

CONFERENCE PROGRAMME

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(i) = invited

TUESDAY, 22 September 2009

VISUAL PRESENTATIONS 4BV.1

Balance of System Components

Engineering and System Integration

- 4BV.1.1** L. Casey
Satcon Technology, Boston, USA
Intelligent Power Conversion - How the Next Generation of Renewable Energy Inverters will Change the Future of Distributed Energy Production and Distribution
- 4BV.1.2** D. Kranzer, B. Burger & F. Reiners
Fraunhofer ISE, Freiburg, Germany
High Efficient PV-Inverters with Silicon Carbide Transistors
- 4BV.1.3** S.H. Stier
Volkwerk Electronics, Bad Vilbel, Germany
S. Buonomo
STMicroelectronics, Catania, Italy
Impact of ESBTs on Inverter Efficiency
- 4BV.1.4** R. Gonzalez, A. Urabayen & F. Ancin
Ingeteam, Sarriguren, Spain
Transformerless Single-Phase Grid-Connected Photovoltaic Inverter with Grounded Generator
- 4BV.1.5** D. Garinto
Indonesian Power Electronics Center, Solo, Indonesia
A New Inverter System for Single-Cell Photovoltaic Modules
- 4BV.1.7** S. Nema, R.K. Nema & G. Agnihotri
National Institute of Technology Maulana Azad, Bhopal, India
Design & Simulation of Sepic/cuk Converter for Optimal Loading of Photovoltaic Array
- 4BV.1.8** H. Häberlin, L. Borgna, D. Gfeller & U. Zwahlen
Berne University of Applied Sciences, Burgdorf, Switzerland
New PV Array Simulator of 100kW: Results of First Tests at PV Inverters of 100kW
- 4BV.1.9** H. Häberlin & P. Schaerf
Berne University of Applied Sciences, Burgdorf, Switzerland
New Procedure for Measuring Dynamic MPP-Tracking Efficiency at Grid-Connected PV Inverters

- 4BV.1.10** B. Burger, H. Schmidt & B. Goeldi
Fraunhofer ISE, Freiburg, Germany
B. Bletterie & R. Bründlinger
Arsenal Research, Vienna, Austria
H. Häberlin
Berne University of Applied Sciences, Burgdorf, Switzerland
F. P. Baumgartner
ZHAW University of Applied Sciences, Winterthur, Switzerland
G. Klein
ISET, Kassel, Germany
Are we Benchmarking Inverters on the Basis of Outdated Definitions of the European and CEC Efficiency?
- 4BV.1.11** R. Haselhuhn
Deutsche Gesellschaft für Sonnenenergie, Berlin, Germany
New Voltage Factor (VF) for PV-Modules and Other Aspects for Optimization of Inverter Sizing
- 4BV.1.12** G. Notton & N. Heraud
University of Corsica, Ajaccio, France
V. Lazarov & L. Stoyanov
Technical University of Sofia, Bulgaria
Optimal Sizing of PV Array and Inverter for 4 PV Technologies and Module Inclination
- 4BV.1.13** W. Grzesiak & J. Poczatek
Institute of Electron Technology, Krakow, Poland
T. Pisarkiewicz & M. Jaskiewicz
AGH University of Science and Technology, Krakow, Poland
Selected Problems in Designing of a Charge Controller for 6V PV Installation
- 4BV.1.14** H. Colin & J. Merten
INES/CEA, Le Bourget du Lac, France
J. F. Cousseau
SAFT, Bordeaux, France
A. Fedzin
Energysys, Bielsko-Biala, Poland
P. Gaillard
Maxwell, Rossens, Switzerland
J. Palou & X. Vallve
Trama TecnoAmbiental, Barcelona, Spain
J.P. Smaha
Hawker, Arras, France
Security of Supply with PV Inverter Including Innovative Energy Storage for Grid-Connected Applications

