

Authors	Date	Year	Institution	Title	Reference type	Details	Location	publisher	Copy available (y/n)	name of copy	Abstract
G. Ramtharan, Anilampalam, A., Ekanayake, J.B.	Dec-09	2009	CSE	Fault ride through of fully rated converter wind turbines with AC and DC transmission systems	Conference Paper		IET	IET	Y		
Ternakoon, A., Anilampalam, A., Leile, H., Ekanayake, J., Abevrana, S.	Oct-09	2009	CSE	Operations of DFIG with simplified rotor current reference model and solution to the recent grid code requirements	Conference Paper		IEEE	IEEE	Y		
Liang, J., Gomez-Belmat, O., Ekanayake, J., Jenkins, N.	Sep-09	2009	CSE	Control of multi-terminal VSC-HVDC transmission for offshore wind power	Conference Paper		EPE2009	EPE2009	Y		
Iain, M., Ekanayake, J.B.	Sep-09	2009	CSE	Frequency Response from Wind Turbines", The 44th International Universities	Conference Paper		UPEC2009	UPEC2009	Y		
Samarakoon, K., Ekanayake, J.B.	Sep-09	2009	CSE	Demand Side Primary Frequency Response Support through Smart Meter Control	Conference Paper		UPEC2009	UPEC2009	Y		
Zhou, S., Liang, J., Ekanayake, J.B., Jenkins, N.	Sep-09	2009	CSE	Control of multi-terminal VSC-HVDC transmission system for offshore wind power generation	Conference Paper		UPEC2009	UPEC2009	Y		
J. Moore, I., Ekanayake J. B., Jenkins, N.	Apr-09	2009	CSE	Control and Dynamics of Wind Turbine Generators for Existing and Future Grid Code Compliance	Conference Paper				Y		
Bowen, P.J., Syied, N., Roberts P.A., Marsh R., Griffin A.J., O'Doherty T., Crayford A.P., Kay P.J., Morris S.M.	8-10 June 2009	2009	CSE	GTRC, First Year Contribution to Progress in Combustion and Energy Systems	Conference paper	16th Members Conference, 8-10 June 2009, Bolton, USA.					
Ekanayake, J	28 Dec 09	2009	CSE	High Voltage DC transmission	Conference Paper	Forth International IEEE conference on Industrial and Information Systems	Sri Lanka				
A. Crayford, P. Kay, P. Bowen & H. Laget	1 Jan 10	2010	CSE	Comparison of Gas-Oil and Bio-Oil Spray Performance For Use in a Gas Turbine	Conference	Proceedings of ASME Turbo Expo 2010: Power for Land, Sea and Air GT2010	Glasgow, Scotland	ASME	y	This study forms part of an ongoing program to investigate the feasibility of substituting a bio-oil for gas-oil in gas turbine applications. In this paper, the influence of the change of fluid properties on spray characteristics is presented and analyzed. It was not feasible to characterize the spray at full-scale operating	
Y. Sevencio, P. Bowen, A. Crayford, R. Marsh, M. Johnson, M. Miller		2010	CSE	Evaluation Of A Particulate Sampling Methodology From A Gas Turbine Exhaust Using Real-Time Size And Number Analysis At Simulated Aircraft Conditions	conference	Proceedings of ASME Turbo Expo 2010: Power for Land, Sea and Air GT2010	Glasgow, Scotland	ASME	y	Two differential mobility spectrometers (DMS 500) were used to measure particulate size distribution and particulate matter losses in the exhaust of a simulated gas turbine combustor test rig. The rig is a stable gas turbine combustor simulator providing particles of physicochemical properties analogous	
A. Bagdanavicius, N. Shah, N. Syied, A. Crayford, P. J. Bowen		2010	CSE	Investigations Of Gaseous Alternative Fuels At Atmospheric And Elevated Temperature And Pressure Conditions	conference	Proceedings of ASME Turbo Expo 2010: Power for Land, Sea and Air GT2010	Glasgow, Scotland	ASME	y	Increasing interest in alternative fuels for gas turbines stimulates research in gaseous fuels other than natural gas. Various gas mixtures, based on methane as the main component, are considered as possible fuels in the future. In particular, methane enrichment with hydrogen or dilution	
	Dec-09	2009	CSE	Multi-terminal DC converters for connecting Induction Generator based Distribution Generation	Conference Paper			IEEE	y		
K. Samarakoon, J. Ekanayake	Dec-09	2009	CSE	Survey of frequency control methods and demand side contribution in Sri Lanka and in the UK	Conference Paper			IEEE	y		
