



© Fraunhofer ISE, PV Wind-hybrid System, Qinghai, China

PV-Hybrid and Mini-Grid

Thursday, April 26th, 2012

Friday, April 27th, 2012

Centre de Congrès Le Manège

Chambéry, France



Georg Bopp
Fraunhofer ISE, Freiburg, Germany

Dr. Jens Merten
INES Institut National de l'Énergie Solaire, Le Bourget du Lac, France

Dr. Houda Ben Jannet Allal
OME, Sophia Antipolis, France

Dr. Hendrik Binder
Risø National Laboratory,
Roskilde, Denmark

Georg Bopp
Fraunhofer-Institut für Solare
Energiesysteme ISE, Freiburg,
Germany

John Chadjivassiliadis
Nat. Delegate In MG/ EC PVTP,
Glyfada-Athens, Greece

Prof. Nikos Hatzigiorgiou
NTUA National Technical
University of Athens, Greece

Prof. Dr.-Ing. Werner Kleinkauf
University of Kassel, Germany

Klaus Knecht
InWEnt - Capacity Building,
Berlin, Germany

Jean-Christian Marcel
TENESOL S.A., La Tour de
Salvagny, France

Prof. Dr. Didier Mayer
Ecole des Mines de Paris,
Sophia Antipolis, France

Bernard McNelis
IT Power Ltd., Chineham,
Hampshire, United Kingdom

Pietro Menna
European Commission, DG
TREN, Brussels, Belgium

Dr. Jens Merten
INES Institut National de
l'Énergie Solaire, Le Bourget
du Lac, France

Dr. Wolfgang Palz
Chairman World Council,
Renewable Energies, Brussels,
Belgium

Gonzalo Piernavieja Izquierdo
Instituto Tecnológico de Cana-
rias (ITC), Canary Islands, Spain

Dr. Christos Protogeropoulos
Phoenix Solar EPE, Athens,
Greece

Prof. Dr.-Ing. Jürgen Schmid
Fraunhofer-Institut für Wind-
energie Energiesystemtechnik
(IWES), Kassel, Germany

Robert Soler
EDF RetD/Norm, Clamart,
France

Dr.-Ing. Philipp Strauss
Fraunhofer-Institut für Wind-
energie und Energiesystem-
technik IWES, Kassel, Germany

Dr. Stathis Tselepis
CRES - Centre for Renewable
Energy Sources, Athens, Greece

Xavier Vallvé
Trama TecnoAmbiental S.L.,
Barcelona, Spain

Michael WolIny
Alliance Rural Electrification,
Brussels, Belgium

Sponsors

Gold Sponsor:



Bronze Sponsor:



Supporting Organisations



ISES
International
Solar Energy
Society



Media Partners



Conference Focus

- Development and Application of Technologies
- Exchange of Results and Ideas
- Know-how Transfer
- Identification of R&D Needs
- Presentation of Field Experience

The chairmen tandem is happy to invite you to the 6th European Conference on PV-Hybrid Systems and Mini-grids in Chambéry close to the French Alps.

This type of systems has been developed to find solutions for the electrification of rural regions and islands and provide an enhanced electricity service. In comparison to village electrification with solar home systems a central PV-Hybrid System reduces the specific electricity cost and enables us to provide a grid equivalent service to the users. This cost reduction is achieved by the aggregation of the expensive system components - the photovoltaic generator, the batteries, and the power converters - which are mutualised.

It is this grid equivalent service which is a crucial condition for starting up economic activities in rural regions, which improve wealth and reduce emigration. This is why PV hybrid systems and Mini-grids are an important tool to achieve the millennium development goals.

