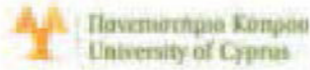


- Cyprus Chamber of Commerce and Industry
- Ministry of Commerce, Industry and Tourism
- Electricity Authority of Cyprus
- Cyprus Scientific and Technical Chamber
- Cyprus Energy Regulatory Authority
- University of Cyprus
- Cyprus University of Technology
- National Technical University of Athens
- Aristotle University of Thessaloniki
- The Cyprus Institute
- Natural Gas Public Company of Cyprus
- Cyprus Energy Agency
- Transmission System Operator, Cyprus



6-7
JUNE 2013
Final Programme

Hilton Hotel
Nicosia-Cyprus



Under the Auspices of
The Minister of Commerce,
Industry and Tourism



4th International Conference on
Renewable Energy Sources
& Energy Efficiency
- New Challenges



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New Challenges



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Co-organisers:

- Ministry of Commerce, Industry and Tourism, Energy Service
- Electricity Authority of Cyprus
- Cyprus Scientific and Technical Chamber
- Cyprus Energy Regulatory Authority
- University of Cyprus
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- Cyprus Energy Agency

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JUNE 2013

Hilton Hotel
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Scope of the Conference:

This international conference is organized for the 4th time with great success and it is a very important venue of inter change of experiences, transfer of new knowledge and information. The Conference aims at bringing together all the key stakeholders interested in renewables, energy efficiency and conventional fuels: industrial experts, academic researchers, policy makers, regulators etc. The thematic areas of the Conference cover all topics of renewables, energy efficiency in all sectors and conventional fuels.

Who should attend?

- Decision makers, including managers and policy makers, interested in exchanging ideas and experiences
- Representatives of international organizations or other organisations willing to share relevant experience on renewable energy exploitation, energy efficiency techniques and developments and conventional technologies.
- Companies interested in investing on renewable energy and energy efficiency equipment.
- Individuals who wish to be informed on new developments, tools and techniques.
- Members of the research and academic communities aiming at exchanging results, sharing similar experiences or new applications.

Invited Speakers:

- Prof. Manthos Santamouris, Group Building Environmental Studies, Physics Department, University Athens
- Prof. Agis Papadopoulos, Lab. of Heat Transfer & Environmental Engineering Dept. of Mechanical Engineering Aristotle University Thessaloniki
- Mr. Solon Kasinis, Executive Vice President of Cyprus National Hydrocarbons Company
- Prof. Derek Wilson, Institution of Engineering and Technology, UK
- Mr. Jeffrey Skeer, Senior Programme Officer – Technology Cooperation, IRENA
- Prof. Evangelos Dialynas, National Technical University of Athens

Conference Fee:

• Non members	
Early Registration before 1st April 2013	€290
Registration after 1st April 2013	€350
• Members of Organisations KEBE, ETEK, IEE, IEEE, ΣEM, IMechE, EBHEK	
Early Registration before 1st April 2013	€200
Registration after 1st April 2013	€250
• University and Research Staff	€120
• Students	€90

Fees cover, the admission to all sessions, invitation to all coffee breaks, one lunch, conference material and VAT

Registration:

To register please visit www.mse.com.cy/energy

Conference Secretariat:

MSE Congress Plus
3, Sina Street, 2nd floor, Office 204A, P.O. Box 24612, T.T. 1306 Nicosia-Cyprus
Phone: 00357 22 466400, Fax: 00357 22 767680
E-mail: mse@mse.com.cy, Website: www.mse.com.cy
Conference web page: www.mse.com.cy/energy

4th International Conference on Renewable Energy Sources & Energy Efficiency

Executive Organising Committee:

