



*First European Conference on*

# Polygeneration Technologies & Applications

[www.polygeneration.net](http://www.polygeneration.net)

***Palau Firal i de Congressos***

***Tarragona, Spain***

***October 16<sup>th</sup>-17<sup>th</sup>, 2007***

The European Union has adopted an energy policy which doesn't simply aim to boost competitiveness and secure energy supply but also aspires to increase significantly energy efficiency, to save energy and promote climate-friendly energy sources.

The CONCERTO initiative, launched by the European Commission, is addressing the challenges of creating a more sustainable future for Europe's energy needs by applying an integrated approach towards Energy Efficiency measures combined with the increased use of Renewable Energy Sources on a local level. Currently, nine projects and their communities are carrying out demonstration activities.

The term "polygeneration" means an energy supply system, which delivers more than one form of energy to the final user, for example: electricity, heating and cooling can be delivered from one polygeneration plant.

Polygeneration can involve combined co-generation (power and heat) or tri-generation ( power, heat and cold) plants and /or district heating, preferably by renewable energy sources. Such polygeneration systems should be designed and controlled with a view to optimizing all relevant interactions between supply and demand. Their main benefit is in maximising the overall efficiency of the integrated system near the point of use.

Polygeneration combined with efficient district heating and cooling may provide added benefits to a larger community. Secondary benefits may include improved reliability of the supply and distribution networks, arising from better interaction between producers and distributors.

## **Conference Focus**

This Conference is organized in the frame of the CONCERTO project "Energy networks in sustainable cities" POLYCITY to share the knowledge of the different CONCERTO projects on polygeneration updating on the latest development on the use of key technologies.

The first day is dedicated to the implementation of the polygeneration plants in the CONCERTO Projects such as the three sites of the POLYCTY project: Ostfildern-Stuttgart, Arquata-Torino and Cerdanyola del Vallés-Barcelona, the SESAC site of Växjö, the TETRAENER site of Geneva , the Ecostiler site of Amsterdam and the two sites of the ECO-CITY project: Helsingborg/Helsingor and Trondheim .

In the second day, relevant scientists will talk about new development of polygeneration technologies, their integration and also its application to different fields.

**Conference Chairman:**

**Prof. Dr. Alberto Coronas**

CREVER, Dep. of Mechanical Engineering, University Rovira i Virgili, Tarragona (Spain)

**Scientific Committee:**

**Dr. Joan Carles Bruno**

CREVER, Dep. of Mechanical Engineering, University Rovira i Virgili, Tarragona (Spain)

**Prof. Dr. Alberto Coronas**

CREVER, Dep. of Mechanical Engineering, University Rovira i Virgili, Tarragona (Spain)

**Prof. Dr. Ursula Eicker**

Zafh.net, University of Applied Sciences, Stuttgart (Germany)

**Prof. Horacio Perez-Blanco**

Dep. Mechanical Engineering, Penn State University (USA)

**Local Committee**

**Cecile Bonnet**

CREVER, Dep. Mechanical Engineering, Universitat Rovira I Virgili, Tarragona

**Carlos Dapena**

Consorci Urbanistic del Centre Direccional de Cerdanyola del Vallés,

**Xavier Marti**

Departament de Medi Ambient i Habitatge, Generalitat de Catalunya, Barcelona

**Registration :**

**Raquel Chaves**

CREVER, Dep. of Mechanical Engineering, Universitat Rovira i Virgili

Avenida Paisos Catalans, 26

43007 Tarragona, Spain

Phone: +34 977 25 78 88

Fax: +34 977 55 96 91

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**Conference language: English**

Organized by:



Sponsored by :



Generalitat de Catalunya  
Departament de Medi Ambient  
i Habitatge



Consorci Urbanistic  
del Centre Direccional de  
Cerdanyola del Vallès

POLYCITY is a project of the CONCERTO  
initiative co-funded by the EC within the FP6



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Generalitat de Catalunya  
Departament d'Indústria,  
Comerç i Turisme  
Institut Català d'Energia



DIPUTACIÓ DE  
TARRAGONA

Supporting organizations:



Training  
Seminars  
Tagungen



## 2<sup>nd</sup> International Conference Solar Air-Conditioning

Palau Firal i Congressos

Tarragona, Spain

October 18<sup>th</sup>/19<sup>th</sup>, 2007

Conference Chairman: Prof. Dr. Alberto Coronas, CREVER-URV, Tarragona, Spain

Topics of the conference:

1. Components
  - heat driven water chillers
  - heat driven open cycles
2. System Technology
3. Practical Experience: Operation Maintenance, Energy Performance, Cost Performance
4. Solar Cooling Applications
5. System Design

