrical contacting to molecules and ultra-thin films as well as self-assembling components that act as molecular wires and molecular diodes (rectifiers), the latter being organic counterparts of the junctions. In this paper, diodes and rectifiers are linked as a bridge or, alternatively, as a bridge whereby induced non-planarity breaks the conjugation and safeguards the integrity of the electroactive moieties. Methods of contacting molecules and self-assembled monolayers will be discussed. They include (a) magnetically induced contact to fragile films by using gold wires attached to a ferromagnetic cantilever and (b) deposition across predefined nano-sized electrode gaps in which the top and bottom gold contacts are separated by an insulating SiO ₂ /Si ₃ N ₄ core and a single ring "molecular necklaces" is self-assembled around its circumference. The presentation will also focus on the design of molecular diodes and increases in the current rectification ratio from 5 at 1V to 1100 at more than 100 at 1V today. It will report the step-by-step synthesis of molecular wires on gold-coated electrodes by sequencing chemical building blocks to readily reach complex molecular structures. Rectification occurs when one end of the wire is electron-donating and the other is electron-accepting and, in each case, electron flow at forward bias is from cathode to anode and from donor to anode on the opposite side.
Ashmeel, G.J., Jarzabek, R., Chung, S.C., James, B.W., et al	15-18 April 2008	2008	SoC	Response of the transmission spectrum of tapered optical fibres to the deposition of a nanostructured coating - art. No. 70456L	Proceeding Paper	Source: 19TH INTERNATIONAL CONFERENCE ON OPTICAL FIBRE SENSORS, FTS 1 AND 2, Date: April 15-18 2008, Perth, Australia	Perth, Australia	SPIE-INT SOC Optical Engineering			Nanostructured coatings have been deposited onto tapered optical fibres using the Langmuir-Blodgett technique. The response of the transmission spectrum of the tapered fibres to changes in thickness of the coating has been analysed. The effects observed are shown to be dependent on the diameter of the tapered region.
Ashmeel, J.A.		2008	SoC	Response of the transmission spectrum of tapered optical fibres to the deposition of a nanostructured coating	Proceeding Paper	Source: 19TH INTERNATIONAL CONFERENCE ON OPTICAL FIBRE SENSORS, FTS 1 AND 2 Book Series: PROCEEDINGS OF THE SOCIETY OF PHOTO-OPTICAL INSTRUMENTATION ENGINEERS (SPIE) Volume: 7004 Pages: 145-146 Part Part 1 of 2 Published: 2008		SPIE-INT SOC OPTICAL ENGINEERING			Nanostructured coatings have been deposited onto tapered optical fibres using the Langmuir-Blodgett technique. The response of the transmission spectrum of the tapered fibres to changes in thickness of the coating has been analysed. The effects observed are shown to be dependent on the diameter of the tapered region.
Croft, N., Williams, A., Cross, M.		SoE	Computational Modelling of a tidal stream turbine	Conference paper	Proceedings of the 8th World Congress on Computational Mechanics (WCCOM) and the 8th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS2008)						
Igc, P., Jankovic, N.	Sep-08	2008	SoE	New High-Voltage Partial SOI for Smart Power Applications	Conference paper	In Proc. Of International ISPS Conference, pp.255-259	Prague, Czech Republic				
Jankovic, N., Igc, P.	Sep-08	2008	SoE	SPICE Modeling of PTI/TBT Thermal Behaviour	Conference paper	In Proc. Of International ISPS Conference, pp.273-277	Prague, Czech Republic				
Croft, N., Williams, A.J., Mubarek, M., Cross, M.		2008	SoE	Computational Fluid Mechanics Modelling of Environmental Issues Related to the Installation of Tidal Stream Turbines	Conference paper	Proc. ECSS Symposium, Cardiff (2008)					
Holland, P.M., Zhou, Z., Igc, P.	May-08	2008	SoE	A Study of Latch-up Robustness for a new Buffer CMOS based Power IC Technology Architecture	Conference paper	The 20th IEEE International conference on Micro-Electronics, May, 2008, Nis, Serbia	Serbia	IEEE			A study of the latch-up robustness for a new Power IC Technology involving Si substrates / silicon modifications is presented in this paper. The results show confirm that for well CMOS technologies, changes in the substrate / epitaxial layer CMOS are a satisfactory way of improving Power IC Process capabilities without compromising the CMOS performance. Both simulation and experimental results are presented.