However, hybrid systems and minigrids are more complex, and there are many exiting topics to be addressed in this conference to find cost efficient solutions for reliable systems:

- The higher investments for these systems need more efforts to be done on financial engineering. The political framework conditions are crucial: are the available subsidies for rural electrification designated to grid extension only, or are hybrid systems sufficiently accepted?
- We need sustainable business models which cope with the high upfront investments, the need of a regular collection of fees from the user, which assure the regular on-site maintenance, and which are able to accumulate funds for the replacement of the battery.
- We need system components which are cheap, robust, reliable, and which should be easily maintained by a local technician on site. Local manufacture would be great.
- We need hybrid systems that work and use any kind of locally available energy sources. What are the novel examples for hybrid systems and minigrids?
- Even the best system components will not work when they do not work together as a system. The key words are here Energy Management and grid control for the long term and short term system control. These are also issues concerning the smartgrids although the stand alone hybrid systems started long before the word smart grid has been invented. The smart grid people surely can learn a lot from PV hybrid systems and minigrids, what can we learn from them?
- The user interaction with the system is crucial for its functioning, and there is no success without user satisfaction. How does the user use the system? How does he learn the limits and possibilities of the system?
- Finally, we need news on the lessons learned from field experience

The conference location of Chambéry has not been only chosen for its beautiful settings. Just a jump away, there is the solar innovation campus housing INES, the National Institute of Solar Energy, which will be happy to receive you for a technical visit!

We are looking forward to welcoming you in Chambéry!

Your chairmen tandem

Georg Bopp

Fraunhofer ISE, Fraunhofer Institute for Solar Energy, Freiburg, Germany

Dr. Jens Merten

INES, Institut National de l'Energie Solaire, Le Bourget du lac, France



Chambéry is close to the French Alps near Lac du Bourget. Once capital of Savoie, the ancient town is famous for its Chateau and its 15th century Cathedral.

Chambéry can be reached via Lyon Airport (75 km) and Genève Airport (90 km). The TGV operates daily from Paris (3h) and Lyon (1h).



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 PV-HYBRID and MINI-GRID.
- The speakers are leading scientific and business experts.
- The programme structure and the conference venue best ensure **exchange of views** between participants and presenters.
- The **detailed proceedings book and the 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

Users of renewable energy systems and mini-grid, users involved in rural electrification, manufacturers and suppliers of renewable energy systems and energy storage technology, energy consultants, public utilities, users from developing countries, development programme specialists, energy policy makers, other attendees

ENERGY MANAGEMENT WORKSHOP

Centre de Congrès Le Manège, Chambéry, France
April 25th, 2012

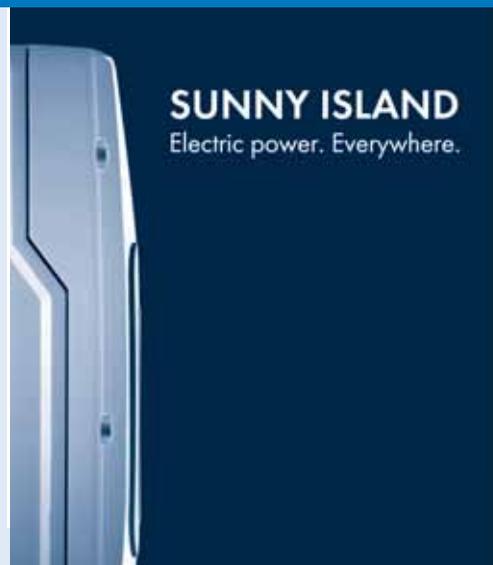
Energy Management is crucial for the operation of PV-Hybrid Systems. We can distinguish two levels: on the production side, it mainly assures the proper operation of the systems' battery with the aim to assure electricity service and to maximize battery lifetime. On the other hand, tools are needed to maximize the matching of the electricity demand to the solar generation and to adapt this demand to the system state.

This one day workshop gives for these two aspects an introduction on the state of the art, up-to-date developments and a practical review on the topic. With a final session on the industrial realizations, the participant will be able to implement Energy Management in the field.

Each talk includes 5 minutes discussion.