- 4BV.1.15** A. Delaille, D. Brun-Buisson & F. Mattera
INES/CEA, Le Bourget du Lac, France
S. Mailley
CEA, Grenoble, France
V. Sauvant-Moynot, J. Bernard & B. Rebours
IFP Lyon, Solaize, France
F. Huet & R. Mingant
CNRS, Paris, France
J.-L. Hognon
Material Mates, Grenoble, France
Accelerated Ageing Tests of Lithium-Ion Batteries for Grid-Connected Photovoltaic Applications, and Research of Battery Indicators Based on Electrochemical Impedance Spectroscopy Measurements
- 4BV.1.16** T. Glotzbach & J. Kirchhof
ISET, Kassel, Germany
Novel Measuring System for Long Term Evaluation of Photovoltaic Modules
- 4BV.1.17** B.G. Yu, A. Abo-Khalil & G. J. Yu
Korea Institute of Energy Research, Daejeon, Republic of Korea
Maximum Power Point Tracking Controller of PV Inverter Using Support Vector Regression
- 4BV.1.18** M. Camino-Villacorta & M. A. Egado-Aguilera
UPM, Madrid, Spain
MPPT Charge Controllers Characterization: Definition of Parameters and Test Procedures
- 4BV.1.19** R. Andoulsi, B. Khiari & A. Sellami
Research & Technology Centre of Energy, Hammam-Lif, Tunisia
A. Mami
LACS, Tunis, Tunisia
G. Dauphin-Tanguy
LAALS, Lille, France
A Non Linear MPPT Controller for a Photovoltaic Powered System
- 4BV.1.20** C.L. Nge, O.M. Midtgård, G.H. Yordanov & T.O. Saetre
University of Agder, Grimstad, Norway
A Comparative Simulation Analysis of Maximum Power Point Tracking Approaches
- 4BV.1.21** R. Merz, A.S. Garamoun & M.B. Schubert
University of Stuttgart, Germany
String-Based Maximum Power Tracking of Photovoltaic Systems
- 4BV.1.22** R. Orduz Marzal & M. A. Egado-Aguilera
UPM, Madrid, Spain
E. Roman
TECNALIA-ROBOTIKER, Zamudio, Spain
Behavior Study of MPPT Converters as Distributed Power Conditioning System in PV Arrays
- 4BV.1.23** M. Straver & D. Gieselaar
Oskomera Solar Power Solutions, Deurne, The Netherlands
An Innovative Flat Roof Based Solar Tracking System, LIGHTTRACK®

- 4BV.1.26** V. Popa, I. Visa & D. Diaconescu
Transilvania University of Brasov, Romania
Tracking Program Optimisation for a PV Azimuthal System
- 4BV.1.27** M. Drapalik, J. Schmid, E. Kancsar, V. Schlosser & G. Klinger
University of Vienna, Austria
Investigations of a Photovoltaic Power Generator in an Electromagnetic Ambiance
- 4BV.1.28** B. Leibig & D. Dürr
DEHN + SÖHNE, Neumarkt, Germany
Safe Surge Protection in Photovoltaic Systems
- 4BV.1.30** J. Liu & N. Henze
ISET, Kassel, Germany
Reliability Consideration of Low-Power Grid-Tied Inverters for Photovoltaic Application
- 4BV.1.32** J. Kirchhof & G. Klein
ISET, Kassel, Germany
EMC Limit Gap - Inverter Influence on Electricity Meters
- 4BV.1.33** B. Mohandes, L. El Chaar & L.A. Lamont
The Petroleum Institute, Abu Dhabi, United Arab Emirates
Application Study of 500W PV Technology in UAE
- 4BV.1.34** J. Avellaner Lacal
GRUPO UNISOLAR, Las Rozas, Spain
Research and Development in Ventilated Facade of Buildings Using Thin Film Photovoltaic Solar Modules
- 4BV.1.35** F. Dadouche, E. Labouré & C. Marchand
Lgep, Gif sur Yvette, France
O. Béthoux & J. P. Kleider
Lgep, Gif-sur-Yvette, France
E.V. Johnson & P. Roca Cabarrocas
CNRS, Palaiseau, France
A System Study on Thin-Film Silicon Cell Tandem Structures Pm-Si :H/ μ c-Si :H
- 4BV.1.36** Y. Qiu, T. R. Betts & R. Gottschalg
University of Loughborough, United Kingdom
H. G. Beyer
University of Applied Sciences Magdeburg, Germany
Uncertainties in the Energy Yield Prediction of PV Cell and Modules
- 4BV.1.37** Y. Hirata
Tokyo University of Science, Suwa, Nagano, Japan
Diagnostic the Performance of Photovoltaic Module to Inspect on I-V Characterization of Photovoltaic Array in Darkness
- 4BV.1.39** P. Vanicek & S. Stein
Deutsche Gesellschaft für Sonnenenergie, Berlin, Germany
Simulation of the Impact of Diffuse Shading on the Yields of Large Scale Single Axis Tracked PV-plants