The conference addresses all engineers and scientists active in air-conditioning, solar thermal and cooling, planners, architects and energy politicians. Further information you will find under: <http://www.otti.de/pdf/energie/sac2611.pdf>

## **Programme of the conference:**

Tuesday, October 16<sup>th</sup>, 2007 – CONCERTO Polygeneration Conference

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08:30 **Registration**

### **Welcome and Inauguration**

09:00 **Ursula Eicker**, University of Applied Sciences Stuttgart, Germany, POLYCITY project coordinator  
**Alberto Coronas**, CREVER - Universitat Rovira i Virgili Tarragona, Spain, Conference Chairman  
**Encarna Baras**, Director of the Catalan Institute of Energy (ICAEN), Generalitat de Catalunya  
**Ignasi Nieto**, General Secretary of Energy of the Ministry of Industry, Tourism and Trade of Spain  
**J.F. Ballesteros**, Mayor of Tarragona

09:30 **The Catalan Action Plan against Climate Change**

**Frederic Ximeno i Roca**, General Director of environmental policy and sustainability – Government of Catalonia, Spain

9:50 **Polygeneration helps to improve Europe's Energy Efficiency**

**R. Linkohr**, Centre for European Energy Strategy CERE, Brussels, Belgium

10:15 **Metropolitan energy supply with integrated heat, power and cold production.**

**Takao Kashiwagi**, Tokyo University of Agriculture and Technology, Japan

10:45 **Coffee break**

### **Innovation and Technology in the CONCERTO projects**

**Chair: Ursula Eicker, University of Applied Sciences Stuttgart, Germany**

11:20 **Concerto Initiative and Polygeneration**

**Doris Österreicher**, Arsenal research, Vienna, Austria

11:40 **POLYCITY - Ostfildern / Germany: Biomass ORC trigeneration with district heating and decentral absorption cooling**

**Wolfgang Lotz**, Stadtwerke Esslingen, Germany

12:00 **POLYCITY - Torino / Italy: Polygeneration and Energy Management for a City District.**

**Pasquale Campanile**, Centro Ricerche FIAT, Italy

12:20 **POLYCITY - Cerdanyola / Spain: Efficient energy supply system in the Directional Centre of Cerdanyola**

**Francesc Figueras**, Consorci urbanístic del Centre Direccional de Cerdanyola del Vallès, Spain

12:40 **POLYCITY - Cerdanyola / Spain: Integration of Renewables into the DHC network - Optimisation and energy assessment**

**Alberto Coronas, Joan Carles Bruno**, CREVER - Universitat Rovira i Virgili, Tarragona, Spain

13:00 **Discussion**

13:15 **Lunch**

**Chair: Doris Österreicher, Arsenal Research, Vienna, Austria**

15:00 **Sesac - Decentral cooling with biomass cogeneration systems in Växjö, Sweden**

**Martin Magnusson**, Växjö Energi AB, Sweden

15:20 **TetraEner - Low temperature thermal exchange network using lake water in Geneva, Switzerland**

**François Maréchal**, Ecole Polytechnique Fédérale de Lausanne, Switzerland

15:40 **ECOSTILER - Cogeneration with biogas in the district heating system of Amsterdam, Netherlands**

**Peter Simoes**, Afval Energie Bedrijf of the city of Amsterdam, Netherlands

16:00 **Coffee break**

16:30 **ECO-City - Adsorption cooling in Helsingborg / Helsingor, Sweden / Denmark**

**Reto Hummelshøj**, COWI AS, Denmark

16:50 **ECO-City - Optimal polygen cooling concept for St. Olav Hospital in Trondheim, Norway**

**Geir Eggen**, COWI AS, Åmund Utne, Trondheim Energi AS, Norway

17:10 **Discussion**

17:30 **End of first conference Day**

20:30 **CONCERTO conference dinner, Hotel Husa Imperial Tarraco, Tarragona**

Polygeneration Technologies

**Chair: Srinivasa Murthy, Indian Institute of Technology, Madras, India**

- 9:00 Renewable Energy for process heat and power, potential and technologies  
**Horacio Perez-Blanco**, Penn State University, USA
- 9:25 Finnish experience on biomass utilisation for cogeneration with emphasis on gasification  
**Pasi Makkonen**, VTT, Finland
- 9:50 Novel cycles for power and refrigeration  
**Felix Ziegler**, Technische Universität Berlin, Germany
- 10:15 **Discussion**
- 10:30 **Coffee Break**

