4th International Conference

Solar Air-Conditioning

Wednesday, October 12th, 2011
Friday, October 14th, 2011
Larnaka, Cyprus

OTTI

www.otti.eu

Location

Map: © Columbus Travel Media
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Larnaka is a major city in the Republic of Cyprus and strongly connected to its history of almost 4 millennia. Larnaka is famous for its beautiful sea front - the ‚Phinikoudes' is the main tourist attraction. Close by the international airport is Larnaka's famous salt lake. Larnaka can be reached by plane (e.g. Aegean Airlines) from nearly all european airports.

Conference Chairman

Dr. Kyriakos Tsiftes
University of Cyprus, Nikosia, Cyprus

Scientific Committee

Dr. Constantinos A. Balaras
Group Energy Conservation, Institute for Environmental Research & Sustainable Development, National Observatory of Athens, Greece

Prof. Marco Beccali
Università degli Studi di Palermo, Dipartimento dell' Energia, Palermo, Italy

Prof. Alberto Coronas
CREVER–URV, Tarragona, Spain

Prof. Dr. Ursula Eicker
Fachhochschule Stuttgart, Hochschule für Technik Stuttgart, Germany

Dr. Hans-Martin Henning
Fraunhofer ISE, Freiburg, Germany

Dr. Daniel Mugnier
TECSOL S.A., Perpignan, France

Prof. Dr. Christian Schweigler
ZAE Bayern - Bayer. Zentrum für Angewandte Energieforschung e.V., Garching, Germany

Prof. Dr.-Ing. Wolfgang Streicher
Universität Innsbruck, Institut für Konstruktion und Materialwissenschaften, Innsbruck, Austria

Supporting Organisations

www.fgk.de

Information about OTTI

OTTI (Ostbayerisches Technologie-Transfer-Institut e.V.) is a non profit organisation founded in 1977. Its aim is the stimulation of the industrial economy and the support of the co-operation between science and industry. OTTI has a 34-person strong team which proffer seminars, specialist forums and conferences. About 7200 specialists and managerial personnel from business, administration and science take part every year.

OTTI is one of the leading European conference organisers of purpose-oriented seminars and conferences in the field of renewable energies. Furthermore, we offer courses in the fields of building, construction and the efficient use of energy. Our conferences with the accompanying specialist exhibitions in Banz Monastery belong to the definitive meetings of the solar energy sector in the German-speaking area.

For more detailed information please visit www.otti.eu

Chairman´s Message

After Bad Staffelstein (Germany, 2005), Terragona (Spain, 2007), Palermo (Italy, 2009), Cyprus – the Island of Aphrodite with 10.000 year of history - is hosting the 4th International Solar Air Conditioning Conference. Through the years, the conference has been recognized as the most important event where scientists and industrial researchers, product manufacturers, building designers and planners, contractors, and installers have met to exchange knowledge and experiences with a common goal: To contribute towards the development of solar technologies and systems so that solar air conditioning can become a real, economically viable choice.

The rapid development in the field of solar thermal technologies and solar air-conditioning systems is a proof that the sun can be a reliable renewable source of energy. The sun can help the global effort to minimize the dependence on fossil fuels and to dramatically decrease the carbon dioxide emissions by reducing the consumption of electricity and fossil fuels for the purpose of heating and air conditioning our buildings.

Ten years have passed since the Mediterranean sun gave birth to the Greek "Photonio" - the largest solar air-conditioning system in the world with 2,700 m^2 of solar collecting arrays. After this project, it has become apparent that solar air conditioning can be reliable and economically viable technology. Today we can say that the solar air conditioning technology has come out of the infancy stage and is growing fast to become the next energy that will drive the air conditioning systems.

Over the last 30 years, there has been a rapid development of building industry in Cyprus. At the same time and despite of the building technology improvements and the availability of innovative building materials, the modern buildings are consuming a great deal of energy; consequently Cyprus that has no fossil energy reserves is spending a considerable part of its gross national product to import fossil fuels. In addition, the mean temperature, according to the Cyprus's Meteorology department, has been increased during the last 100 years by more than 1.0 °C which is well over than the global average of 0.7 °C.