Seminar Chairman: Jens Merten, INES, Le Bourget du Lac, France

- 09.00 **Registration**
- 09.30 **Opening Address**
Gabriele Struthoff-Müller, OTTI, Regensburg, Germany
- 09.45 **Introduction into Energy Management Strategies for PV-Hybrid Systems**
Georg Bopp, Fraunhofer ISE, Freiburg, Germany
- 10.20 **Forecasting Strategies**
Xavier le Pivert, INES, Le Bourget du Lac, France
- 10.40 **Coffee Break**
- 11.20 **Energy Management by Mixed Integer Programming**
Long Ha, INES, Le Bourget du Lac, France
- 11.40 **Overview about different Communication Protocols for PV-Hybrid Systems**
Jakob Wachtel, Fraunhofer ISE, Freiburg, Germany
- 12.15 **Lunch Break**
- 13.45 **Review of feasible Solutions for Demand Side Management**
Brisa Ortiz, Fraunhofer ISE, Freiburg, Germany
- 14.20 **The Energy Dispenser and Load Management Devices**
Xavier Vallve, TTA, Barcelona, Spain
- 14.40 **Coffee break**
- 15.20 **Industrial Realizations of Energy Management and Communication Protocol**
(SMA, Studer, IngeTeam, Schneider/Xantrex, Steca, Outback, Otonet etc. invited)
- 16.40 **Discussion**
- 16.55 **Closing remarks**
Jens Merten, INES, Le Bourget du Lac, France
- 17.00 **End of the Workshop**



IEA PVPS Planning Workshop NEW TASK ON PV HYBRIDS AND MINI-GRIDS Chambéry, France - April 25th, 2012

(in advance of the 6th European PV Hybrid and Mini-grid Conference)

The current IEA Photovoltaic Power Systems Programme (PVPS) Task 11 on PV hybrid systems in mini-grids completes its work plan in 2011. Experts from PVPS member countries who are interested in continuing the work of Task 11 in a new PVPS sponsored Task are invited to a planning meeting from 17.00 hrs to 20.00 hrs on 25 April, 2012 in the Centre de Congrès Le Manège, Chambéry, France (venue of the 6th European PV Hybrid and Mini-Grid Conference).

The purposes of this initial meeting are to

- Gauge the level of interest in a new PVPS R&D project (Task) on PV hybrid systems and mini-grids.
- Identify potential topics for the Task.
- Set up a working group to prepare a draft Task Work Plan for discussion at the IEA PVPS Executive Committee meeting in the Fall of 2012 (assuming there is sufficient interest among Experts).

Interested Experts are requested to contact the Task 11 Operating Agent, Konrad Mauch (konrad.mauch@ieee.org) to obtain further information. General information about the IEA PVPS and Task 11 can be found at <http://www.iea-pvps.org/> and <http://www.iea-pvps-task11.org/>.

6th European Conference

PV-HYBRID AND MINI-GRID

Thursday, April 26th, 2012

09.00 Opening Address

Gabriele Struthoff-Müller, OTTI, Regensburg, Germany
Georg Bopp, Fraunhofer ISE, Freiburg, Germany
Jens Merten, INES, Le Bourget du lac, France

OPENING SESSION: ECONOMICAL FRAMEWORK

Chair: Georg Bopp, Fraunhofer ISE, Freiburg, Germany
Jens Merten, INES, Le Bourget du lac, France

09.25 The Off-Grid Market - a Land of Opportunities

Michael Wollny, Alliance Rural Electrification, Brussels, Belgium

09.40 PV Hybrid Systems within Minigrids

Konrad Mauch, Gabriola, Canada

09.55 Photovoltaic as Economic Alternative for a Diversification of the Energy Mix in New Energy Markets – Example Chad, Central Africa

David Lecoufle, Fichtner GmbH & Co. KG, Stuttgart, Germany

10.10 Questions

10.25 Coffee Break and Visit to the Poster and Trade Exhibition

SYSTEM COMPONENTS

Chair: Jean Christian Marcel, Tenesol, La Tour de Salvagny, France

11.10 Power Electronics for Next Generation Village Energy Supply

Florian Reiners, Fraunhofer ISE, Freiburg, Germany

11.25 Hybrid Lithium-Ion / Lead-Acid Battery System for Village Power Supplies: How to make Lithium-Ion Technology Cost Competitive

Simon Schwunk, Fraunhofer ISE, Freiburg, Germany

11.40 Discussion

11.50 Poster Presentations

A1 On the Realistic Validation and Testing of Power Electronics Dominated Mini-Grids.