Barroz, V., Lamb, D., Jones, E., Irvine, S.J.C.,	May-09	2009	CSE	Suitability of Atmospheric-pressure MOCVD C&Te Solar Cells for Inline Production Scale.	Conference paper	2009 MRS Spring Meeting; Mat. Res. Soc. Symp. Proc. Vol 1165, M07-03		Materials Research Society			C&Te, with a direct band gap of 1.45 eV is well suited to the terrestrial AM1.5 solar irradiance and currently makes up half of the thin film (TF) photovoltaic (PV) market. There are 4 main factors that determine final cost of PV modules: the conversion efficiency, materials amount per unit area of module, production yield, and the economy of scale. It is therefore valuable to investigate alternative and/or innovative deposition techniques and processes which have the potential to impact on these factors. Metal organic chemical vapour deposition (MOCVD) is a powerful technique offering increased process repeatability, achieving a high level of control of materials characteristics. Recent improvements in C&Te devices using atmospheric-pressure (AP) MOCVD have led to efficiencies of 13.3 % using 2 µm absorber layers and 11 % with a 1 µm absorber layer [1, 12]. These results were achieved by extending the optical band gap of the window layer, using a ternary alloy (Cd0.92In0.15), with intentional p-type doping of the C&Te layers with As, and the use of an in situ (dry) deposited C&O2 layer and anneal. All layers, except the front and back contact, are grown by a sequential MOCVD process. Furthermore this is a dry process without the need for any etch treatment. The inherent design of the horizontal MOCVD laboratory chambers do not lend
Clayton, A.J., Irvine, S.J., Barroz, V.	1st - 3rd April 2009	2009	CSE	Stoichiometry of Pyrite (FeS <sub>2</sub> ) by MOCVD using an atmospheric horizontal quartz tube reactor	Conference Paper	Stoichiometry of Pyrite (FeS <sub>2</sub> ) by MOCVD using an atmospheric horizontal quartz tube reactor. Proceedings of the 5th PV SAT conference, Wrexham, UK, 5 - 8.					Pyrite (FeS <sub>2</sub> ) was deposited at atmospheric pressure by metal organic chemical vapour deposition MOCVD in a horizontal quartz tube reactor on to glass substrates. The aim was to optimise conditions for obtaining single phase FeS <sub>2</sub> and avoiding any mixed pyrrhotite (Fe <sub>1-x</sub> S) phases which would lead to loss of the absorption characteristics. The growth temperature used for experiments was kept above 450 °C to favour single phase pyrite deposition. Wall deposits with a metallic appearance were observed at the entrance of the heated zone which was expected to be iron due to its low temperature thermal decomposition. Film growth on the substrates was only observed when they were placed at the entrance of the heated zone. No film was deposited on the central substrate underneath the optical port which allowed access of the incident laser used to monitor growth at the substrate.
Irvine, S.J.C.	1-3 April 2009	2009	CSE	5 <sup>th</sup> Photovoltaic Science, Applications and Technology Conference C90 (PV/SAT-5)	Conference Hosting	Glyndwr University, Wrexham, 2008/2009.					

Turkستاني, M.A., Durbise, K., Walek, B., Lane, D., Irvine, S., Baroz, V.,	Apr-09	2009	CSER	A Rapid Screening Method for Investigating the Effect of Processing Parameters on CdTe/CdS Solar Cell Performance.	Conference Paper	2009 MRS Spring Meeting: Mat. Res. Soc. Symp. Proc. Vol 1165, M05-17		Materials Research Society			A rapid screening method is reported in which material processing parameters are investigated as a function of the CdTe absorber thickness in CdTe/CdS solar cells. It has been used to investigate i) the optimum absorber thickness for CdTe/CdS processing at 380°C for 10 mins, and ii) the effect on device performance of post-growth annealing of CdS layer with H <sub>2</sub> , N <sub>2</sub> , and O <sub>2</sub> . It was found that the optimum thickness of CdTe compatible with the processing was ~3µm. The device results were independent of the post-growth treatment of the CdS for the conditions investigated here. The bevel method allowed for ~30 data points to be obtained from each sample, this giving a significant advantage over conventional experimental methods.