On the other hand, Cyprus holds the 1st position worldwide in the installation of solar panels per inhabitant. Within the above contexts, the development of solar air-conditioning in Cyprus could not be an exception. Five years have passed since the development of the 1st commercial Solar Air Conditioning system and it is estimated that by the end of 2011, at least another 10 systems of various solar collecting technologies and array size will be in operation. The involvement of the newly established academy community of Cyprus with two State Technical Universities will help significantly to increase knowledge through the scientific observation, research, and development as both universities are acquiring limited size solar air conditioning systems.

It is time that we re-evaluate the role that should be entrusted to the solar air-conditioning technologies. For the next decade, we should focus on factors beyond the scientific issues. We need to talk about standardisation of components and systems that will lead to a) a significant reduction of costs, b) an improvement of efficiency and c) an increased reliability. It is time to dedicate to a solar air conditioning society that will be responsible to gather information on solar air conditioning, to encode it, and to dispense it to all interested professionals.

Closing, we invite you all to visit the sunny island of Cyprus where solar air conditioning is taking its right dimension; the sun energy is being captured to provide indoor comfort. Our expectation is that the 4th International Solar Air Conditioning Conference becomes a meeting place for scientists, researchers, manufacturers, engineering designers, building owners, and investors; where the sun will melt all barriers and obstacles towards the commercialization of solar air conditioning.

Dr. Kyriakos Tsiftes
University of Cyprus, Nikosia, Cyprus

Conference Focus

- Development of technologies
- Know-how transfer
- Identification of R&D needs
- Exchange of results and ideas

Your Advantage

- You gain comprehensive information about the **state of technology** as well as latest **results from research and development.**
- The scope of the conference is intended to encourage a hearty **open discussion of problems and future strategies to spread Solar Air-Conditioning.**
- The speakers are leading scientific and business experts.
- The programme structure and the conference venue best ensure **intensive experience-sharing** between participants and presenters.
- The detailed **proceedings book** and CD-ROM with all talks and poster contributions will be handed over at the start of the conference and will serve you well as reference works.

You will meet

- Planners, architects, engineers and scientists active in air-conditioning, solar thermal and cooling
- energy policy makers
- manufacturers
- industry representatives
- other attendees

Wednesday, October 12th, 2011

Technical Tour to GEVO, Limassol,

7.30 – 12.30 hrs (by bus from Palm Beach Hotel, Larnaka)

The exhibition space in Limassol of the company GEVO is a remarkable technological project. It is an environmentally friendly building, since it combines perfectly the rational use and the implementation of several new technological systems utilizing renewable energy sources. Inevitably, the utilization of solar energy for the heating and cooling of the indoor space classifies this work among the most energy saving air conditioning systems in Cyprus.

GEVO's new building is used to exhibit sanitary wares, fittings and building materials and it is in operation since November 2010. The Designers, accounting for the specific use and the specific building's operation hours, have provided innovative solutions which has lead both to the reduction of the thermal/cooling needs and to the reduction of energy consumption overall. Basically, the heating, cooling and domestic hot water production needs of the buildings are satisfied by the solar air conditioning system which is backed up by a high efficiency geothermal closed loop heat pump chiller. This combination of CO2 emission saving renewable technologies has been done for the first time in Cyprus. The combined system covers 95% of the building's annual needs in air conditioning and domestic hot water.

The systems are monitored and controlled by a building energy management system which was developed in such a way to enable distance access through the web so as to give the opportunity to Graduate Students and other interested parties to study its operation. Already, GEVO's solar air conditioning system is the subject of undergraduate dissertation and post graduate thesis work.

Also, it is good mentioning that the project is qualified to take 40% subsidy from the Renewable Energies Fund.