**Chair: Horacio Perez-Blanco, Penn State University, USA**

- 10:50 Recent developments in thermal driven cooling and refrigeration systems  
**Roberto Best I Brown**, CIE-UNAM, Mexico
- 11:15 Metal hydride based cooling systems with hydrogen as working fluid  
**Srinivasa Murthy**, Indian Institute of Technology Madras, India
- 11:40 Liquid desiccant-based air-conditioning systems  
**Manuel Conde-Petit**, M. Conde Engineering, Zurich, Switzerland
- 12:05 Advanced Absorption Chillers  
**Masahiro Ishimatsu**, Environment & Energy Equipment Operations, Yazaki Corporation, Japan
- 12:30 Advanced absorption Chillers and Heat Pumps for polygeneration applications  
**Jürgen Scharfe**, Veolia Water Solutions & Technologies, Erding, Germany
- 12:55 **Discussion**
- 13:10 **Lunch**

**Chair: Roberto Best I Brown, CIE-UNAM, Mexico**

- 14:30 Absorption Technology as a sustainable energy solution in the United States  
**Vikas Patnaik**, The Trane Company, USA
- 14:50 Novel Steam Engine for multi primary energy resources  
**Peter Platell**, Ranotor, Sweden
- 15:10 High Efficiency Polygeneration applications –Hegel  
**Franco Anzioso**, CRF, Italy
- 15:30 **Discussion**
- 15:45 **Coffee Break**

Applications

**Chair: Manuel Conde-Petit, M. Conde Engineering, Zurich, Switzerland**

- 16:05 OPTIPOLYGEN- Optimum Integration of Polygeneration in the food industry  
**Thomas Bouquet**, Cogen Europe, Brussels, Belgium
- 16:25 Integration of trigeneration systems in industrial processes  
**Jean Paris**, Ecole Polytechnique de Montreal, Canada
- 16:45 Polygeneration in fishing boats  
**Francisco Monedero**, IDAE, Spain
- 17:05 Polygeneration of Power and desalination with solar energy  
**J. Blanco**, CIEMAT, Plataforma Solar de Almería, Spain
- 17:25 Integration of Desalination with cold-heat power production in the tertiary sector  
**J. Uche**, CIRCE, Universidad de Zaragoza, Spain
- 17:45 **Discussion**
- 18:00 **End of Second Conference Day**

## **General Information**

- Conference venue:

Palau Firal i de Congressos de Tarragona  
Tarragona Trade-Fair and Congress Centre  
Arquitecte Rovira 2,  
43001 Tarragona, Spain  
Phone: +34 977 24 55 77  
Fax: + 34 977 24 34 08  
[info@palaucongrestgna.com](mailto:info@palaucongrestgna.com)  
[www.palaucongrestgna.com](http://www.palaucongrestgna.com)

- Conference Fees

Registration until August 31st, 2007:

Per person: €100,00

after August 31<sup>st</sup>, 2007:

Per person: €150,00

Fees cover admission to conference, coffee breaks, conference lunches and conference proceedings and CD-Rom.

- Registration

Via the conference website: [www.polygeneration.net](http://www.polygeneration.net)

Per fax: Please fill in the registration form bellow and send it back to:

Raquel Chaves

CREVER, Dep. of Mechanical Engineering. Universitat Rovira I Virgili

Avda Paisos Catalans, 26

43007 Tarragona, Spain

Fax number: +34 977 55 96 91.

[info@polygeneration.net](mailto:info@polygeneration.net)

Payment by bank transfer at: Caixa d'Estalvis de Catalunya  
Bank account: 2013 0291 94 0200651705  
BIC: CESCESBBXXX  
IBAN: ES42 2013 0291 94 0200651705

- Accommodation:

Viajes el Corte Inglés, AVENIDA RAMON Y CAJAL 31-33, Tarragona (Spain)

[www.polygeneration.net](http://www.polygeneration.net)

# Registration form

## European Conference on Polygeneration Technologies and Applications Palau Firal i de Congressos Tarragona, Spain October 16<sup>th</sup>-17<sup>th</sup>, 2007

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Family name First name

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Phone Fax

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E-mail

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Company / Organisation VAT NUMBER

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Postal address

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Postcode / City Country

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### Registration fees

- Before 31.08.2007  € 100,00  
- After 31.08.2007  € 150,00

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### Order conference proceedings (in case you cannot participate to the conference but wish to receive the proceedings)

- Only CD-Rom version  € 50,00  
- Paper version + CD-Rom  € 100,00

Payment by bank transfer at:

Caixa d'Estalvis de Catalunya  
Bank account: 2013 0291 94 0200651705  
BIC: CESCESBBXXX  
IBAN: ES42 2013 0291 94 0200651705

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Date Signature

Please return to:

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