Erik de Jong, KEMA Electricity Transmission and Distribution, AR Arnhem, Netherlands

A2 Photovoltaic Co-Generation with Solar-Assisted Heat Pumps

Luca A. Tagliafico, University of Genoa, Genoa, Italy

A3 Multi-Storage Experimental Test-Bed for Investigation of Intelligent Decentralized Power Supply Units

Thilo Bocklisch, TU Chemnitz, Chemnitz, Germany

A4 Smarter Mini-Grids Business Models

Fabrice Poulin, Infinergia Consulting, Grenoble, France

B1 End-users' Experiences with Electricity Supply from Stand-alone Mini-Grid Solar PV Power Stations in Rural Areas of Western China

Chian-Woei Shyu, National Chung-Cheng University, Chia-Yi, Taiwan

B2 Evaluation of a Micro PV-Diesel Hybrid System in Tanzania

Caroline Nielsen, Dalarna University, Falun, Sweden

B3 Solar for the poor! Best Praxis examples with Sunny Island Systems in Haiti

Willi Ernst, CentroSolar Group AG, Paderborn, Germany

B4 Evaluation of PV-Standalone Systems in Bolivia

Jonathan Frederik Krink, HAW Hamburg - University Of Applied Sciences Ecoenergia Falk S.R.L., Hamburg, Germany

B5 Applying Lessons Learned from the Implementation of Solar Home Systems to the implementation of Hybrid Systems in Developing Countries

Geoffrey Stapleton, Global Sustainable Energy Solutions Pty Ltd, Ulladulla, Australia

12.20 Presentation of Sponsors

- SMA (Gold)

- Schneider Electric (Bronze)

12.40 Lunch and Visit to the Trade Exhibition

SYSTEMS TECHNOLOGY PART 1

Chair: Gonzalo Piernavieja Izquierdo, Instituto Tecnológico de Canarias (ITC), Canary Islands, Spain

14.00 Analysis Of Mini-Grid Installations: An Overview On System Configurations

Christian Breyer, Reiner Lemoine Institut GmbH, Berlin, Germany

14.15 Comparison of System Efficiency and Performance Indicator of Different PV Hybrid System Topologies

Michael Müller, Steca Batterieladesysteme und Präzisions-elektronik GmbH, Memmingen, Germany

14.30 Sustainable Electricity Generation for Rural and Peri-Urban Populations of Sub-Saharan Africa: The "Flexy-Energy" Concept

Yao Azoumah, Foundation 2iE, Ouagadougou, Burkina Faso

14.45 Discussion

15.00 Poster Session

C1 Energy Management in a Mini-Grid Dedicated to Industrial and Public LED Lighting: A System developed by Sunna

Thomas Samuel, Sunna Design, Bordeaux, France

C2 Village Solar Electrification: A Review of Feasible Solutions for Demand Side Management

Brisa Ortiz, Fraunhofer ISE, Freiburg, Germany

C3 15 Years of Field Experience with the "Daily Energy Allowance" Concept as the Basis for Load Control and Guide for Social Behaviour in Rural Micro Grids

Antoine Graillet, Trama Tecnambiental, Barcelona, Spain

C4 An Open Approach to Hybrid Power Systems Including Demand Side Management

Sven Ruin, TERO, Köping, Sweden

C5 Voltage Level as Information Carrier in Emergency Grid Operation

Gunnar Kaestle, Institut für Elektrische Energietechnik TU Clausthal, Clausthal-Zellerfeld, Germany

C6 Simulation Of The Energy Management For A Hybrid System: Application To A High Mountain Refuge "Refuge Du Gouter"

Henri Zara, INES, Le Bourget du Lac, France

- C7 **Control Issues and Solutions in High Renewable Penetration in High Power Micro Grid Systems**
Stephen J. Phillips, Optimal Power Solutions Pty Ltd, Perth, Australia
- 15.20 **Coffee break and Visit to the Trade and Poster Exhibition**
Coffee break and Visit to the Trade and Poster Exhibition