D Lamb, A Clayton, V Baroz, G Lautenbach, L Jones, S Irvine	1 – 3 April 2009	2009	CSER	PVSAT 5	Conference			Glyndwr University			Invited talks were given on a range of topics from the proposed feed-in tariff in the UK by Philip Wolfe of the Renewable Energy Association to the potential for much higher efficiency conversion than currently attainable by Martin Green of the University of New South Wales. Both talks highlighted the opportunity for PV solar energy as it enters very large scale production. Greater stimulus to the UK market can only help the emerging UK PV industry. A stimulating presentation was given from the home team by Graham Sparye-Taylor on the solar car challenge. Such is the diversity of this conference covering aspects of fundamental materials research through to the challenges of applying PV technology.
V. Baroz, W. S. M. Brooks, S.J.C. Irvine, D. A. Lamb, A.J. Clayton and E.W. Ross	Mar-10	2010	CSER	The Benefit of CdTe Platform Devices by MOCVD for Systematic Improvements in PV Performance	Conference	Conference Proceedings C91: PVSAT 6		University of Southampton	The Solar Energy Society	y	
A.J. Clayton, S.J.C. Irvine, V. Baroz, G. Zoppi, I. Forbes, W.S.M Brooks	Mar-10	2010	CSER	A feasibility study towards ultra - thin PV Solar cell devices by MOCVD based on p-n structure incorporating pyrite	Conference	Conference Proceedings C91 for PVSAT 6		University of Southampton	The Solar Energy Society	y	
L. Danos, N. Soleimani, F.T. Martins, T. Markvart, A. Clayton, W.S.M. Brooks, V. Baroz, S.J.C. Irvine	Mar-10	2010	CSER	Increased efficiencies on CdTe solar cells via luminescence down-shifting with efficient excitation energy transfer between dyes	Conference	Conference Proceedings C91		University of Southampton	The Solar Energy Society	y	
A.J. Clayton, S.J.C. Irvine, V. Baroz, W.S.M. Brooks, G. Zoppi, I. Forbes, K.D. Rogers, D.W. Lane, K. Hatahara, S. Braccio	Submitted	2010	CSER	MOCVD of ultra-thin PV solar cell devices using a pyrite based p-n structure	Conference	to be published		Strasbourg	Thin Solid Films	n	
V. Baroz, A. Clayton, W.S.M. Brooks, X. Yang, S.J.C. Irvine, S. Rugen-Harkey	2010	2010	CSER	CdTe devices by AP-MOCVD: evolution from horizontal to inline reactors	Conference	Conference Proceedings		Valencia		y	
S.J.C. Irvine, D.A. Lamb, V. Baroz, A.J. Clayton, W.S.M. Brooks, S. Rugen-Harkey, G. Katsouli	Submitted	2010	CSER	The role of TCOs in MOCVD CdTe / CdS PV Solar Cells	Refereed Paper				Thin Solid Films		
D.A. Lamb, S.J.C. Irvine	Submitted	2010	CSER	Physical properties of thin film cadmium oxide deposited by MOCVD	Refereed Paper				Thin Solid Films		
A.J. Clayton, S.J.C. Irvine	Under review	2010	CSER	Interpretation of absolute laser reflectance during optical monitoring of polycrystalline GaAs deposition on quartz using MOCVD	Refereed Paper				Journal of Electronic Materials		
A.J. Clayton, S.J.C. Irvine	2010	2010	CSER	Interpretation of absolute laser reflectance during optical monitoring of polycrystalline GaAs deposition on quartz using MOCVD	Refereed Paper				Journal of Instrumentation		
V. Baroz, A. Clayton, W.S.M. Brooks, X. Yang, S.J.C. Irvine, S. Rugen-Harkey	2010	2010	CSER	CdTe devices by AP-MOCVD: evolution from horizontal to inline reactors	conference	Conference Proceedings		Valencia		y	
S.J.C. Irvine, D.A. Lamb, V. Baroz, A.J. Clayton, W.S.M. Brooks, S. Rugen-Harkey, G. Katsouli	Submitted	2010	CSER	The role of TCOs in MOCVD CdTe / CdS PV Solar Cells	Refereed Paper				Thin Solid Films		
D.A. Lamb, S.J.C. Irvine	Submitted	2010	CSER	Physical properties of thin film cadmium oxide deposited by MOCVD	Refereed Paper				Thin Solid Films		
A.J. Clayton, S.J.C. Irvine	Under review	2010	CSER	Interpretation of absolute laser reflectance during optical monitoring of polycrystalline GaAs deposition on quartz using MOCVD	Refereed Paper				Journal of Electronic Materials		
