



WCRE

World Council for Renewable Energy



EUROSOLAR and the World Council for Renewable Energy (WCRE) invite to

Energy storage and the case of energy autonomy, decentralization and efficiency

Second International Renewable Energy Storage Conference (IRES II)



Bundeshaus




Waterworks

19 - 21 November 2007
World Conference Center Bonn

Organizer: EUROSOLAR
World Council for Renewable Energy (WCRE)

In cooperation with: PREHEAT EUROBAT ESA
ELECTRICITY STORAGE ASSOCIATION

EnergieAgentur.NRW

 Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

dena
German Energy Agency

BONN
The UN-City

Sponsors: citysolar power plants

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VRD ENERGIE STIFTUNG
STIFTUNG FÜR ERNEUERBARE ENERGIEN

Media partner: vdi nachrichten

Chairmen´s Message

EUROSOLAR and the World Council for Renewable Energy (WCRE) invite to
Energy storage and the case of energy autonomy,
decentralization and efficiency
Second International Renewable Energy Storage Conference (IRES II)

We cordially invite you to the Second International Renewable Energy Storage Conference (IRES II).

In about 40 presentations, IRES II will embrace the current status of energy storage technologies, as well as other new research and industry approaches to electricity and heat storage, alongside such integrated solutions eliminating or minimizing the need for additional storage.

The conference aims at demonstrating how a diverse mix of Renewable Energy sources can be handled to ensure the balance between demand and supply and also, how more efficient and autonomous energy supply systems can be established.

EUROBAT and the Electricity Storage Association (ESA) are our partners at IRES II, as well as the European research cooperation for promoting heat storage, PREHEAT.

The IRES II addresses the research and development community in the fields of energy storage and grid management, suppliers of Renewable Energy products and services, Renewable Energy producers, energy planners, energy industry specialists, political institutions and decision makers.

Together, by providing economic, technological and political impulses, we can create fresh momentum to the worldwide development towards Renewable Energies.

IRES II will be held in parallel to the Second World Renewable Energy Assembly (WREA). This enables IRES II attendees to exchange thoughts and ideas with the WREA participants. We look forward to welcoming you at IRES II.



Hermann Scheer, MP
President EUROSOLAR
General Chairman WCRE
(Conference Chairman)



Wolfgang Palz
Chairman WCRE



Dirk Uwe Sauer
RWTH Aachen University
(Scientific Conference Chairman)

Steering-Committee: Dirk Uwe Sauer, Brad Roberts, Wim van Helden,
Peter Schossig, Ingo Stadler, Bernhard Riegel

Conference language: German/English (first day), English (second and third day)

Organizer: EUROSOLAR, WCRE

Conference Director: Irm Pontenagel

Conference Assistants: Valentin Hollain, Daniel Craffonara

Monday, 19 November 2007

8.30 **Registration**

9.30 **Opening and welcome**

*Irm Pontenagel, Managing Director
EUROSOLAR*

*Christa Thoben, Minister, Ministry of
Economic Affairs and Energy of the State of
North Rhine-Westphalia*

Norbert Hüttenhölischer, EnergyAgency.NRW

10.20 **Renewable Energy scenarios**

Chair *Wolfgang Palz, WCRE*

The state of the art of Renewable Energy power technologies

*Antonio Pflüger, International Energy Agency
IEA / France*

Scenarios of a future energy supply

*Wolfram Krewitt, German Aerospace Center
DLR / Germany*

Technology and transition scenarios on the road to 2050 - which energy carriers are needed and how to include the mobility sector

*Dirk Uwe Sauer, RWTH Aachen University /
Germany*

The multifunctional power plant car

Wolfgang Palz, WCRE / Belgium

Decentralization and modularization: The technologic, eco-logic and socio-logic of new Renewable Energies

*Hermann Scheer, President EUROSOLAR,
General Chairman WCRE*

13.00 **Lunch**

14.00 **Renewable Energy and grid structure**

Chair *Preben Maegaard, WCRE*

*Hermann Albers, German WindEnergy
Association BWE / Germany*

*Christine Wörten, Deutsche Energie-Agentur
GmbH (dena) – German Energy Agency /
Germany*

*Udo Paschedag, Federal Ministry for the
Environment, Nature Protection and Nuclear
Safety BMU / Germany*

15.00 **Coffee break**

15.30 **Overview on storage technologies**

Chair *Preben Maegaard, WCRE*

From hybrid systems towards sector-spanning integration: concepts for the use of wind energy for individual transport

*Roger Kohlmann, German Electricity Association
VDEW / Germany*

CHP with thermal storage for peak power generation in intelligent grids

*Anders N. Andersen, Aalborg University /
Denmark*

Overview on electrical storage systems and international activities and installations