Departure by bus from Palm Beach Hotel, Larnaka

Welcome and Reasons for Taking the Decision for the Realization of this Project
Petros Tryphonos, General Manager GEVO, Limassol, Cyprus

Financial Characteristics of the Project
Dr. Kyriakos Tsiftes, Zenith Consulting, Nicosia, Cyprus

Mechanical Parts and their Functions
Zacharias Hadjigeorgiou, C & H Heatflow LTD, Nicosia, Cyprus

Discussion

Coffee Break

Visit of the Systems

End of the Seminar and Return Trip to Larnaka

4th International Conference Solar Air-Conditioning

13.30 **Opening Address**
Energy Minister, Cyprus (tbc)
Gabriele Struthoff-Müller, OTTI, Regensburg, Germany
Kyriakos Tsiftes, University of Cyprus, Nikosia, Cyprus
Solon Kassinis, Energy Service, Ministry of Commerce, Industry and Tourism, Nicosia, Cyprus

OPENING SESSION

POLITICAL – ECONOMIC FRAMEWORK

Chair: Kyriakos Tsiftes, University of Cyprus, Nicosia, Cyprus

14:00 **Status and Perspectives of Solar Air-Conditioning and Refrigeration**
Hans-Martin Henning, Fraunhofer ISE, Freiburg, Germany

14:15 **Development of a Technology Roadmap for Solar Thermal Cooling in Austria**
Anita Preisler, Austrian Institute of Technology, Vienna, Austria

14:30 **Solar Cooling Potential In Spain 2011 – 2020**
Laura Sisó, Free-Lance Consultant, Barcelona, Spain

14:45 **Solar Cooling in Australia - a Review**
Inga Doemland, Australian National University (ANU), Canberra, ACT, Australia

15:00 **Discussion**

15:30 **Coffee Break and Visit to the Trade and Poster Exhibition: Topic A and E**

POSTER SESSION

Chair: Constantinos Balaras, Group Energy Conservation, Institute for Environmental Research & Sustainable Development, National Observatory of Athens, Greece

16:15 **SYSTEM DESIGN: DESIGN TOOLS, SIMULATION, ENGINEERING**

A1 **Performance Optimization of an Air-Cooled Single-Effect LiBr/Water Absorption Chiller**
José Daniel Marcos, UNED, Madrid, Spain

A2 **Potential and Limits of Solar Thermal and Solar Electric Cooling**
Peter Zachmeier, ZAE Bayern Bavarian Center for Applied Energy Research, Garching, Germany

A3 **Phase Change Materials in Heat and Cold Storage for Solar Cooling Facilities**
Rafael Salgado, Universidad Interamericana de Puerto Rico, Bayamón, Puerto Rico

A4 **Appropriate Solutions Using Solar Energy - Basic Comparison of Solar Thermal and Photovoltaic Approaches**
Edo Wiemken, Fraunhofer ISE, Freiburg, Germany

A5 **Comparative Analysis of Concentrating Solar Collectors and Double-Effect Absorption Chillers for Solar Air Conditioning Configurations**
Joan Carles Bruno, CREVER-Universitat Rovira i Virgili, Tarragona, Spain

A6 **Parametrical Analysis of Solar Combi + Configuration for Commercialization**
Matteo D'Antoni, EURAC Research Institute for Renewable Energy, Bolzano, Italy

A7 **A New Methodology for Operational Data Treatment, Monitoring and Performance Analysis of Absorption Chillers**
Joan Carles Bruno, CREVER-Universitat Rovira i Virgili, Tarragona, Spain

A8 **Simulation and Model Validation of a Large Scale Solar Adsorption Cooling Plant**
Jesús Lopez-Villada, Rovira i Virgili University, Tarragona, Spain

A9 **Simulation of an Adsorption Chiller Using Artificial Neural Networks**
Jochen Doell, Fraunhofer ISE, Freiburg, Germany

A10 **Performance of a Solar Ammonia/Water Absorption Chiller under Real Scenarios of Operation**
Fernando Palacin, National Renewable Energy Centre (cener), Sarrigurren (Navarra), Spain

A11 **Integrated Energy Upgrade, Main Focus on Solar and Sea Cooling, of the MMM (Ministry of Mercantile Marine) Building at Miaouli Coast, Piraeus**
Michaelis Karagiorgas, Athens, Greece