A.J. Clayton, S.J.C. Irvine	2010	2010	CSER	Interpretation of absolute laser reflectance during optical monitoring of polycrystalline GaAs deposition on quartz using MOCVD	Refereed Paper				Journal of Instrumentation		
Robinson, B.	Jul-09	2009	SoC	Growth of Functional Molecular Wires on Solid Supports - Aled Williams and Susan Barnes	Conference paper	International Conference on Materials and Advanced Technologies 2009					This presentation will focus on development of an in-situ step-by-step method of synthesising complex molecular wires on solid supports (e.g. gold and silicon electrodes) and which may be used to bridge nano-sized electrode gaps. The technique involves the self-assembly of suitable molecules to provide reactive groups (e.g. CHO) at the surface of a monolayer and is followed by sequencing chemical building blocks with complementary ends (first NH2 and then CHO) to extend the wires via mini linkages between component parts. The sequence as well as the length is user-defined and our work has focused to date upon conjugated molecular wires that range from 2 nm to in excess of 10 nm.
Robinson, B.	Jul-09	2009	SoC	Organic Rectifying Junctions	Conference Paper	International Conference on Materials and Advanced Technologies 2009					Functionality may be induced by ordering the sequence. For example, rectification occurs when the wire is electron-donating at one end and electron-accepting at the other and, in every case, the forward bias direction of electron flow is from the cathode to anode on one side and from the donor to anode on the opposite side. This dependence of the current-voltage characteristics on the donor-acceptor sequence confirms that the behaviour is induced by the molecule and we also note that the bias for rectification may be reversed by altering the molecular sequence and the electrical asymmetry is suppressed by molecules in which the sequence is symmetrical.
Bagdanavicius A., Bowen P., Syred N., Kay P., Crawford A., Wood J.	2009	2009	SoC	Burning Velocities of Alternative Gaseous Fuels at Elevated Temperature and Pressure	Conference Paper	47th AIAA Aerospace Sciences Meeting, ref. AIAA-2009-0229		Orlando, USA			
Bagdanavicius A., Shell N., Bowen P., J., Syred N., Crawford A.	2010	2010	SoC	Investigations Of Gaseous Alternative Fuels At Atmospheric And Elevated Temperature And Pressure Conditions	Conference Paper	GT2010-23270, ASME Turbo Expo 2010		Glasgow, UK			
Bagdanavicius A., Shell N., Syred N., Griffiths A. J., Bowen P. J.	2010	2010	SoC	Premixed Swirl Combustion and Flashback Analysis with Hydrogen/Methane mixtures	Conference Paper	48th AIAA Aerospace Sciences Meeting, ref. AIAA-2009-1169		Orlando, USA			Molecular electronics represents the ultimate level of device miniaturisation, and as such highlights a way forward for future architectures of components in integrated circuitry. There has been considerable interest in molecular diodes – the organic counterpart of the semiconductor pn junction – but recent systems have consistently demonstrated inefficient current suppression at reverse bias when compared to conventional devices.
Bagdanavicius A., Bowen P. J., Syred N.	2010	2010	SoC	Turbulent flame structure of methane-hydrogen mixtures at elevated temperature and pressure	Conference Paper	33rd Combustion Symposium (submitted)					This presentation reports the progress from unimolecular diodes to ultra-thin organic rectifying junctions with improvement in their current rectification ratios. Design and deposition of these structures will be discussed. Unimolecular diodes comprise an electron-donating moiety separated, by a $\sigma$ -bridge or a twisted $\pi$ -electron bridge, from an electron-accepting moiety. In contrast, rectifying junctions, which consist of adjacent accepting and donating layers, may be formed via ionically coupling two electroactive components, for example, cationic acceptor and anionic donor.