- 4BV.1.40** R. Velicu, M. Lates & G. Moldovean
Transilvania University of Brasov, Romania
Analysis and Simulation of an Azimuthal Solar Tracking System with Linear Actuators
- 4BV.1.41** G. Moldovean, M. Lates & R. Velicu
Transilvania University of Brasov, Romania
Equatorial Solar Tracking System with Linear Actuators - Analysis and Simulation
- 4BV.1.42** K. Ogimoto & T. Ikegami
University of Tokyo, Japan
T. Oozeki
AIST, Tokyo, Japan
H. Azuma & S. Fukutome
JP Business Service, Tokyo, Japan
Y. Ueda
Tokyo Institute of Technology, Japan
Power System Demand-Supply Balance Analysis under Large PV Penetration
- 4BV.1.43** B. Koirala
Malaviya National Institute of Technology, Jaipur, India
B. Sahan
University of Kassel, Germany
N. Henze
ISET, Kassel, Germany
Modeling and Measurement of MPP Mismatch Losses in Photovoltaic Applications
- 4BV.1.44** S. Poulsen & I. Katic
Danish Technological Institute, Taastrup, Denmark
K.F. Jensen & B. Bentzen
FAKTOR 3, Copenhagen, Denmark
P. Poulsen & C. Dam-Hansen
Technical University of Denmark, Roskilde, Denmark
Towards a CO₂ Neutral Urban Environment – Cutting the Wire
- 4BV.1.45** S. Elies, M. Hermle & B. Burger
Fraunhofer ISE, Freiburg, Germany
Improved Two-Diode Model for More Detailed Simulation of I-V-Curves for Solar Cells and Modules
- 4BV.1.46** G. Petrone & G. Spagnuolo
University of Salerno, Fisciano, Italy
M. Vitelli
University of Naples "Federico II", Italy
A Cheap and Efficient Photovoltaic Emulator
- 4BV.1.47** D. Masa & E. Caamaño-Martín
UPM, Madrid, Spain
Improved Methodology for System Performance Analysis
- 4BV.1.48** P. J. Sonneveld, G.L.A.M. Swinkels, B.A.J. van Tuijl, H.J.J. Janssen & G.P.A. Bot
University of Wageningen, The Netherlands
PV System Integrated in a Solar Greenhouse with NIR Selective Covering

- 4BV.1.49** P.J. Sonneveld, G.L.A.M. Swinkels, H.J.J. Janssen, B.A.J. van Tuijl & G.P.A. Bot
University of Wageningen, The Netherlands
A Fresnel Lenses Based Concentrated PV System in a Greenhouse
- 4BV.1.50** S. Nedeltcheva & V. Chobanov
Technical University of Sofia, Sliven, Bulgaria
Multi-Criteria Optimization of the Compensated Reactive Power in the Integrated Branches of PV Power Plants
- 4BV.1.51** S. Nedeltcheva, N.D. Dimitrov & V. Chobanov
Technical University of Sofia, Sliven, Bulgaria
Examination of Asymmetrical Conditions in Low-Voltage Distribution Grid with Distributed Generation
- 4BV.1.53** P. Poulsen & C. Dam-Hansen
Denmark University of Technology, Roskilde, Denmark
K.F. Jensen & B. Bentzen
FAKTOR 3, Copenhagen, Denmark
S. Poulsen & I. Katic
Danish Technological Institute, Taastrup, Denmark
Design Tool for PV Applications for the Urban Environment
- 4BV.1.55** R. Orduz Marzal & M. A. Egado-Aguilera
UPM, Madrid, Spain
Flexibility to Integrate PV Modules in Buildings: MPPT Converters in PV Modules as Power Conditioning Device
- 4BV.1.57** A. Spina & V. Annoscia
University of Rome Tor Vergata, Italy
Evaluation of Spectral Response and Reflectivity Effects on the Outdoor Performance of PV Modules
- 4BV.1.58** J. C. Ausin, M. Aseginolaza & A. Gastesi
Ibaia Energía, Beasain, Spain
Optimising the Power Produced by a Roof-Mounted PV System
- 4BV.1.59** M. Comsit & I. Visa
Transilvania University of Brasov, Romania
Integrated Prototyping Platform for a Tracked PV System
- 4BV.1.60** S. Stein & R. Haselhuhn
Deutsche Gesellschaft für Sonnenenergie, Berlin, Germany
Shadowing of Cells, Modules and Generators - Simulation of Inverse Characteristics
- 4BV.1.61** F. Roca, G. Graditi, A. Merola, F. Pascarella & A. Romano
ENEA, Portici, Italy
An Innovative Integrable System to Scan the Outdoor Performance of PV-Flat and PV Concentration Modules
- 4BV.1.62** M. Finot, E. Johnson & S. Khattar
Skyline Solar, Mountain View, USA
Design of High Gain Silicon System Using Empirical and Analytical Predictive Models