SYSTEM TECHNOLOGY PART 2

Chair: Jürgen Schmid, Fraunhofer IWES, Kassel, Germany

- 16.10 **High-Power Pv-Hybrid Systems: Is it their Time Now?**
Luis Arribas, CIEMAT, Madrid, Spain
- 16.25 **Optimising a Renewables Based Island Grid and Integrating a Battery Electric Vehicles Concept on the Example of Graciosa Island, Azores Archipelago**
Markus Hlusiak, Reiner Lemoine Institut, Berlin, Germany
- 16.40 **A Minigrd of Many Individual Solar Home Systems: A Distributed Minigrd. Concept and Test Site in Switzerland.**
Pierre-Olivier Moix, Studer Innotec, Sion, Switzerland
- 16.55 **Discussion**
- 17.10 **Poster Session**
- D1 **Simulation of AC, DC and AC-DC Coupled Hybrid Mini-Grids in Search of the most Efficient System**
Jorge Solórzano, Universidad Politécnica de Madrid-Instituto de Energía Solar, Madrid, Spain
- D2 **Design Study of a PV-Diesel Hybrid System for a Micro-Grid in Tanzania**
Frank Fiedler, Dalarna University Solar Energy Research Center (SERC), Borlänge, Sweden
- D3 **Designing and Sizing a Wind-PV Hybrid Mini-Grid Solution for Rural Electrification in Cameroon : Nganha Case Study**
Joseph KENFACK, Ecole Polytechnique / University of Yaoundé , Yaoundé, Cameroon
- D4 **Suntool Off-Grid: A Practical System Sizing Software for PV Hybrid Systems**
Lars Koerner, Solar World, Bonn, Germany
- D5 **A large-scale Electrical Grid Simulation for Massive Integration of Distributed Photovoltaic Energy Sources**
Evora Evora, Siani Eifer, Las Palmas de Gran Canaria, Spain
- D6 **PV-Wind Hybrid Power System Performance Simulation using Simulink**
Mustafa Engin, Ege University Ege Tech., Izmir, Turkey
- D7 **Modeling for Hybrid Micro-Grids: A Case Study for PV in India and Implications for the Global Market Development**
Shannon K. Fulton, SolarVision Co., USA
- 17.30 **Visit to the Poster and Trade Exhibition**
- 18.15 **End of the First Conference Day**
Guided City Tour will be provided from 18.30 – 19.45 hrs
- 20.00 **Dinner in Chambéry**

Friday, April 27th, 2012

ENERGY MANAGEMENT AND GRID CONTROL

Chair: Henrik Bindner, Risø National Laboratory, Roskilde, Denmark

- 08.30 **Direct Load Control by AC Frequency Modulation**
Philip Douglass, Technical University of Denmark Center for Electric Technology, Kgs. Lyngby, Denmark
- 08.45 **Economic Dispatch and Demand Side Management via Frequency Control in Pv-Diesel Hybrid Mini-Grids**
Luiz Lopes, Concordia University, Montreal Quebec, Canada
- 09.00 **Dynamic Analysis of a Stand-Alone Hybrid PV-Diesel System with Battery Storage**
Tuan Tran-Quoc, CEA/INES, Le Bourget-du-Lac, France
- 09.15 **The NACIR Project: CPV Island System for Water Pumping and Irrigation in Egypt – Energy Management Strategy and Field Results**
Alexander Schies, Fraunhofer ISE, Freiburg, Germany
- 09.30 **On Line Efficient Energy Management Strategy of an Off-Grid Hybrid Power Generation System**
Chrysovalantou Ziogou, CPERI/CERTH, Thessaloniki, Greece
- 09.45 **Discussion**
- 10.10 **Coffee Break and Visit to the Poster and Trade Exhibition**