- Conference Coordinator:** • Mr Marios Tsiakkis, Cyprus Chamber of Commerce and Industry
- Chairman:** • Dr Andreas Poullikkas, Electricity Authority of Cyprus
- Members:** • Prof Ioannis Michaelides, Cyprus University of Technology
- Mr George Partasides, Ministry of Commerce, Industry and Tourism, Energy Service
 - Mr Christos Maxoulis, Cyprus Scientific and Technical Chamber
 - Prof Agis Papadopoulos, Aristotle University of Thessaloniki
 - Dr George Tzamzis, The Cyprus Institute
 - Mr Andreas Pentaliotis, Natural Gas Public Company of Cyprus
 - Mrs Anthi Charalambous, Cyprus Energy Agency
 - Mr Panayiotis Keliris, Cyprus Energy Regulatory Authority
 - Prof George Georgiou, University of Cyprus
 - Prof Evangelos Dialynas, National Technical University of Athens
 - Dr Christos E. Christodoulides, Transmission System Operator, Cyprus

Scientific Committee:

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- Members:** • Mr Marcello Antinucci, Ecuba Srl., Italy
- Dr Constantinos Balaras, National Observatory of Athens, Greece
 - Prof Stelios Choulis, Cyprus University of Technology, Cyprus
 - Prof Chris Christodoulou, Frederick University, Cyprus
 - Prof Evangelos Dialynas, National Technical University of Athens, Greece
 - Dr Venizelos Efthymiou, Electricity Authority of Cyprus, Cyprus
 - Dr Polyvios Eleftheriou, Cyprus University of Technology, Cyprus
 - Dr Paris Fokaides, Frederick University, Cyprus
 - Prof George Georgiou, University of Cyprus, Cyprus
 - Prof George Karagiorgis, Frederick University, Cyprus
 - Prof Elias Kyriakides, University of Cyprus, Cyprus
 - Prof Manfred Lange, The Cyprus Institute, Cyprus
 - Prof Agis Papadopoulos, Aristotle University of Thessaloniki, Greece
 - Prof Manthos Santamouris, University of Athens, Greece
 - Dr Despina Serghides, Cyprus University of Technology, Cyprus
 - Dr Kyriacos Tsiftes, Zenith Engineering Consultants, Cyprus
 - Prof Theocharis Tsoutsos, Technical University of Crete, Greece
 - Prof Derek Wilson, Institution of Engineering and Technology, UK
 - Prof Theodoros Zachariades, Cyprus University of Technology, Cyprus

Advisory Committee:

- Prof Toula Onoufriou, Vice Rector (Academic Affairs), Cyprus University of Technology
- Prof Costas N. Papanicolas, Chairman, The Cyprus Institute, Cyprus
- Prof Agis Papadopoulos, Department of Mechanical Engineering, Aristotle University of Thessaloniki, Greece
- Prof Evangelos Dialynas, National Technical University of Athens, Greece

Solar thermal technology for electricity and desalinated water production: The STEP-EW project*

A special Workshop on solar energy technologies is integrated within the 4th International Conference on RES & EE. This Workshop, which focuses on the cogeneration of desalinated water with renewable energy sources electricity production, is part of the research program STEP-EW which is funded by the Cross-border Cooperation Program Greece-Cyprus 2007-2013.

The STEP-EW project (www.step-ew.eu) examines the possibility of cogeneration of desalinated water and electricity. In detail, the project's objective is to build a pilot solar thermal cogeneration unit in Cyprus, which will be based on a feasibility study already carried out by the Cyprus Institute for a similar plant. The construction will confirm the technical feasibility of the innovative idea of cogeneration of desalinated water and electricity by using concentrated solar energy on a small scale and realistic environmental and operating conditions. The proposed technology is extremely important, particularly for areas that are isolated from continental electricity networks and with limited water resources, such as the Mediterranean islands. The cogeneration unit will have the ability to reliably and consistently produce water and electricity according to specific needs. The construction and operation of the unit will confirm that the technology is mature enough to be commercially used and will highlight potential need in subsystems that need further development.