A12 **IEA SHC Task38 Subtask A – Final Results and Outlook on the Austrian Solar-Cooling-Opt. Project**
Alexander Thür, AEE-Institut für Nachhaltige Technologien, Gleisdorf, Austria

A13 **Experimental Performance Investigation of a Solar Thermal Driven Absorption LiBr Chiller in Cairo under the Egyptian Solar Conditions**
Tarek Khalil, German University in Cairo, New Cairo City, Helwan, Egypt

A14 **Modelling of Absorption of H2O in Falling Film of LiBr Aqueous in Vertical Tubes with Presence of Non-Absorbables**
E. Garcia-Rivera, Universitat Politècnica de Catalunya (UPC) Centre Tecnològic de Transferència de Calor (CTTC), Terrassa, Spain

A15 **Transient Modeling and Simulation of a Manufactured Absorption Chiller**
Jean Castaing-Lasvignottes, LaTEP, Pau, France

A16 **Dynamic Modeling and Experimental Validation of a Solar Air-Conditioning System**
Jean Castaing-Lasvignottes, LaTEP, Pau, France

PRACTICAL EXPERIENCE: OPERATION, MAINTENANCE, ENERGY PERFORMANCE, COST PERFORMANCE

B1 **Solar Heating and Cooling System for Office Building in Italy; Description and Performance Assessment**
Ayadi Osama, Politecnico di Milano, Milan, Italy

B2 **Experimental Performance of a Small Capacity Solar Air-Conditioning System: A Pilot Installation in Lisbon**
João Cardoso, Laboratório Nacional de Energia e Geologia, I.P., Lisboa, Portugal

B3 **Experience Report on System Optimization of a Small Scale Solar Driven Adsorption System in Vienna/Austria**
Anita Preisler, Austrian Institute of Technology, Vienna, Austria

B4 **Solera Demonstrator of Small Scale Solar Heating and Cooling System in Ines Office Building**
David Cheze, CEA LITEN, Le Bourget du Lac, France

B5 **Using Flat Plate Collectors for Active Solar Cooling of Computer Server Rooms**
Maik Brünig, Ernst Schweizer AG, Hedingen, Switzerland

B6 **Performance Assessment of a Small-Scale Adsorption Chiller Integrated to an Already Existing Solar Heating System**
Sebastien Thomas, University of Liège, Arlon, Belgium

B7 **Monitoring and Simulation Results of Two Small Scale Solar Cooling Plants**
Daniel Neyer, University of Innsbruck, Innsbruck, Austria

B8 **Monitoring Results and Conclusions of the Solar Cooling Systems Installed in the Frame of the Project "SOLERA"**
Tomas Núñez, Fraunhofer ISE, Freiburg, Germany

SYSTEM TECHNOLOGY

C1 **Development of a Solar Driven Double/Single Effect LiBr-H2O Cooling Unit Using Innovative Medium Temperature Solar Collector**
Yanjun Dai, Shanghai Jiao Tong University, Shanghai, China

C2 **Comparison of an Existing Solarthermal Air Conditioning Installation Versus a Projected PV Driven Compression Air Conditioning Unit**
Hilbert Focke, ASIC - Austria Solar Innovation Center, Wels, Austria

C3 **Air Cooling Powered by Façade Integrated Coloured Opaque Solar Thermal Panels**
Iris Mack, SwissINSO SA, Lausanne, Switzerland

C4 **Energy Performance Improvements of a Dec System due to Wet Heat Exchangers**
Marco Beccali, Università degli Studi di Palermo, Palermo, Italy

C5 **Evaluation of a New Open Sorption Based Air-Conditioning System – Simulation of the System Performance under Different Climatic Conditions**
Alexander Morgenstern, Fraunhofer ISE, Freiburg, Germany

C6 **Solar Cooling Systems with Building Integrated Concentrating Thermal Collectors**
Jesús Lopez-Villada, Rovira i Virgili University, Tarragona, Spain

C7 **Thermal and Economical Investigation of Evaporative Air-Conditioning in Europe and Middle East**
Samar Jaber, Ilmenau University of Technology, Department of Thermo and Fluid Dynamics, Ilmenau, Germany