DESIGN AND SIMULATION

Chair: Xavier Vallvé, Trama TecnoAmbiental S.I., Barcelona, Spain

- 10.50 **Energy Supply in Mini-Grids Regarding Renewable Energies: An Optimization for Petite Martinique**
Philipp Blechinger, Reiner Lemoine Institute, Berlin, Germany
- 11.05 **Design of PV Hybrid Systems: Energy and Power Requirements - The Unknown Input Variables**
Martin Rothert, SMA Solar Technology AG, Niestetal, Germany
- 11.20 **IPSYS – A Tool for Development and Analysis of Controllers for Hybrid System**
Henrik Bindner, Risø National Laboratory Technical University of Denmark, Roskilde, Denmark
- 11.35 **Discussion**

POSTER AWARD

Committee: Wolfgang Palz, Chairman World Council, Renewable Energies, Brussels, Belgium (tbc)

John Chadjivassiliadis, Nat. Delegate In MG/ EC PVTP, Glyfada-Athens, Greece

11.50 **Award Ceremony: Two Winners**

12.00 **Lunch and Visit to the Poster and Trade Exhibition**

FIELD EXPERIENCE PART 1

Chair: Didier Mayer, Ecole des Mines de Paris, Sophia Antipolis, France

- 13.15 **10 Years Field Experience with Modular AC-coupled Off-Grid Systems**
Jürgen Schmid, Fraunhofer IWES, Kassel, Germany
- 13.30 **Field Experience on Operation and Repowering of PV-Hybrid Systems**
Pablo Diaz, Universidad de Alcalá, Alcalá de Henares, Spain
- 13.45 **Analysis of the Performance and Impact of the Rural Electrification Using Solar Hybrid System for Rural Schools in Sabah, Malaysia – Case Study**
Mahmud Abdul Muhaimin, Public Works Department Of Malaysia, Kuala Lumpur, Malaysia
- 14.00 **Solar Hybrid Mini-Grid - A holistic approach**
Fabian Jochem, Juwi Solar GmbH, Wörrstadt, Germany
- 14.15 **Discussion**
- 14.35 **Coffee Break**

FIELD EXPERIENCE PART 2

Chair: Christos Protogeropoulos, Phoenix Solar EPE Athens, Greece

- 15.10 **Performance Analysis of the First Medium Size Grid-Connected Hybrid System in Burkina Faso for Powering a Bank Building**
Mark Vervaart, INES/CEA INES R.D.I, Le Bourget-du-Lac, France
- 15.25 **From Feedback on International Experiences to Improvements of PVHybrid Power Systems**
Guy Marboeuf, Electricite De France, Paris, France
- 15.40 **Novel example of PV and Wtg Back Up Power Systems for Weak Rural Grids in Lebanon**
Xavier Vallvé, Trama Tecnioambiental S.L., Barcelona, Spain
- 15.55 **Operation and Maintenance of PV Hybrid Systems in Remote Villages in Amazonas, Brazil**
Cesar Sobral Vieira, Guascor Solar do Brazil, Campinas SP, Brazil
- 16.10 **Discussion**
- 16.30 **Closing Remarks**
Georg Bopp, Fraunhofer ISE, Freiburg, Germany
Jens Merten, INES, Le Bourget du lac, France
- 16.45 **End of the Conference**
Technical Tour to INES, Le Bourget du Lac, by bus – only for registered people.

Organisation Committee

Eckardt Günther
Gabriele Struthoff-Müller
OTTI e.V.
Renewable Energies
Wernerwerkstraße 4,
93049 Regensburg, Germany
Phone +49 941 29688-29
Fax +49 941 29688-54
gabriele.struthoff-mueller@otti.de

Conference Venue

Centre de Congrès - Le Manège
331 rue de la République
73000 Chambéry
Phone +33 04 79 33 30 30
Fax +33 04 79 85 88 78
congres@mairie-chambery.fr
www.chambery-congres.fr

Accommodation

Please book your accommodation as soon as possible by yourself.
www.booking.com

Conference Fee

If registered until March 14th, 2012 | after March 14th, 2012
Per Person: € 740,- | 820,-
Member of OTTI and supporting organizations:
Per Person: € 640,- | 690,-

Energy Management Workshop

If registered until March 14th, 2012 | after March 14th, 2012
Per Person: € 290,- | 340,-

IEA PVPS Planning Workshop

free of charge

From 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, two conference lunches, a dinner, the conference proceedings and CD-Rom.