Shell N., Bagdanavicius A., Griffiths A.J., Roberts P. J., Syred N.	2010	2010	SoC	"Flashback Limits Of Premixed H2/CH4 Flames in Swirl-Stabilised Combustor"	Conference Paper	GT2010-23623, ASME Turbo Expo 2010		Glasgow, UK			This presentation will report recent results that demonstrate a considerable improvement of the rectification. The highest confirmed rectification ratio reported for a unimolecular system is ca. 150 at $\pm 1$ V, a value too low to have any practical significance. Organic rectifying junctions that comprise discrete layers of cationic acceptors (4,4'-bipyridinium) and anionic donors
Peer J Holliman	26th Nov 09	2009	SoC	Dye sensitized solar cells - SPARCing the future	Conference (Invited talk)	Collaborating for a Low Carbon Wales		National Museum of Wales, Cardiff			
Elwin, M., Holland, P., Antoney, I., Ellis, J., Armstrong, L., Birchby, G., Ilic, P.	14-17 May 2009	2009	SoE	Optimisation of 100V High Side LDMOS Using Multiple Simulation Techniques	International Symposium	Power Semiconductor Devices and IC's, 2009 IEEE International Symposium 10.1109/ISPSD.2009.5158012		Barcelona, Spain	IEEE	y	
Z. Zhou, T. C. Yang, P. M. Holland, R. P. Lewis	2009	2009	SoE	"Robust Design of Power System Stabilizers using Constrained optimal algorithm for Multi-machine Power Systems"	Conference Paper	IEEE					
Z. Zhou, P. J. Unsworth, P. M. Holland, P. Igo	2009	2009	SoE	"Design and Analysis of a Feed Forward Control Scheme for a Three Phase Voltage Source PWM Rectifier Using Sensorless Load Current Signal"	Conference Paper	IET				y	

Lewis, P. L., Igc, P., Zhou, Z.	2009	SoE	Assessment of Communication Methods for Smart Electricity Metering in the U.K.	Conference Paper			IEEE-PES/IAS		Abstract—Communication methods for smart metering pose a number of unique challenges driven from the demand for a unique communication network that can communicate with some 28 million devices in the U.K. with near real-time latency. In this paper an overview of communication methods for Smart Metering is presented, focusing towards 'The Last Mile' of the communication network connected to the metering device. The need for robust low-bandwidth communications is a core requirement due to the possible interference from consumer products operating in unlicensed frequency bands. Investigations towards both wired and wireless technologies are performed and conclusions indicate that Power Line Communication (PLC) is becoming a low cost method to communicate with metering devices. Additionally, it can operate in relatively low bandwidth channels in the sub 100kHz region of the spectrum. An analytical approach towards analysis of coding schemes for OFDM based PLC systems is performed. Through investigation of current state of the art coding techniques we present a series of performance markers for (PLC) at low bit rates when degraded with various channel effects. Results show that (PLC) has real potential for Smart Metering networks where high levels of interference are present from existing communication technologies.
D McBride, N Humphreys, T N Croft, N R Green and M Cross.		SoE	Complex free surface flows for mould filling using centrifugal casting	Conference	Modeling of Casting, Welding and Advanced Solidification Processes – X11 (eds. S L Cockcroft and D M Majer), pub TMS, pp. 77-84				
D Shevchenko, D McBride, N Humphreys, T N Croft, P Wilbey, N Green, M Cross.		SoE	Centrifugal casting of complex geometries: computational modelling and validation experiments	Conference	Modeling of Casting, Welding and Advanced Solidification Processes – X11 (eds. S L Cockcroft and D M Majer), pub TMS, pp. 459-466				
J C Shim, C Bennett, R Davies and M Cross.	Apr-09	2009	Industry applications of computational fluid dynamics to smoke control systems	Conference	Proc 17th ACME-UK Conf, April 2009				
S Roland, A J Williams, T N Croft and M Cross.	Apr-09	2009	CFD modelling of fluid flow through rotating machinery	Conference	Proc 17th ACME-UK Conf, April 2009				
D Carswell, T N Croft, D McBride, A K Stone, M Cross and G Foster.	Apr-09	2009	Modelling left ventricular assist devices using multiple reference frames	Conference	Proc 17th ACME-UK Conf, April 2009				
T N Croft, D Carswell, M Cross, D McBride, S Roland, A K Stone and A J Williams.	Apr-09	2009	Parallel computational fluid dynamics – not without its challenges.	Conference	CD Proc 1st Intl Conf on Parallel, Distributed and Grid Computing for Engineering, Pécs, Hungary, Széchenyi, April 2009, paper 46				
A K Stone, A J Williams, T N Croft and M Cross.		SoE	Dynamic fluid structure interaction in parallel: a challenge for scalability	Conference	Parallel, Distributed and Grid Computing for Engineering (Eds B H V Topping and P Ivanyi), Széchenyi, paper 329-339				