*Brad Roberts, Electricity Storage Association
ESA / USA*

Overview on low, medium and high temperature storage systems for households, energy storage and industrial applications

*Jean-Christoph Hadorn, Swiss Federal Office of
Energy SFOE / Switzerland*

17.30-18.30 **Panel discussion I (Politics)**

Moderation: Rudolf Schulze, VDI Nachrichten

Panelists:

*Dirk Uwe Sauer, RWTH Aachen University
Hermann Scheer, President EUROSOLAR, General Chairman WCRE
Gerhard Weissmüller, Technische Werke Ludwigshafen
Roger Kohlmann, German Electricity Association VDEW*

20.00 **Welcome reception by EUROSOLAR**

Tuesday, 20 November 2007, **Parallel Sessions**

9.00 **Thermal storage technologies (A)**

Chair *Peter Schossig, Fraunhofer ISE*

The sun as main energy supplier for heating: from vision to reality

Ulrich Leibfried, CONSOLAR / Germany

Air-sand heat transmitters for energy storage in solar tower power stations

Shashikant Warekar, University of Applied Sciences Aachen / Germany

Paraffin oil-in-water emulsion as phase change slurry for thermal energy storage

Li Huang, Fraunhofer UMSICHT / Germany

Phase-change materials for energy storage and air-condition back-up

Anmol Kamdar, PCM Energy P. Ltd / India

9.00 **Electrical storage technologies (B)**

Chair *Bernhard Riegel, EUROBAT*

Overview on current status of lithium-ion batteries

Andreas Jossen, Zentrum für Sonnenenergie- und Wasserstoff-Forschung BW / Germany

Making the most of redox flow batteries

Martha Schreiber, Funktionswerkstoffe Forschungs- und Entwicklungs GmbH / Austria

High temperature batteries NN

Using intelligent storage to smooth wind energy generation

Peter A. Coppin, Commonwealth Scientific and Industrial Research Organisation CSIRO / Australia

11.00 **Coffee break**

11.30 **Thermal storage technologies (A)**

Chair *Wim van Helden, PREHEAT*

Polymer-derived ceramics - multifunctional materials for the use of Renewable Energies

Michael Scheffler, BTU Cottbus / Germany

New adsorption materials for heat storage and heat transformation

Stefan Henninger, Fraunhofer ISE / Germany

Highly efficient latent heat storage technology for process heat and power plants

Rainer Tamme, German Aerospace Center DLR / Germany

11.30 **Electrical storage technologies (B)**

Chair *Martha Schreiber, Funktionswerkstoffe F&E GmbH*

Grid frequency regulation and primary load balancing using flywheel technology

Matthew L. Lazarewicz, Beacon Power Corporation / USA

Detailed cost calculations for battery storage systems

Dirk Uwe Sauer, RWTH Aachen University / Germany

The operation of decentralized storage systems from the point of view of the energy industry

Gunnar Bärwaldt, TU Braunschweig / Germany

13.00 **Lunch**

14.00 **Poster session (Posters are also on display during 1st and 3rd day)**

Poster exhibition overview at www.eurosolar.org

15.00 **Thermal storage technologies (A)**

Chair *Angelina Galiteva, WCRE*

Characterisation of MgSO₄ for thermochemical storage

Herbert Zondag, Energy research Centre of the Netherlands ECN / The Netherlands

Energy storage and recovery through reversible cycle processes

Bodo Wolf, Founder CHOREN Industries / Germany

2-step thermochemical process for solar H₂-production

Martin Roeb, German Aerospace Center DLR / Germany

Evolution of H₂ and O₂ from water with a TiSi₂-based catalyst and solar radiation

Martin Demuth, Max Planck Institute / Germany

15.00 **Electrical storage technologies (B)**

Chair *Brad Roberts, ESA*

An innovative adiabatic compressed air energy storage-system (CAES) system in Lower Saxony

Bernd Calaminus, EnBW / Germany

State of the art and development potentials - hydrogen

Hubert Landinger, Ludwig-Bölkow-Systemtechnik / Germany

The ENERTRAG-hybrid-power plant

Stefan Wagner, ENERTRAG / Germany

Low maintenance / long lifetime energy storage for community-center buildings

Troy McBride, Elizabethtown College / USA

17.00 **Coffee break**

17.30 **Panel discussion II (Technology) / Poster award**

20.00 **Reception at the Historic Town Hall of the City of Bonn**

Wednesday, 21 November 2007, **Parallel Sessions (morning)**

8.30 **Autonomous power supply (C)**

Chair *José Etcheverry, WCRC*

Energy management system for PV hybrid systems supplying autonomous measuring stations