Lodzinski, M., Jankovic, N., Gay, O.J., Holland, P.M., Igc, P.	Sep-08	2008	SoE	A Novel n-Si/n-SiC Hetero-Junction Power Diode	Conference paper	In Proc. Of International ISPS Conference, pp.169-172	Prague, Czech Republic				
Lodzinski, M., Perez-Tomas, A., Gay, O.J., Penny, M., Bennett, S., W-Hartony, G.A., Durston, P., Wiles, S., Igc, P.	May-08	2008	SoE	Characterisation of MOS Interfaces on Protected and Unprotected n-SiC Surfaces	Conference paper	International MEE, 2008 Conference	Serbia				

Wang, C., Zhou, Z., Linworth, P., Igc, P.	Nov-08	2008	SoE	Current Space Vector Amplitude Fluctuation based Sensorless Speed Measurement of Induction Machines Using Short Time Fourier Transformation	Conference	The 34th Annual Conference of the IEEE Industrial Electronics Society	IEEE	Orlando, Florida, USA	A novel method of obtaining sensorless speed information of induction motors, derived from current space vector amplitude fluctuation (SVAF), is presented in this paper. The space vector amplitude fluctuation associated with the eccentricity harmonics is first demodulated using Park transformation in space vector plane. Short Time Fourier Transformation (STFT) is then carried out to estimate the speed of an induction machine running under transient conditions phase such as motor starting. The method has been tested and verified on an ABB 2 pole induction machine in laboratory, excellent agreement has been achieved between the estimated speed using the proposed scheme and the measured speed using an actual speed sensor. The advantage of the proposed method is that it is more effective to estimate the motor speed running with high acceleration rate during motor starting.	
Wills, M.R., Masters, I.		2008	SoE	Site Selection Protocols for Tidal Stream Turbine Deployment in the Bristol Channel - A Case Study	Conference paper	Proc. ECSA Symposium	Cardiff			
Zhou, Z., Holand, P.M., Igc, P.	June	2008	SoE	Wave Energy Power Take-off System Control and Simulation	Conference	The IASTED Eighth International Conference on Power and Energy Systems, IASTED EuropES' 08, Corfu, Greece, June, 2008.	Corfu, Greece	ACTA press	A wave energy power take off system control and simulation scheme is presented in this paper. The characteristics of low pressure hydro turbine are described. To achieve maximum efficiency, a variable speed control scheme using IGBT AC/DC converter for low-head hydro-turbine is described. The electrical system configuration, operation and grid connection issues are also discussed. Simulation model to investigate long electro-mechanical process is developed for simulating the generator turbine starting-stop process. Effects of the water head on the torque, speed and output power are simulated. Simulation results are presented and discussed.	
Zhou, Z., Holand, P.M., Igc, P.	May	2008	SoE	Compact thermal model of a three phase inverter power module	Conference	The 26th IEEE International conference on Micro-Electronics, May 2008, Nis, Serbia	Serbia	IEEE	N	A compact thermal model of a three-phase IGBT inverter power module utilized in most of variable speed drivers has been described in this paper. The compact thermal model equals to an electrical RC network model is assembled from thermal resistances and thermal capacitances so that it can be easily implemented in a circuit simulator. Transient thermal 3D finite element (FE) model of the IGBT module has been carried out using commercially available FLOTHERM software; the 3D simulation results are then utilized to extract the compact thermal network parameters of the IGBT power module. Good agreement has been achieved between simulation and experimental measurements.