M J Willis, T N Croft and M Cross.	2009	2009	Computational fluid dynamic modelling of an erosion-corrosion test method	Conference	NACE Corrosion 2009 Conference Proceedings, paper no. 09473				
MR Willis, J Masters, M Burasoh		SoE	Environmental Impact of Noise Associated with Small Scale Marine Drilling Operations	Conference	International Conference on Ocean Energy				This investigation studies the effects of noise from near-shore marine drilling activity taken from hydrophone readings in the water column. Land and boat-based readings were taken over a 2-week period during trial. Findings suggest that peak noise levels were emitted by hard-rock rotary drilling, 125 dB re 1µPa in the low frequency range, close to the source. Noise emissions associated with normal vessel transit in the vicinity of the drilling area however peaked above these levels at 128 dB re 1µPa, 138m from the source, considering the studied characteristics of noise propagation in sea water, tug emissions may have exceeded those of rock drilling. Closer inspection of the geomorphology of the drill site revealed the limestone rock substrata to be covered by an insulating layer of up to 20m silty-sand. Noise from drilling associated activity surpassed the literature supported 90 dB limit for all measured distances. A pelagic and benthic survey of the surrounding area was conducted. Species most severely affected by increased decibel levels in the mid to low frequency range are pelagic fish, though all marine animals in the area would have been
A. J. Williams, T.N. Croft, I. Masters, M. R. Willis and M. Cross		SoE	A Combined CFD-BEM model for tidal stream turbines	Conference	International Conference on Ocean Energy				Marine currents have the potential to generate a large proportion of the UK's energy requirements. However, there is at present little exploitation of marine energy within the UK, although there are several devices currently under development, including tidal stream turbines. The performance of a tidal stream turbine is dependent on a number of site specific factors including the bathymetry of the site and the variation of the tidal current, both temporally and within the water column. A combined computational fluid dynamics (CFD) - blade element (BEM) model is presented in this paper which enables engineers to predict the performance of tidal stream turbines at a chosen location using site specific data. This model is validated using a low tank experiment and the computational results show good agreement with the experimental data. Finally, results are presented that predict the performance of a tidal stream turbine at a site in the Severn Estuary. These results show the importance of using good quality measured site data when using CFD models to predict tidal stream turbine performance.
P. Igc, M.P. Elwin, P. M. Holland.	2010	SoE	Perspective on Power IC Technology: From Design Lab to Water Fab	Conference Paper	10.1109/MIEL.2010.5490529		IEEE	y	
MR Willis, J Masters, A Cook	Mar-10	2010	Review of Present UK Marine Energy Policy and Developments	Conference	International Conference on Renewable Energies and Power Quality Granada, March 2010				Marine renewable energy has the potential to help combat the increasing challenges of climate change and energy security. Unlike other forms of renewable energy, it is highly predictable making it invaluable to a renewable energy portfolio. The UK, being surrounded by oceans, is well positioned to exploit the abundant marine renewable energy resource. The technology necessary to convert the ocean's energy into a usable power commodity already exists. However, the industry is currently restrained by its infancy and the venture risks associated long cash-burn periods with an uncertain return using unproven technology. Currently the UK is considered to be the furthest along the road to the commercialisation of marine renewable energy, however the rest of the world are increasingly closing the lead. To prevent Britain being overtaken, as occurred in the development of the wind industry, investor confidence must be increased. One mechanism to do this is through government policy intervention, backed up with governmental action. This paper looks at the UK Government's policies and examines the