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JUNE 2013

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Day 1

4th International Conference
on Renewable Energy Sources &
Energy Efficiency

Day 1

09:30	Greetings Fidias Pilidis , Chairman of CCCI Stelios Himonas , Permanent Secretary of Ministry of Commerce, Industry & Tourism Stelios Stylianou , General Manager, EAC Yiorgos Siammas , Chairman, CERA Andreas Pentaliotis , Natural Gas Officer, Natural Gas Public Company Andreas Poullikas , Electricity Authority Cyprus, Conference Chairman		
10:00 - 10:30	Plenary Session Chairperson: Prof. Toula Onoufriou		
10:30 - 11:00	• Future Challenges in the Energy Performance of Cities, Manthos Santamouris		
11:15 - 11:30	• Towards (Nearly) Zero Energy Buildings, Agis Papadopoulos		
	Coffee Break		
	A1: Solar systems Chairpersons: Prof. George Georgiou, Prof. Theocharis Tsoutsos		B1: Energy efficiency of buildings Chairpersons: Prof. Denia Kolokotsa, Mr. George Partasides
11:30 - 11:50	• 1325 Photovoltaics competitiveness and measures to accompany PV to grid parity and beyond T. Tsoutsos, S. Tournaki, I. Weiss, S. Caneva, S. Arancon, G. Masson, M. Latour, W. Sinke, C. Olson, T. Veltkamp, F. Pause, F. De Mango, L. Bastone, M. Raganella,	11:30 - 11:50	• 1347 Energy analysis and energy efficiency in swimming pools M. Arybli, D. Kolokotsa
11:50 - 12:05	• 1314 Evaluation of a Heat plate Solar Collector for Solar Heating and/or cooling systems G. Martinopoulos and G. Tsilingiridis	11:50 - 12:05	• 1318 Energy saving potential by the application of green roofs in the climatic conditions of Greece G. Kotsiris, A. Androutopoulos and P.A. Nektarios
12:05 - 12:20	• 1306 The Use of Renewable Energies in the New Legislative Framework for Decreasing Energy Consumption in Buildings in Greece N. Papamanolis and M. Tsitoura	12:05 - 12:20	• 1322 The energy efficiency concept for hotels: The Cyprus case study, S.N. Boemi and A.M. Papadopoulos
12:20 - 12:35	• 1316 Very High Values of Global Irradiance Due To Cloud Enhancement in Cyprus R. Tapakis, A.G. Charalambides	12:20 - 12:35	• 1323 On investigating the correlation of external and internal air leakages and the impact on the actual infiltration rates in buildings under unsteady wind conditions D. Kraniotis, T. Aurlien and T.K. Thiis
12:35 - 12:50	• 1369 The PV-NET project: Promotion of PV energy through net metering optimization Hadjipanayi M.a, Georghiou G.a, Camacho C.b, Papagiannis G.c, Popovi? J.d, Oliveira J.e , Charalambous A.f, and Biard P.g	12:35 - 12:50	• 1337 Energy supply and saving strategies for existing buildings in different climate zones M. Harrestrup, S. Svendsen and A. Papaioannou
	Discussion		Discussion
13:30 - 14:30	Lunch Break	13:30 - 14:30	Lunch Break
	A2: Integrating Green Technologies Chairpersons: Prof. I.A. Meir, Prof. George Karagiorgis		B2: Energy efficiency of buildings Chairpersons: Anthi Charalambous, Prof. K.T. Papakostas
14:30 - 14:50	• 1305 Constraints to Assets, Waste to Resources Integrating Green Technologies in a Novel Pilot Project for Drylands I.A. Meir	14:30 - 14:50	• 1355 Increase of energy efficiency in 25 low-income households in Cyprus, Panayiotou G.a, Charalambous A.b, Vlachos S.b, Kyriacou O.b, Theofanous E.c, Filippou T.c