C8 **Performance Analysis and Simulation of a LiBr Based Absorption Chiller Powered by Concentrated Linear Fresnel Collectors**
Eva Bernal Serra, GE Global Research Europe, Garching (Munich), Germany

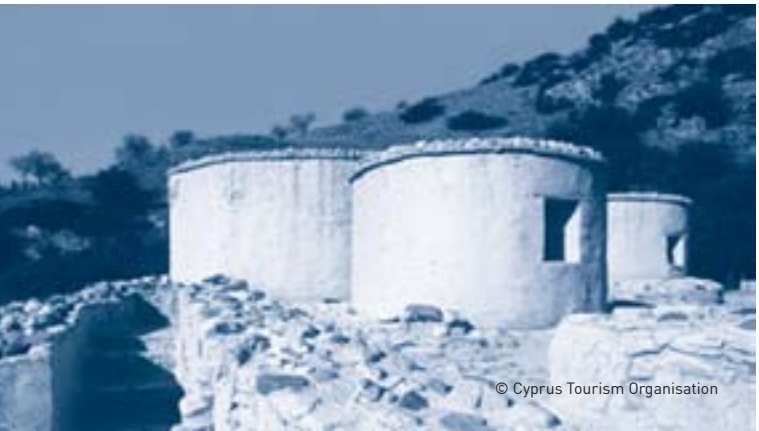
COMPONENTS: HEAT DRIVEN WATER CHILLERS, HEAT DRIVEN OPEN CYCLES

D1 **Experimental Performance Comparison of Heat Driven Silica Gel-Water Chiller and Silica Gel/LiCl-Methanol Chiller**
Zisheng Lu, Shanghai, China

D2 **Modeling Results of a Novel Adsorption Cycle with Advanced Heat Recovery for High Efficiency Air-Cooled Adsorption Chillers**
Ferdinand Schmidt, Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

D3 **Presentation of a Pre-Industrial Air-Cooled LiBr-H2O Small Capacity Absorption Machine**
Joan Farnos Baulenas, Universitat Politecnica de Catalunya (UPC) Centre Tecnologic de Transferencia de Calor (CTTC), Terrassa, Spain

D4 **Composite Adsorbent "LiCl Inside Mesouporus Silica Gel" for Adsorption Air Conditioning: Optimization of Equilibrium and Dynamics of Methanol Sorption**
Larisa Gordeeva, Boreskov Institute of Catalysis, Novosibirsk, Russia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D5 **Performance under Different Working Conditions of NH3-LiNO3 and NH3-H2O Solar Absorption Refrigeration System**
José Vidal Herrera, Centro de Investigación en Energía Universidad Nac. Autónoma de México, Temixco, Morelos, Mexico

D6 **Performance Optimization of Solar Driven Small Capacity Water-Cooled Absorption-Diffusion Chiller Working with Light Hydrocarbons**
Sayadi Zouhour, ENIM Monastir Tunisia, Monastir, Tunisia

SOLAR COOLING APPLICATIONS

E1 **Experimental Performance of One Novel Solar Silica Gel-Water Chiller Application**
Zaizhong Xia, Shanghai, China

E2 **Solar Adsorption Cooling System: Development of a Plant for Air Conditioning of a Small Office**
Andrea Frazzica, CNR ITAE, Messina, Italy

E3 **Solar Driven Precooling Strategies for Passenger Vehicles**
M. Carsten Wachsmuth, Ostfalia University of Applied Sciences, Wolfsburg, Germany

E4 **A Hybrid Solar Cooling System Including an Evaporative Cooling System and a Sky Radiator**
Tarek Khalil, German University in Cairo, New Cairo City, Helwan, Egypt

17:45 **Drinks and Visit to the Trade and Poster Exhibition: Topic C, D and E**

19:00 End of the First Conference Day

Thursday, October 13th, 2011

INDUSTRY FORUM

Chair: Alberto Coronas, CREVER-Universitat Rovira i Virgili, Tarragona, Spain

09:00 **Global Innovation: Chiller with Zeolith-Technology and New Features for Easy System Integration**
Sören Paulussen, InvenSor GmbH, Berlin, Germany