AJ Williams, TN Croft, G Patterson, I Masters, MR Willis	Mar-10	2010	Combined BEM-CFD Modelling of Tidal Stream Turbines Using Site Data	Conference	International Conference on Renewable Energies and Power Quality Granada, March 2010				Marine currents have the potential to provide a large proportion of Britain's energy generation requirements. Whilst a number of devices capable of utilising this resource are under development, there is at present little exploitation of marine energy. One potential generator of energy in this area is tidal stream turbines (TST). However, since they are expensive to install, engineers need to ensure that the TST will deliver optimum performance once they are in place. This performance is dependent on a number of features that are specific to the surrounding environment, including the underlying bathymetry and variation of the current both temporally and within the water column. Computational fluid dynamics (CFD) is a useful tool for predicting what impact the surrounding environment and supporting structure will have on the performance of a TST. In this paper the importance of using measured site data to develop CFD models for TSTs is demonstrated. A CFD model of a TST is presented and two designs for the supporting structure are investigated. A parametric study is carried out using a fast bed model. Finally, a series of
Eames, M., Mortensen, J. E.,	4-5 June 2009	2009	Towards more open, socially inclusive and just transitions processes: Insights from the Citizens Science for Sustainability Project.	Conference	1st European Conference on Sustainability Transitions'. Session: The impact and guidance of scenarios and visions for transitions.		Amsterdam.		In recent years growing international recognition and acceptance of the magnitude of the threat posed by global climate change has meant that the rhetoric of transitions, and talk of transitions to a low carbon economy in particular, has come to feature prominently as part of the mainstream political agenda. Purposely shaping and driving forward such transitions, however, presents an inherently wicked problem for which much of our current policymaking, institutional and governance structures are poorly suited. Early pioneering attempts to develop 'transition management' in the Dutch context have been criticised for failing to adequately recognise the inherently political and contested character of sustainable development and for their vulnerability to capture by dominant economic and political interests. This paper draws upon the work of the Citizens Science for Sustainability (SuSci) Project in order to highlight the potential contribution of more open, reflexive and participatory foresight process to the governance of socio-technological transitions. It argues for centring on-site technocratic foresight processes
Eames, M., Mortensen, J.	7 - 8th May 2009	2009	Shaping just transitions: towards more open and socially inclusive foresight processes. Urban Transitions/Technological Transitions: Cities and Low Carbon Transitions	Conference paper	Workshop hosted by Department of Geography, Durham University and SURF, Salford University, Manchester	Department of Geography, Durham University and SURF, Salford University, Manchester			Socio-technological transitions are complex processes. Purposely shaping transitions therefore presents an inherently wicked problem. Recent work on transitions management and reflexive governance seeks to address this problem by placing process of stakeholder engagement, foresight, scenario building, experimentation, evaluation and social learning centre stage. Particular emphasis is placed on the development of shared problem definitions, normative visions and prospective transition pathways. However, some have questioned the politics of transition management and the role of foresight therein. Specifically they question the feasibility and desirability of shared normative vision(s) and argue that transition management fails to adequately address the operation of power by vested interests, or the deeply political and contested character of sustainable development.
Mortensen, J. E., Eames, M., Nielsen, K. A.,	2009	WSA	Re-embedding scientific development in the realities of local communities. Reflexive experiments in upstream engagement towards sustainability.	Conference	9th Nordic Environmental Social Science Conference (NESS): Knowledge, learning and action for sustainability. Workshop 6: Community engagement for sustainability. 10 - 12 June 2009, London.		London		This paper directly addresses the challenge of developing more open and inclusive foresight processes, which recognise the inherently uncertain and politically contested character of sustainable development, through working with multiple visions and expectations and/or diverse social interests and perspectives.