- 4BV.1.63** A. Driesse
Queen's University, Kingston, Canada
B. Harris
Sustainable Energy Technologies, Calgary, Canada
A Real-World Performance Comparison between Parallel-Only and Series/Parallel Array Configurations Under Non-Uniform Conditions
- 4BV.1.64** M. Zehner, M. Schlatterer & P. Fritze
Munich University of Applied Sciences, Germany
T. Glotzbach & B. Schulz
ISET, Kassel, Germany
M. Mayer, C. Vodermayr & G. Wotruba
BEC-Engineering, Ottersberg, Germany
One Year Round Robin Testing of Irradiation Sensors - Measurement Results and Analyses
- 4BV.1.65** V. Perraki
University of Patras, Greece
Comparison of Installed Power, Yield and Costs of a Typical Installation on Flat Roofs or Facades Using Polycrystalline and Amorphous Silicon Modules
- 4BV.1.67** P. Romanos & N. Hatzigiorgiou
NTUA, Athens, Greece
J. Schmid
ISET, Kassel, Germany
PVs in Smart Buildings
- 4BV.1.68** A. Hasan, S. McCormack & B. Norton
Dublin Institute of Technology, Ireland
M.J. Huang
University of Exeter, Cornwall, United Kingdom
Phase Change Materials for Thermal Control of Building Integrated Photovoltaics: Characterisation and Experimental Evaluation
- 4BV.1.70** S. Mau & Y. Sánchez Reina
Abengoa Solar NT, Sevilla, Spain
A. Martín & F. Rubio
ISFOC, Puertollano, Spain
J. Leloux & D. Pachón
UPM, Madrid, Spain
T. Gomez & G. Jüngst
INTA, Madrid, Spain
T. Gerstmaier & A. Hakenjos
Concentrix, Freiburg, Germany
First Results of the Spanish National Project "Espectro Solar"
- 4BV.1.71** V. Salas Merino, P.J. Débora & E. Olías
University Carlos III of Madrid, Spain
Analysis of the Maximum Power Point Tracking in the Photovoltaic Grid-Connected Inverters of around 5 KW
- 4BV.1.72** W. Grzesiak
Institute of Electron Technology, Krakow, Poland
E. Radziemska
Gdansk University of Technology, Poland
MPPT Tracking Problems in PV Modules of Partly Shaded Solar Cells

- 4BV.1.73** W. Grzesiak, J. Poczatek & T. Maj
Institute of Electron Technology, Krakow, Poland
New Solutions for PV Charge Controllers of Enhanced Efficiency
- 4BV.1.75** L. Sui
ET Solar Group, Pleasanton, USA
S. Hu
ET Solar Group, Nanjing, China
The R50 - A SMART Tracking System for Both Ground and Roof Applications
- 4BV.1.76** B. Burduhos, I. Visa, D. Diaconescu & R. Saulescu
Transilvania University of Brasov, Romania
Novel Orientation Step-Program of a Pseudo-Equatorially Tracked PV Panel

VISUAL PRESENTATIONS 5BV.2**PV Power Plants****PV and Architecture**

- 5BV.2.2** M. Pierro, B. Salsedo & A. Martella
RomaEnergia, Rome, Italy
M. Grottko
WIP-Renewable Energies, Munich, Germany
BIPV Plant STC Power Determination Based on Monitoring Data - Real STC Performance Versus Performance According to System Suppliers
- 5BV.2.3** M. Alonso-Abellá & F. Chenlo Romero
CIEMAT, Madrid, Spain
J. Sánchez, C. Rodríguez & J.A. Rodríguez
Fotovoltaica10cm, Toledo, Spain
Operation and Energy Production of Two 1MW Low Concentration Plants in Toledo (Spain)
- 5BV.2.4** K. Brecl, J. Kurnik & M. Topic
University of Ljubljana, Slovenia
Evaluation of Losses on Energy Yield Due to Self Shading of Free Standing PV Systems
- 5BV.2.5** J.M. Olchowik, J. Adamczyk & K. Ciaslak
Lublin University of Technology, Poland
R. Tomaszewski
Biala Podlaska University of Technology, Poland
Comparison Analysis of the Photovoltaic Modules Efficiency Working in a Hybrid System after Five Years of Exploitation under South-East Poland Conditions
- 5BV.2.6** J. H. So, B.G. Yu, H.M. Hwang, K.S. Kim & G.J. Yu
Korea Institute of Energy Research, Daejeon, Republic of Korea
A Detailed Performance Results of Grid-Connected PV System by Long-Term Field Test
- 5BV.2.7** A. Yurchenko, A. Kozlov & A. Volgin
Tomsk Polytechnical University, Russian Federation
Factors Influencing the Output Performances of Solar Energy Complexes in Siberia and the Far East