14:50 - 15:05	• 1338 Presentation Of A New 3-stage Steady-bed Gasification Scheme Appropriate for Biomass I.-S. Antonopoulos, A. Karagiannidis and L. Elefsiniotis	14:50 - 15:05	• 1367 Implementing the Greek Energy Performance of Buildings Regulation in practice, S. Chadiarakou, D. Anastaselos, A.M. Papadopoulos
15:05 - 15:20	• 1333 Green Partnerships – Pilot use of biomass in Lakatamia for heating systems in public buildings N. Xenophontos, Koudouna	15:05 - 15:20	• 1334 Heat Recovery in an Air Conditioning System With Air-to-air Heat Exchanger K.T. Papakostas, G.C. Kiosis
15:20 - 15:35	• 1336 Anaerobic digestion and biogas utilization in Greece: Current status and perspectives Avraam Karagiannidis, George Perkoulidis and Apostolos Malamakis	15:20 - 15:35	• 1309 A preliminary study for Cyprus energy retrofits potential of residential buildings Dr. Michalis Menicou
15:35 - 15:50	• 1324 Optimization of the used cooking oil to biodiesel chain the European initiative RecOil T.D.Tsoutsos, S. Tournaki. O. Paraiba, D. Antunes	15:35 - 15:50	• 1364 Energy efficiency in domestic appliances and lighting A. Konyaev, S. Opekunov
	Discussion	15:50 - 16:05	• 1346 Building Energy Inspectors in Greece: Pitfalls and limitations addressed by an attempt of Greece to apply European Directions in Building Energy Saving Policy, Constantina C. Sdravopoulou
16:30 - 16:45	Coffee Break		Discussion
	A3: Integrating Green Technologies Chairpersons: Prof. Chris Christodoulou, Mr Andreas Pendaliotis	16:30 - 16:45	Coffee Break
16:45 - 17:05	• 1332 Combined heat and power production from agricultural biomass by means of gasification and Internal Combustion Engine application P. Mitsakis, D. Mertzis, S. Tsiakmakis, P. Manara, A. Zambaniotou and Z. Samaras	16:45 - 17:05	B3: Energy, Economics and the Environment Chairpersons: Prof. Manfred Lange, Dr. George Tzamzis
17:05 - 17:20	• 1360 Advanced Technology For Anaerobic Conversion Of Organic Waste Producing Biogas, Electric And Thermal Energy And Sterile Biological Mineral Fertilizer Kakatsios Xenophon	17:05 - 17:20	• 1352 Climate Change in the Eastern Mediterranean and Adaptation Measures in the Built Environment M. A. Lange and M. Santamouris
17:20 - 17:35	• 1339 Municipal Solid Waste Heating Value In Greece By Applying Various Waste Treatment Scenarios I.-S. Antonopoulos, A. Karagiannidis	17:20 - 17:35	• 1315 Projections of Green House Gas Emissions From Electricity Production in Greece Up To 2030 A. Ikonomopoulos, I. Tsimoura, M. Panonides, G. Tsilingiridis
17:35 - 17:50	• 1335 Assessment of waste biomass utilization for energy production in agro-industrial and wood processing facilities in Greece. A. Karagiannidis, A. Malamakis and N. Philippopoulos	17:35 - 17:50	• 1354 Assessing Transport Scenarios in Relation to Climate Change and Air Quality Marios Valiantis, Agapios Agapiou
17:50 - 18:05	• 1365 Environmental and socioeconomic impacts of the wood biomass use in Mountainous Cyprus Charalambous A., Kordatos H., Theocharis T., Tournaki A., Loizou M., Sofokleous A., Charalambides A.	17:50 - 18:05	• 1368 Quality Assessment: Methods in Construction Industry K. Frangou, E. Christoforou, P.A. Fokaides, A. Kanarachos, S. Kanarachos, G. Kanarachou, C. Charalampous
	Discussion	18:05 - 18:20	• 1356 Environmental Assessment of Insulating Clay Bricks E. Giama, P. Ntoas and A.M. Papadopoulos
			• 1362 On the impact of economic recession on domestic energy consumption T. Slini, E. Giama and A.M. Papadopoulos
			Discussion