Grandeiro Cortesão J, Brandão Alves F, Patterson J, Monteiro A and Madureira H,	Oct-09	2009	A Method for the Bioclimatic Intervention in Porto	Conference paper	45th ISOCARP Congress 2009, PORTO			Available from .PDF or at <a href="http://www.isocarp.net/">http://www.isocarp.net/</a>	
Pearson PJG	2009	WSA	Past and Prospective UK Energy Transitions	Conference paper	Advanced Energy 2009, New York, USA, November. <a href="http://www.aerac.org/conference2009/presentation/Pearson.pdf">http://www.aerac.org/conference2009/presentation/Pearson.pdf</a>				
Pearson, P J G	2009	WSA	Research Frontiers for Low-Carbon Energy Systems: some reflections on UK transition pathways?	Keynote Conference Speech	International Forum for Sustainable Asia and the Pacific (ISAP) Towards Copenhagen: A New Development Pathway to a Low-Carbon Sustainable Asia and the Pacific, The Institute for Global Environmental Strategies (IGES), Hayama, Japan, June. <a href="http://www.iges.or.jp/en/news/event/isap2009/pdf/dict/26m0202Pearson.pdf">http://www.iges.or.jp/en/news/event/isap2009/pdf/dict/26m0202Pearson.pdf</a>				
Timothy J Foxon, Geoffrey P. Hammond, Peter J. Pearson, Jacquetin Burgess and Tom Hargreaves	2009	WSA	Transition pathways for a UK low carbon energy system: exploring different governance patterns.	Conference paper	1st European Conference on Sustainability Transitions: 'Dynamics and Governance of Transitions to Sustainability', Amsterdam, The Netherlands, 4-5 June. <a href="http://www.lowcarbonpathways.org.uk/lowcarbonpublications/Sust_Transitions_Conf_paper_Foxon.pdf">http://www.lowcarbonpathways.org.uk/lowcarbonpublications/Sust_Transitions_Conf_paper_Foxon.pdf</a>				

Granadeiro Cortesão J. Brandão Alves F. Paterson J.	Oct-10	2010	WSA	Bioclimatic urban renewal in compact urban fabrics	Conference paper	XXXVII IAHS World Congress on Housing October 29 – 29, 2010, Santander, Spain			Santander, Spain	Contemporary urban renewal is particularly aimed at promote more pedestrian-focused public spaces. Considering summer thermal conditions in temperate climates stressed under the urban heat island, microclimate optimization is crucial to ensure the success of these actions. Indeed, it will determine human thermal comfort and, consequently, the usage of public spaces and buildings. Under these circumstances, bioclimatic urban design premises should be incorporated into urban renewal programmes, highlighting the importance of relating morphologic and climatic space definitions. This article presents a basis for a bioclimatic intervention tool, illustrated by a case study in Porto (Portugal). The case study illustrates the importance that correlating facing materials and vegetation has to outdoors thermal comfort. Through this relationship, the combined effects of lower air and surface temperatures, and higher air humidity can promote more thermally comfortable outdoor spaces. Lower levels of CO2 in the local atmosphere can also be expected due to carbon sequestration by vegetation. Additionally, CO2 emissions from buildings can be influenced. The analysis of two spaces, a square and a garden, was carried out by correlating information on Porto's heat island and main bioclimatic urban design parameters from previous studies, as well as climatic measurements, morphological characterization, and inquiries undertaken by the authors. This
Islam, N. Eames, M. & Baxter, J.	March 8-10, 2010,	2010	WSA	A structured systematic literature review of sustainable hydrogen energy innovations	Conference	paper presented at the 19th International Conference on Management of Technology (IAMOT'2010), March 8-10, 2010, Cairo, EGYPT				
Eames, M & Wang, Y.	Feb-10	2010	WSA	Regional Governance for low carbon transitions: Exploring the case of Wales	Conference	SPRU "Energy transitions in an interdependent world: what and where are the future social science research agendas?" Conference				
P. Jones, S Lannon, John Mayhew, Hendrik Rosenthal	22-23 May 2009	2009	WSA	Energy Optimisation and Carbon Impact Assessment: Planning for a Low Carbon City	Conference Contribution	Planning for Low Carbon Cities, 191				
Phil Jones		2009	WSA	Low Carbon Urban Scale Built Environment (L-CUBE), keynote paper, Energy Optimisation Modelling for Urban Scale Master Planning	Keynote Conference paper	44th ISOCARP Conference				
Phil Jones, Simon Lannon, Hendrik Rosenthal		2009.00	WSA	Energy Optimisation Modelling for Urban Scale Master Planning	Conference paper	44th ISOCARP Conference				
M Eames	26-27 November 2009	2009	WSA	Low Carbon Transitions and the Built Environment: A Socio-Technical Perspective	Conference	Collaborating for a Low Carbon Wales	Cardiff National Museum			
O'Doherty, Mason-Jones, A., O'Doherty,		2010		Consideration of a Horizontal Axis Tidal Turbine. Proc. Inst.		163 (3) EN3, 119-130, ISSN 1751-4223.				
Willis, M., Masters, I., Thomas, S., G		2010		Tidal Turbine Deployment in the Bristol Channel: A Case Study		163 (3) EN3, 93-105, ISSN 1751-4223.				