



Solar Air-Conditioning

Rome Airport, Italy
Thursday, September 24th, 2015
Friday, September 25th, 2015



www.solaircon.com
www.otti.eu

- 08.45 **New solar desiccant and evaporative Cooling unit based on fixed and cooled adsorption beds and wet heat exchangers assisted by a building integrated solar PV/T generator**
Marco Beccali, Information Engineering and Mathematics Modeling (DEIM), Università degli Studi di Palermo, Italy
- 09.00 **Operating conditions of a NH₃/H₂O chiller for trigeneration systems – chiller adaption and first results**
Werner Pink, Pink GmbH, Langenwang, Austria
- 09.15 **Applicability of a desiccant dew-point cooling system independent of external water sources**
Lorenzo Bellemo, Technical University of Denmark, Kgs Lyngby, Denmark
- 09.30 **Hybrid Libr absorption chiller boosted by high speed turbo-compressor**
Christian Schweigler, University of Applied Sciences Munich, Munich, Germany
- 09.45 Discussion
- 10.10 Coffee break and visit to the poster exhibition

SESSION 5: THERMALLY DRIVEN SOLAR AIR CONDITIONING: CONTROLLING

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

- 10.50 **Optimized generic control strategies for solar thermal cooling systems**
Björn Nienborg, Fraunhofer ISE, Freiburg, Germany
- 11.05 **Influence of fan's control strategies on heat rejection potential**
Matteo D'Antoni, EURAC Research, Bolzano, Italy
- 11.20 **Control method for increasing efficiency over solar heating and cooling system**
Lee Dong Kyu, Hyundai Engineering and Construction Company, Yongin, South Korea
- 11.35 **Pump efficiency and adaptability in solar cooling applications**
Martin Helm, Bavarian Centre for Applied Energy Research (ZAE Bayern), Garching, Germany
- 11.50 Discussion
- 12.10 **Poster award
Award Ceremony: Two Winners**
Committee:
Costas Balaras, Group Energy Conservation, Institute for Environmental Research & Sustainable Development, National Observatory of Athens, Greece
Wolfgang Streicher, Universität Innsbruck, Austria
Constanze Bongs, Fraunhofer ISE, Freiburg, Germany
- 12.20 **Lunch and visit to the poster exhibition – Meet the poster award winners**

SESSION 6: SYSTEM DESIGN: DESIGN TOOLS, SIMULATION, ENGINEERING

Chair: **Yanjun Dai, Shanghai Jiao Tong University, Shanghai, China**

- 13.30 **A method to guarantee the performance of solar heating and cooling systems**
Daniel Mugnier, TECSOL, Perpignan, France
- 13.45 **Solar absorption air-conditioning in Saudi Arabia: a simulation study**
Ahmed Al-Mogbel, King Abdulaziz City for Science and Technology (KACST), Riyadh, Saudi Arabia
- 14.00 **Solar assisted trigeneration in the food logistics industry**
Ursula Eicker, University of Applied Sciences Stuttgart, Stuttgart, Germany
- 14.15 **A solar cooling system for a data center in South Africa**
Tobias Schwind, Industrial Solar GmbH, Freiburg, Germany
- 14.30 Discussion
- 14.50 Coffee break

SESSION 7: PRACTICAL EXPERIENCE: OPERATION, MAINTENANCE, ENERGY PERFORMANCE, COST PERFORMANCE

Chair: **Kyriakos Tsiftes, University of Cyprus, Nikosia, Cyprus**

- 15.20 **Technical and economic assessment of SHC plants – Compilation of 10 best practice examples of IEA SHC Task 48**
Daniel Neyer, University of Innsbruck, Innsbruck, Austria
- 15.35 **First performance results of solar cooling in Jordan based on highly efficient absorption chillers**
Christopher Paitazoglou, Technische Universität Berlin, Berlin, Germany
- 15.50 **High efficiency mirrorless solar thermal as economically viable solar air cooling driver**
Jonathan Koifman, TVP Solar, Meyrin, Switzerland
- 16.05 Discussion
- 16.20 **Closing remarks**
Conference Chairwoman Ursula Eicker, University of Applied Sciences Stuttgart, Germany
- 16.30 **End of the Conference**



Rome is the city with the highest concentration of historical and architectural riches in the world. **The conference venue** is located in Fiumicino a small city in the province of Rome. The hotel is next to the Leonardo da Vinci International Airport. For hotel guests there is a shuttle service available to and from Rome City Center and the Airport.

Leonardo da Vinci Rome Airport Hotel
Via Portuense, 2470
00054 Fiumicino/Rome
Italy
www.romeairporthotel.it
info@romeairporthotel.it

The sixth International Conference on Solar Air Conditioning concludes the first decade of high level exchange on solar cooling science and technology. Renewable energies have dramatically increased their market share during the last years and many countries now approach 30% of renewable electricity and about 10 to 15% of renewable heat in the national energy mix. This has led to strong reduction in prices, especially for solar photovoltaics, while the solar thermal market only slowly gains importance. Cooling and air conditioning was always an optimal application for solar energy use, as the temporal coincidence between cooling need and solar energy conversion is better than most other uses of solar energy. In countries with cooling dominated climates solar air conditioning is an excellent technology to provide high own consumption of solar energy, offering interesting economic solutions, especially if electricity prices are high and long cooling operation hours are needed. While photovoltaic cooling seems to take the lead in reducing cooling costs, solar thermal cooling technologies offer more flexible and low cost thermal storage and show reliable and stable operation with a long machine lifetime. A major advantage is the strong reduction of stress on the electrical networks, which often suffer due to high peak cooling loads during summer conditions. Trigeration systems obtained when coupling cogeneration units with thermal cooling systems are also attractive solutions for highly efficient and economic cooling and can be supported with solar thermal energy. Italy with its significant cooling requirements and its advanced refrigeration industry is an excellent host of the 2015 Solar Air Conditioning Conference. Following the 3rd Conference hosted in Palermo 2009, the 6th Conference returns to Italy to celebrate 10 years of successful networking of solar cooling researchers, industrial companies and technology developers. Rome as the conference location lies in the center of Italy's leading economic region and is a well known host of many events on refrigeration and air conditioning.

Prof. Dr. Ursula Eicker

University of Applied Sciences Stuttgart, Germany

Conference Chairwoman

Prof. Dr. Ursula Eicker

University of Applied Sciences Stuttgart, Germany

Scientific Committee

Dr. Constantinos A. Balaras

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

Prof. Marco Beccali

Dept. of Energy, Information Engineering and Mathematics Modeling (DEIM) Università degli Studi di Palermo, Italy

Prof. Alberto Coronas

Universitat Rovira I Virgili, Tarragona, Spain

Prof. Yan Jun Dai

Shanghai Jiao Tong University, China

Prof. Dr. Hans-Martin Henning

Fraunhofer ISE, Freiburg, Germany

Dr. Daniel Mugnier

Tecsol SA., Perpignan Cedex, France

Prof. Dr. Christian Schweigler

University of Applied Sciences Munich, Germany

Prof. Dr.-Ing. Wolfgang Streicher

University of Innsbruck, Institute for Structural Engineering and Material Sciences, Innsbruck, Austria

Dr. Kyriakos Tsiftes

University of Cyprus, Nicosia, Cyprus

Dr. Stephen White

CSIRO Energy Technology Newcastle, Australia

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 with all talks and poster contributions will be handed over at the start of the conference and will serve you well as reference works.