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JUNE 2013

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Day 2

4th International Conference
on Renewable Energy Sources &
Energy Efficiency

Day 2

09:30 - 10:00	Plenary session: New challenges Chairperson: Dr Venizelos Efthymiou		
10:00 - 10:30	• The Challenges of Natural Gas in Cyprus, Solon Kasinis		
10:30 - 11:00	• The conflict between Nuclear and Renewables, Derek Wilson		
	• Renewable Energy on Islands: Strategies for RE Development and Integration Jeffrey Skeer, Senior Programme Officer – Technology Cooperation, IRENA.		
11:00 - 11:15	Coffee Break		
	A1: Architecture and Energy Design Chairpersons: Dr Despina Serghides, Dr Paris Fokaides		
11:15 - 11:35	• "Bioclimatic Architecture" – Towards Sustainability and Energy Efficiency in Buildings, Despina Serghides	11:15 - 11:35	B1: Integrating RES Chairpersons: Prof. John Kaldellis, Mr. Christos Maxoulis
11:35 - 11:50	• 1328 Sustainable architecture through an environmental educational program, Eleni Antonara, Julia Georgi, Nikolaos Lianos	11:35 - 11:50	• 1320 Opportunities for Wave and Tidal Energy Exploitation in the East Mediterranean Region, J.K. Kaldellis, M. Kapsali, Chr. Giannaraki and A. Pavlou
11:50 - 12:05	• 1326 The contribution of the courtyard to the environmental perception of residential architecture in Cyprus, M. Philokyprou, A. Michael	11:50 - 12:05	• 1358 The development of Geothermal Energy in Cyprus, Kyriakos Akritas
12:05 - 12:20	• 1307 Occupants' behaviour and the energy consumption during summer in a University building, C.K.Chatzinikola, D.K.Serghides, M.C.Katafygiotou	12:05 - 12:20	• 1301 RENEWABLE ENERGY SOURCES IN CRETE, Gigantidou Antiopi
12:20 - 12:35	• 1310 Selecting fenestration for cooling energy efficiency in Cyprus, D.K. Bikas1, K.G. Tsikaloudaki and T.G. Theodosiou	12:20 - 12:35	• 1319 Experimental Energy Analysis of a Hybrid Wind-PV Stand-Alone Installation, G. Ristas, G. Spyropoulos, K. Kavadias and J.K. Kaldellis
12:35 - 12:50	• 1308 Energy Auditing and Energy Conservation in a University Building, D.K.Serghides, M.C.Katafygiotou	12:35 - 12:50	• 1344 Line current Harmonics Elimination at the output of Grid-Connected DC to AC Thyristor Converters, CC Marouchos, M. Darwich, M. Evdokimou
	Discussion		• 1317 Power quality measurements on distribution feeders with integrated wind generators, Andreas Armenakis, Minas Patsalides, George E. Georghiou, Venizelos Efthymiou
13:30 - 14:30	Lunch break	13:30 - 14:30	Discussion
	A2: Power generation and storage Chairpersons: Prof. Mehmet F. Orhan, Mr. Panayiotis Keliris		B2: Solar thermal technology for electricity and desalinated water production: The STEP-EW project* Chairperson: Prof. John Georgiadis
14:30 - 14:50	• 1345 Mitigation of Environmental Impact via an Integrated Hydrogen production system based on solar and nuclear energy sources in U.A.E., Binish Sam Babu*, Mehmet F. Orhan**, Andreas Poullikkas**	14:30 - 14:50	• Design of a Solar thermal co-generation demonstrator, G. Tzamtzis, The Cyprus Institute, Cyprus
14:50 - 15:05	• 1361 Selection of optimum steam turbines parameters for CSP plants, A. Poullikkas, C. Rouvas, G. Kourtis and I. Hadjipaschalis	14:50 - 15:05	• Optical design of an integrated receiver and storage system C. Marakkos, The Cyprus Institute, Cyprus