- 5BV.2.8** G. Graditi, C. Cancro, A. Merola & C. Privato
ENEA, Portici, Italy
One Or Two Axis PV Tracking? The Case Study of a 10kWp Tracking PV System installed In Southern Italy
- 5BV.2.9** J. A. Chojnacki, J. Teneta, L. Wieckowski & M. Suchecki
AGH University of Science and Technology, Krakow, Poland
The Embedded Solar Data Logger for Photovoltaic System Control and Monitoring
- 5BV.2.10** J. A. Chojnacki, J. Teneta & L. Wieckowski
AGH University of Science and Technology, Krakow, Poland
Two Years' Experience in Monitoring of a Small Grid-Connected Photovoltaic Power Station
- 5BV.2.11** K.-L. Yen, C.-T. Tsai & M.-S. Bai
Industrial Technology Research Institute, Hsin Chu, Taiwan
Performance Evaluation of Monocrystalline and Amorphous Silicon PV Systems in Taiwan
- 5BV.2.12** G. Wirth, M. Zehner & G. Becker
Munich University of Applied Sciences, Germany
M. Schroedter-Homscheidt
DLR, Wessling, Germany
Snow Cover Mapping for Yield Forecasts and Photovoltaic System Design
- 5BV.2.13** C. Garcia, D. Ibarrula, A. López Mendía, B. Martinez, Z. Torbado & S. Calvente Palacios
Barlovento Recursos Naturales, Logroño, Spain
PV Controlergy: Monitoring System Based on Credited Measurements and Expert Software, Executed by an Independent Laboratory, for the Control and Analysis of Photovoltaic Plants
- 5BV.2.14** X. Le Pivert & L. Sicot
CEA, Le Bourget du Lac, France
A Tool for the 24 Hours Forecast of Photovoltaic Production
- 5BV.2.15** M. Grottko, O. Beck & P. Helm
WIP-Renewable Energies, Munich, Germany
K. Gehrlicher
Gehrlicher Solar, Dornach, Germany
J. Martínez, F. Espin & J. Guerrero
Gehrlicher Solar España, Bullas, Murcia, Spain
Performance of a 230 kWp Solar Park in Spain with Two-Axis Trackers from a European Market Leader
- 5BV.2.16** S. Guastella & M. Marzoli
CESI RICERCA, Milan, Italy
S. Castello
ENEA, Rome, Italy
F. Trezza
Gestore dei Servizi Elettrici, Rome, Italy
Advanced Monitoring of PV Plants Installed in the Frame of Italian "Conto Energia" Programme

- 5BV.2.17** N. Tyutyundziev, P. Vitanov & R. Radkov
CL SENES, Sofia, Bulgaria
M. Grottko
WIP-Renewable Energies, Munich, Germany
Performance Monitoring and Influence of LV Grid Disturbances on 10 kWp PV Grid-Connected System In Bulgaria
- 5BV.2.18** B. Schulz, S. Schmitt & G. Jacob
Siemens, Fürth, Germany
Analysis of System Data of Existing Photovoltaic Power Plants
- 5BV.2.19** B. Zinsser, M. Schubert & J. Werner
University of Stuttgart, Germany
G. Makrides & G. Georghiou
University of Cyprus, Nicosia, Cyprus
Temperature and Irradiance Effects on Outdoor Field Performance
- 5BV.2.20** E. Lliarena, A. Linares Mena, M. Friend Monasterio, M. Cendagorta & C. Montes
ITER, Santa Cruz de Tenerife, Spain
Three Years Operating 24 MW PV Grid-Connected Facilities in Tenerife (Canary Islands, Spain)
- 5BV.2.21** O. Kleven, H. Larsson, C. Good & T. Bostrom
Norut Narvik, Norway
W. Sulkowski
Narvik University College, Norway
Solar Cells Above the Arctic Circle - a Comparison between a Two-Axis Tracking System and Simulations
- 5BV.2.22** C. Good, H. Larsson, O. Kleven & T. Bostrom
Norut Narvik, Norway
W. Sulkowski
Narvik University College, Norway
Solar Cells Above the Arctic Circle - Measuring Characteristics of Solar Panels under Real Operating Conditions
- 5BV.2.23** S.M. Pietruszko & M. Bialecki
Warsaw University of Technology, Poland
The Influence of Basic Environmental Atmospheric Parameters on Grid-Connected a:Si PV System Performance in Long Term Aspect
- 5BV.2.24** M. Tao & Y. Zhao
Beiyi Innovation Vacuum Technology, Beijing, China
P. Yu
Tianjin PV Technologies Test Site, China
Daily Energy Yield Efficiency of PV Modules
- 5BV.2.25** A. Hamzeh
University of Damascus, Syrian Arab Republic
Impact of Integrating PV Distributed Generations on Fault Quantities at the Host Distribution Grid