Zhou, Z., Igc, P.	June	2008	SoE	Robust Design of Power System Stabilizers using Constrained optimal algorithm for Multi-machine Power Systems	Conference	The IASTED Eighth International Conference on Power and Energy Systems, IASTED EuropES' 08, Corfu, Greece, June, 2008.	Corfu, Greece	ACTA press	A new robust design of power system stabilizer (PSS) using optimal algorithm for multi-machine power systems is presented in this paper. Based on the structure of widely applied conventional power system stabilizer (CPSS), the design process is divided into two stages. In the first stage, the CPSS time constants are determined using the well-established physical concept based method; then in the second stage, the gains of the CPSS are determined by solving a special form of robust pole assignment problem implemented using constrained optimal algorithm. The robustness of the CPSSs designed in this paper has been evaluated using a four-machine power system model and simulation results show good robustness has been achieved using the proposed approach.	
Zhou, Z., Masters, I., Igc, P.		2008	SoE	Permanent Magnet Generator Control and Electrical System Configuration for Wave Dragon MW Wave Energy Take-off System	Conference Paper	Proceeding of ISE'08, 2008 IEEE International Symposium on Industrial Electronics, 2008, Cambridge, UK	Cambridge, UK	IEEE	A permanent magnet generator (PM) control scheme and electrical system configuration for Wave Dragon MW wave energy power take off system is presented in this paper. The characteristics of low pressure hydro turbine are introduced first. To achieve the maximum energy conversion efficiency, a variable speed control scheme of low-head hydro-turbine using IGBT AC/DC converter is described. The electrical system configuration, operation and grid connection issues are also discussed. Voltage source PWM inverters are employed to control the output power to utility grid. Simulation model has been built, and the control of tracking maximum turbine efficiency is simulated.	
Zhou, Z., Knapp, W., MacEnri, J., Sorenson, H.Ch., Ellis Macken, E., Masters, I., Igc, P., Stevenson, V.		2008	SoE	Permanent Magnet Generator Control and Electrical System Configuration for Wave Dragon MW Wave Energy Take-off System	Conference paper	Proc. 2008 IEEE International Symposium on Industrial Electronics	Cambridge			
Jones, P., Srinivasan, S.		2008	WSA	Green Leases: An opportunity to develop a sustainable approach for tenanted commercial buildings in the UK	Conference paper	International Conference on Improving Energy Efficiency in Commercial Buildings, Frankfurt		n		
Jones, P., Srinivasan, S.	39479	2008	WSA	Sick Building Syndrome Studies in Hong Kong Offices	Conference paper	UK-India-Sri Lanka Young Scientists Networking Conference - Towards sustainable energy technologies and low carbon buildings for climate change mitigation	New Delhi, India			
Jones, P.		2008	WSA	Use of Traditional Passive Strategies to reduce the Energy use and Carbon Emissions in Modern Dwellings	Conference Contribution	PLEA 2008 - 23th Conference on Passive and Low Energy Architecture, 1-3/3				
Knight, I.		2008	WSA	17th Plant Canopy Design in Modifying Urban Thermal Environment: Theory and Guidelines	Conference	Proceedings of PLEA 2008 - 25th Conference on Passive and Low Energy Architecture, Dublin, Ireland, October 2008				
Knight, I.		2008	WSA	Effect of Internal Gains on Thermal Comfort in Welsh Dwellings	Conference	Proceedings of Eurostat 2008, 1st International Conference on Solar Heating, Cooling and Buildings, Lisbon, Portugal, October 2008				
Knight, I.		2008	WSA	The potential for solar thermal heating and cooling systems to reduce the carbon emissions of domestic properties in a northern European country	Conference	International Conference on Improving Energy Efficiency in Commercial Buildings	Frankfurt			
Larghey, A., Hopkinson, L., Stevenson, V.		2008	WSA	Green Leases: An opportunity to develop a sustainable approach for tenanted commercial buildings in the UK	Conference paper	International Conference on Improving Energy Efficiency in Commercial Buildings	Frankfurt			