15:05 - 15:20	• 1321 The Role of Hydrogen-Based Energy Storage in the Support of Large-Scale Wind Energy Integration in Island Grids, K. Kavadias, D. Zafirakis and J.K. Kaldellis	15:05 - 15:20	• Comparative assessment of a large-scale cogeneration CSP system in Cyprus, A. Poullikkas, G. Kourtis, I. Hadjipaschalis, Electricity Authority of Cyprus, Cyprus
15:20 - 15:35	• 1304 Emissions measurements of naturally-aspirated and turbo-charged Diesel internal combustion engines for various biodiesel blends, C.A. Chasos, G.N. Karagiorgis and C.N. Christodoulou	15:20 - 15:35	• Techno-economic Analysis of a Co-generation Solar thermal plant, N. Fylaktos, The Cyprus Institute, Cyprus
15:35 - 15:50	• 1348 A solar-driven near-Braysson cycle incorporating multistage, intercooled compression, D.P. Georgiou, K.F. Milidonis and T.P. Xenos	15:35 - 15:50	• Thermal Desalination performance analysis, M.C. Georgiou, The Cyprus Institute, Cyprus
15:50 - 16:05	• 1329 Beyond solar radiation management – the strategic role of low cost photovoltaics in solar energy production, F. Hermerschmidt, P.D. Pouloupatis, G. Partasides and S.A. Choulis	15:50 - 16:05	• Desalination – The Cyprus Experience, E. Kyriakides, Water Development Department, Cyprus
	Discussion		Discussion
16:30-16:45	Coffee break	16:30-16:45	Coffee break
	A3: Energy conservation in buildings Chairpersons: Dr Constantinos Balaras, Dr Kyriacos Tsiftes		B3:Implementing energy efficiency Chairpersons: Prof. Evangelos Dialynas, Prof. Elias Kyriakides
16:45 - 17:05	• 1331 Standby Energy Consumption of Electrical Appliances in Hellenic Households, C.A. Balaras, D. Dimostheniadou, E.G. Dascalaki	16:45 - 17:05	• Impact of Spinning Reserve Requirements and Demand Response Programs on the Reliability and Operational Performance of Power Systems Incorporating an Increased Penetration of Renewable Energy Sources Evangelos Dialynas
17:05 - 17:20	• 1357 Assessment of thermal bridges in building walls using finite element heat conduction analysis, D.C. Charmpis, E. Christoforou and J. Panayiotou	17:05 - 17:20	• 1351 Technical-economic optimization of sustainable electric-vehicle charging infrastructure using linear programming, S. Swolfs and D. Haeseldonckx
17:20 - 17:35	• 1359 In situ U-value measurements for today's Cypriot Houses, F. Xenis, P. Eleftheriou, I. Michaelides, S. Hadjiyainnis, P. Philimis and A. Stylianou	17:20 - 17:35	• 1303 Techno-economics study of hybrid system combined with renewable energy sources, I.A. Naxakis, K.C. Neokli, E.C. Pyrgioti
17:35 - 17:50	• 1341 The role of the new way of living in the bioclimatic design- a response to weather architecture through a case study in Kaimakli, Y. Hadjichristou	17:35 - 17:50	• 1342 Electricity Consumption and the Awareness Factor, Avraam Georgiou*, Petros Ioannou, Paul Christodoulides
17:50 - 18:05	• 1366 Field survey on multi- family buildings in order to depict their energy characteristics, S. Chadiarakou, M. Santamouris	17:50 - 18:05	• 1343 A new Concept for a multilevel sinusoidal Grid-Connected Inverter, CC Marouchos M. Darwish L. Diomidou
18:05 - 18:20	• 1312 Comparative assessment of the Greek and the Cypriot Regulation for thermal insulation by their implementation in a typical building, K.G. Tsikaloudaki, T.G. Theodosiou, D.G. Aravantinos and A.K. Michopoulos	18:05 - 18:20	• 1340 Energy Efficiency in Households – A Case Study from Four European Islands, A. Klaesener, J. Jantzen, S.I. Fridleifsson, A. Chatzimpiros, E. Lopez Suarez and S. Carlier-Wiart
	Discussion		Discussion