Simon Schwunk, Fraunhofer ISE / Germany

Determining the energy pay-back periods of PV-battery stand-alone systems: case study Greece

John K. Kaldellis, TEI of Piraeus / Greece

Optimized battery management system for the extensions of life cycles and reliability of storage in autonomous electricity supply systems

Rudi Kaiser, Fraunhofer ISE / Germany

Lifetime simulations of lead-acid batteries in power systems with high penetration of Renewable Energy such as solar and wind

Anton Andersson, RISOE / Denmark

8.30 **Thermal storage in electricity grids (D)**

Chair *Anders N. Andersen, Aalborg University*

400 GWh of existing energy storage is waiting to be integrated into electricity supplies to balance fluctuating Renewable Energies

Ingo Stadler, University of Applied Sciences Cologne / Germany

Operation strategies for CHP-plants in a virtual power plant network making use of the building's internal thermal capacities

Jochen Link, Fraunhofer ISE / Germany

Biogas as compensative energy in the regenerative combi-power plant

Hanna Emanuel, Schmack Biogas AG / Germany

Energy markets driving control of small-scale energy storage in combination with distributed co-generation

René Kamphuis, Energy research Centre of the Netherlands ECN / The Netherlands

10.30 **Coffee break**

11.00 **Applications and demonstration**

Chair *Ingo Stadler, University of Applied Sciences Cologne*

Proven technology - vanadium redox flow batteries

Hugh Sharman, VRB Power / Canada

Electrical energy storage from 100 kW - state of the art technologies, realisations, fields of use

Christian Dötsch, Fraunhofer UMSICHT / Germany

Seasonal solar thermal energy storage in Germany

Dirk Mangold, Steinbeis Research Institute for Solar and Sustainable Thermal Energy Systems / Germany

Virtual power plants

Gerhard Weissmüller, Technische Werke Ludwigshafen / Germany

13.00 **Lunch**

14.00 **Political initiatives / How to manage a full Renewable Energy supply**

Chair *Dirk Uwe Sauer, RWTH Aachen University*

Approaches to 100% Renewable Energies

Wolfhart Dürschmidt, Federal Ministry for the Environment, Nature Protection and Nuclear Safety BMU / Germany

Technical, economical and political factors of success for 100% RES regions in Germany

Martin Hoppe-Kilpper, Kompetenznetzwerk Dezentrale Energietechnologien, deNEet / Germany

Aggregate scenario for an energy supply exclusively from domestic Renewable Energy resources

Eberhard Waffenschmidt / Wolf von Fabek, Solarenergie-Förderverein Deutschland e.V. SFV / Germany

15.30 **Closing remarks**

Hermann Scheer, President EUROSOLAR, General Chairman WCRC

16.00 **End of conference**

Binding Registration

- Second international conference "Energy storage and the case of energy autonomy, decentralization and efficiency" (IRES II)**

Registration fee

if registering **before 30 September, 2007**

if registering **after 30 September, 2007**

_____ 800,00 €uro

_____ 900,00 €uro

member of EUROSOLAR/WCRE 650,00 €uro

member of EUROSOLAR/WCRE 750,00 €uro

(membership number _____)

(membership number _____)

Second World Renewable Energy Assembly (WREA) 2007

For more information please visit: www.eurosolar.org or www.wrea2007.org

Please remit your registration fee to:

Account no. 40 42 50, Sparda Bank West eG, Bank Code no. 370 605 90, IBAN DE98 3706 0590 0000 404250, BIC GENODE33SPK, indicate: "IRES II 2007".

Name _____

Organisation _____

Street _____

Postcode, City _____ Country _____

E-mail _____ Phone/Fax _____

Date _____ Signature _____

Please fill in the registration form and send it to

EUROSOLAR, Kaiser-Friedrich-Str. 11, D-53113 Bonn/Germany

Phone: +49-(0)228-362373 or 362375,

Fax: +49-(0)228-361279 or 361213

E-mail: info@eurosolar.org, info@wcre.org

Internet: www.eurosolar.org, www.wcre.org



Online-registration and further information: www.eurosolar.org

The participation fee for the conference includes conference handouts, lunch and drinks during breaks, as well as a dinner reception. Once your registration has been received, you will be sent a confirmation document including a registration number. In case of cancellation (only accepted in writing), we charge a handling fee amounting to 50% of the registration fee. For cancellations on the day of the conference or in case of absence the full participation fee is due. You may choose a person to replace you without additional costs. The organizers reserve the right to change the programme should circumstances so require.

Conference Venue: World Conference Center Bonn (www.worldccbonn.com), Görresstraße 15 (Bundesviertel), D-53113 Bonn (Detailed travel information is available online)