Largest Solar Cooling System in the Middle East for a Showcase Football Stadium in Qatar
Christian Zahler, Industrial Solar GmbH, Freiburg, Germany

Solar Cooling with Cooling Power Beyond One Megawatt – New Installations in Singapore and USA
Moritz Schubert, S.O.L.I.D., Graz, Austria

ClimateWell Chillers in Polysun: Modeling and Validation
Andreas Witzig, Vela Solaris AG, Winterthur, Switzerland

Design and Simulation Tool for Solar Cooling Systems
Uwe Radke, Dr. Valentin EnergieSoftware GmbH, Berlin, Germany

"Photonio" The World's Largest Solar Air Conditioning System
Panos Lamaris, Sole S.A., Acharnai, Athens, Greece

Kloben Solar Cooling Applications around the World
Francesco Fontana, Kloben, Bovolone, Italy

10:30 **Coffee Break and Visit to the Trade Exhibition**

SYSTEM DESIGN: DESIGN TOOLS, SIMULATION, ENGINEERING

Chair: Christian Schweigler, ZAE Bayern – Bayer. Zentrum für Angewandte Energieforschung e.V., Garching, Germany

11:15 **Simulation of Solar Cooling Systems**
Jürgen Schumacher, Stuttgart University of Applied Sciences, Stuttgart, Germany

11:30 **Optimization of a High Solar Fraction System for Building Heating and Cooling, in Combination with a Heat Pump**
Aristotelis Aidonis, Politecnico di Milano, Milan, Italy

11:45 **Heat Rejection Systems for Solar Driven Sorption Systems**
Ursula Eicker, University of Applied Sciences, Stuttgart, Germany

12:00 **LCA of Solar Cooling Systems with 12 KW Adsorption and 8 KW Adsorption Chillers**
Marco Beccali, Università degli Studi di Palermo, Palermo, Italy

12:15 **An Investigation of Solar Powered Absorption Cooling Systems for Southern Africa**
Tatenda J. Bvumbe, University of KwaZulu-Natal, Durban, South Africa

12:30 **Discussion**

13:00 **Lunch and Visit to Trade and Poster Exhibition: Topic A and E**

PRACTICAL EXPERIENCE: OPERATION MAINTENANCE, ENERGY PERFORMANCE, COST PERFORMANCE

Chair: Daniel Mugnier, TECSOL S.A., Perpignan, France

14:30 **Report and Comparison of Two Solar Assisted Air Conditioning Systems Located in Upper Austria**
Hilbert Focke, ASIC - Austria Solar Innovation Center, Wels, Austria

14:45 **Life Cycle Analysis of the Solar Air-Conditioning System in a Passivhouse Office Building**
Tim Selke, Austrian Institute of Technology, Vienna, Austria

15:00 **Component Analysis of a Solar-Driven DEC-System**
Tobias Bader, Ingolstadt University of Applied Sciences, Ingolstadt, Germany

15:15 **Operation and Energy Performance as well as Simulation Results of two Solar Cooling Plants in Gleisdorf**
Martin Vukits, AEE - Institut für Nachhaltige Technologien, Gleisdorf, Austria

15:30 **Solar Cooling for a Large Office Building in Portugal – Operational Experiences and Measurement Results**
Moritz Schubert, S.O.L.I.D., Graz, Austria

15:45 **Discussion**

16:10 **Coffee Break and Visit to the Trade and Poster Exhibition: Topic C, D and E**

SYSTEM TECHNOLOGY

Chair: Wolfgang Streicher, Universität Innsbruck, Institut für Konstruktion und Materialwissenschaften, Innsbruck, Austria

16:45 **Solar Thermal Driven Air-Conditioning System for Singapore Climate**
Arifeen Wahed, Solar Energy Research Institute of Singapore (SERIS), Singapore, Singapore

17:00 **Solar Cooling and Heating System Using a new Ammonia/ Lithium Nitrate Absorption Chiller for Residential Sector**
Miguel Zamora Garcia, University Rovira i Virgili, Tarragona, Spain