Conditions of participation and cancellation

You will receive your registration documents with receipt of your registration. The participation fee is VAT-exempt and due net with receipt of the invoice. Please transfer the invoice amount not later than 14 days before the conference starts. Otherwise a copy of the transfer order must be presented at the conference desk. All bank charges have to be covered by the transmitter. Entrance to the conference can only be permitted if OTTI has received the payment. OTTI reserves the right to make modification and amendments of any kind for urgent reasons. In the case of a cancellation of your registration up to 30 days before the seminar takes place, we do not raise a cancellation fee. For cancellations made within a period of 30 to 15 days before the start of the seminar, we charge a service fee of € 120. In the event of cancellations made later than 15 days before the seminar, or in the case of absenteeism, the total participation fee will be charged, unless you are able to provide evidence of a deviating amount of damages or expenses. The cancellation must be in written form. The person representing the contracting party may be replaced at any time but a written notice is necessary not later than 4 days before the conference starts. Irrespective of legal basis, OTTI shall only be liable for property damage and pecuniary loss which occurred due to intent or gross negligence. The place of fulfilment and jurisdiction is Regensburg, Germany.

Workshop

ENERGY MANAGEMENT (EMW 4117)

April 25th, 2012

6th European Conference

PV-HYBRID AND MINI-GRID (IPV 3734)

April 26th – April 27th, 2012

OTTI e.V.

Headword: PV-Hybrid and Mini-Grid

Wernerwerkstraße 4
93049 Regensburg
Germany

Please print your member or customer number:

OTTI (Member number only)

AGENCE ECONOMIQUE

EPIA

EUREC

FRAUNHOFER ISE

ISES

INES

PHOTOVOLTAIC AUSTRIA

ALLIANCE RURAL
ELECTRIFICATION

- I will participate in the conference (IPV 3734).
- I will participate in the technical visit at INES (free of charge, online registration under http://www.otti.de/pdf/Formulare_Visit_to_INES_on_Friday_27th201.pdf, passport required, INES-registration form to be sent until March 29th to inscriptions@ines-solaire.org)
- I will participate in the Energy Management Workshop (EMW 4117).
- I will participate in the IEA PVPS Planning Workshop - free of charge.
- 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 € 160,00 (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.

Family name

First name Mr/Mrs/Ms/Dr/Prof.

Phone Fax

E-Mail

Department/Position

Company/Institute

Postal address

Postal code/City/ Country

Invoice address (if it differs from registration address)

Company/Institute

Postal address

Postal code/City/ Country

Economic sector Number of employees

Member of OTTI

Member number OTTI

Date Signature/Company stamp

Registration only valid with signature and company stamp!

Energy Management Workshop

European Conference PV-Hybrid and Mini-Grid

	April 25 th , 2012	April 26 th , 2012	April 27 th , 2012
08:30			
09:00	Workshop		Energy Management and Grid Control
09:30	Registration Opening Address	Opening Address	
10:00	Energy Management Strategies	Economical Framework	
10:30	Forecasting Strategies		
11:00			Design and Simulation
11:30	Mixed Integer Programming	System Components	
12:00	Communication Protocols		Poster Award
12:30			
13:00			
13:30			Field Experience Part 1
14:00	Solutions for Demand Side Management		
14:30	Energy Dispenser	System Technology Part 1	
15:00			
15:30			Field Experience Part 2
16:00	Realizations of Energy Management		
16:30		System Technology Part 2	Closing Remarks
17:00	Discussion		
17:30			Technical Tour To INES
18:00	IEA PVPS Planning Workshop		
18:30	New Task on PV Hybrids and Mini-Grids		
19:00			
19:30		Guided City Tour	
20:00		Dinner	