17:15 **Energetic and Economic Analysis of a Solarthermal-Assisted Energy System for Flexible Cooling and Heating**
Manuel Riepl, ZAE Bayern, Bavarian Center for Applied Energy Research, Garching, Germany

17:30 **First Experimental Results of a Solar Driven Ammonia-Lithium Nitrate Cooling System**
Roberto Best, Universidad Nacional Autonoma de México, Centro de Investigacion en Energía, Temixco, Morelos, Mexico

17:50 **Discussion**

18:10 **Visit to the Trade and Poster Exhibition: A and E**

18:45 End of the Second Conference Day

20:00 Dinner, Terrace, Palm Beach Hotel

Friday, October 14th, 2011

COMPONENTS: HEAT DRIVEN WATER CHILLERS, HEAT DRIVEN OPEN CYCLES

Chair: Ursula Eicker, Fachhochschule Stuttgart, Hochschule für Technik Stuttgart, Germany

08:30 **Performance Analysis and Model Validation of an Evaporatively Cooled Sorptive Coated Heat Exchanger (ECOS)**
Constanze Bongs, Fraunhofer ISE, Freiburg, Germany

08:45 **Development of a 50 KW Absorption Chiller**
Stefan Natzer, ZAE Bayern, Bavarian Center Center for Applied Energy Research, Garching, Germany

09:00 **Feasibility of Ionic Liquid in Solar Driven Liquid Desiccant Dehumidification System for Air Conditioning**
Hongbo Xu, Beijing, China

09:15 **Characteristics of High Performance Cooling Systems Using Ejectors**
Mike Dennis, The Australian National University, Canberra, Australia

09:30 **Membrane Based Air Dehumidification System for Applications in Tropics**
Zaw Khin, Solar Energy Research Institute of Singapore, Singapore, Singapore

09:45 **Modelling and Experimental Evaluation of a Solar Thermally-Driven Liquid Desiccant Air Conditioning System**
Lisa Crofoot, Solar Calorimetry Laboratory Queen's University, Kingston, Canada

10.00 **Discussion**

10:30 Poster Award Ceremony – 3 Winners

Speaker: Constantinos Balaras, Group Energy Conservation, Institute for Environmental Research & Sustainable Development, National Observatory of Athens, Greece

Award Committee:
Ursula Eicker, Fachhochschule Stuttgart, Hochschule für Technik Stuttgart, Germany
Wolfgang Streicher, Universität Innsbruck, Institut für Konstruktion und Materialwissenschaften, Innsbruck, Austria

10:40 **Coffee Break and Visit to the Trade and Poster Exhibition: Topic C, D and E**

SOLAR COOLING APPLICATIONS

Chair: Hans-Martin Henning, Fraunhofer ISE, Freiburg, Germany

11:15 **Case Study of a Solar Driven Two Stage Rotary Desiccant Cooling System Using Evacuated Tube Solar Air Collectors**
Yanjun Dai, Shanghai Jiao Tong University, Shanghai, China

11:30 **Efficient Solar Heating and Cooling System Concept: DHW/Cooling Strategy**
Daniel Mugnier, TECSOL S.A., Perpignan, France

11:45 **High Combi – High Solar Fraction Heating and Cooling Systems in European Buildings – Operational Results**
Dimitris Chasapis, Centre for Renewable Energy Sources, Athens, Greece

12:00 **Solar Cooling Technologies for Southern Climates - a System Comparison**
Dirk Pietruschka, Fachhochschule Stuttgart, Hochschule für Technik Stuttgart, Germany

12:15 **Discussion**

STANDARDISATION AND QUALITY MANAGEMENT

Chair: Marco Beccali, Università degli Studi di Palermo, Italy

12:35 **Performance Testing of Solar Cooling Systems Based on the CTSS-Method**
Patrick Frey, Institute for Thermodynamics and Thermal Engineering, University Stuttgart, Stuttgart, Germany

12:50 **Proposal for a Performance Calculation and Evaluation Procedure for Solar Cooling Applications**
Tomas Núnez, Fraunhofer ISE, Freiburg, Germany

13:05 **First Results of Megapics (Method Towards Solar Heating and Cooling Installation Performance Guarantee)**
Romain Sire, TECSOL, Perpignan, France

13:20 **Discussion**

13:35 **Closing Remarks**
Kyriakos Tsiftes, University of Cyprus, Nicosia, Cyprus

13:45 **End of the Conference**

Travel Information

To Larnaka International Airport

Larnaka can be easily reached by plane from almost every International Airport.
Flights are offered for example by Aegean Airways, British Airways, Cyprus Airways, Lufthansa, Ryanair, Easy Jet, KLM.
Please book your flight as soon as possible by yourself.

From Larnaka International Airport to the Palm Beach Hotel

There are many cabs both in front of the airport and the hotel.

One tour between the International Airport and the Palm Beach Hotel takes around 20 minutes. The price depends on the day-time and the number of people.

From the Palm Beach Hotel to Larnaka Centre

The easiest way to get to Larnaka Centre is by cab. There are many cabs in front of the hotel. The price depends on the day-time and the number of people. One tour takes about 10 minutes.

There are buses directly in front of the hotel to get to Larnaka Centre.

Registration Conditions

You will receive the relevant papers and confirmation as soon as we have your registration. The fees are exempt from value-added tax (VAT) and are payable in full upon receipt of the invoice. **Payment must be received no later than 14 days before the conference begins (it has to be settled in EURO). All bank charges have to be covered by the transmitter!** OTTI reserves the right to refuse admission if the amount has not arrived, unless said amount is paid by cheque on the day. In case transferring occurs later than 14 days before the conference, please keep a copy of the transfer order ready and show it in the organisation office at the conference. OTTI reserves the right to change the programme at short notice for urgent reasons. There is no charge for cancellations made at least 35 days before the event starts. If the booking is cancelled 34 days before the start of the conference a service charge of € 120,- will be made. It is possible to rebook once without extra charge. All cancellations must be in writing. It is possible to send a substitute delegate at any time without additional cost, but we need a written message about the change before the conference starts. Legal domicile and place of fulfilment is Regensburg.

Organisation Committee

Eckardt Günther
Gabriele Struthoff-Müller

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Accommodation

Please book your accommodation as soon as possible by yourself. The Palm Beach Hotel offers special rates for participants.

E-Mail: reservations@palmbeachhotel.com
Phone: +357 24 846 600
www.palmbeachhotel.com

Conference Venue

Palm Beach Hotel

Larnaka Dekelia Road
CY 6303 Larnaka, Cyprus

Conference Fee

If registered until August 14th, 2011

Per Person:	€ 700,00
Member of OTTI and supporting organisations:	€ 600,00

after August 14th, 2011

Per Person:	€ 780,00
Member of OTTI and supporting organisations:	€ 680,00
Reduced fee for presenters:	€ 380,00

From the third participant on, every other participant of your company profits from our **15% discount** on the conference fee.

Fees cover the admission to all sessions, invitation to all coffee breaks, conference lunch, the dinner, the conference proceedings and CD-Rom.

The Conference Language is English.

Technical Tour SAW (3955)
Per Person: € 60,00

Bus starts at 7.30 a.m. at the Palm Beach Hotel

4th International Conference Solar Air-Conditioning

October 12th - October 14th, 2011 (SAC 3679)

OTTI e.V.

Headword: Solar Air-Conditioning

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93049 Regensburg
Germany

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University of Cyprus	
VBI	

Einträge löschen | Anmeldung versenden

- ☐ I will participate in the conference (SAC 3679).
- ☐ I will participate at the Technical Tour on Wednesday, October 12th (7.30 a.m. to 12.30 p.m.) (SAW 3955)
- ☐ We are interested in sponsorship. Please send us information and the registration form.
- ☐ I cannot participate but wish to order the conference proceedings at the price of € 150,00 (incl. VAT) plus postage and packing – delivery after the conference.
- ☐ We would like to present our products in the exhibition. Please send us information and the registration form.

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