- 5BV.2.26** S. Caneva, I. Weiss & P. Helm
WIP-Renewable Energies, Munich, Germany
D. Fraile Montoro & E. Despotou
EPIA, Brussels, Belgium
C. Duvauchelle & R. Soler
EDF, Clamart, France
E. Schellekens
AIE, Kortenberg, Belgium
Strengthening the Network Integration of PV Systems - SUNRISE Project
- 5BV.2.27** A.A. Solomon & D. Faiman
Ben Gurion University of the Negev, Beer Sheva, Israel
G. Meron
Israel Electric Corporation, Haifa, Israel
A Novel Use of Storage for Improving Grid Matching for Very Large-Scale PV Systems
- 5BV.2.28** A. Kuwayama, S. Miwa & N. Matsuno
Hokkaido Electric Power, Ebetsu, Hokkaido, Japan
T. Ito
Meidensha, Tokyo, Japan
R. Hara & H. Kita
Hokkaido University, Sapporo, Japan
N. Matsuoka
Japan Weather Association, Tokyo, Japan
K. Taira
Environmental Systems & Engineering, Osaka, Japan
Mega-Solar Demonstration Project at Wakkanai
- 5BV.2.29** Y. Ueda & K. Kurokawa
Tokyo Institute of Technology, Japan
M. Kudou & H. Konishi
NTT Facilities, Tokyo, Japan
Evaluation of Various PV Technologies in HOKUTO Mega-Solar Project
- 5BV.2.30** M. Akatsuka, R. Hara & H. Kita
Hokkaido University, Sapporo, Japan
T. Ito & Y. Ueda
Meidensha, Tokyo, Japan
S. Miwa & N. Matsuno
Hokkaido Electric Power, Ebetsu, Hokkaido, Japan
K. Takitani & M. Saito
Japan Weather Association, Sapporo, Japan
Analysis on Fluctuation of PV Power Plant Output with Energy Storage System
- 5BV.2.31** S. Takayama, Y. Iwasaka, R. Hara & H. Kita
Hokkaido University, Sapporo, Japan
T. Ito & Y. Ueda
Meidensha, Tokyo, Japan
S. Miwa & N. Matsuno
Hokkaido Electric Power, Ebetsu, Hokkaido, Japan
K. Takitani & K. Yamaguchi
Japan Weather Association, Sapporo, Japan
Study on Scheduling of PV Power Station Output Based on the Solar Radiation Forecast

- 5BV.2.32** A. Woyte, K. van Rattinche & T. Van Thong
3E, Brussels, Belgium
H. Brunner & B. Bletterie
Arsenal Research, Vienna, Austria
Active Grid Control with Photovoltaics: Real World Application
- 5BV.2.33** F. Spertino, P. Di Leo & J. Sumaili Akilimali
Politecnico di Turin, Italy
Optimal Configuration of Module Connections for Minimising the Shading Effect in Multi-Rows PV Arrays
- 5BV.2.34** S. Schmitt & B. Plail
Siemens, Fürth, Germany
Contribution of Large PV Power Plants to Grid Stability According to Latest Requirements
- 5BV.2.35** C. Voyant, M. Muselli, C. Paoli, M.L. Nivet & P. Poggi
University of Corsica, Ajaccio, France
Predictability of PV Power Grid Performance on Insular Sites without Weather Stations: Use of Artificial Neural Networks
- 5BV.2.36** H.-M. Hwang, J. H. So & K.-J. Yu
Korea Institute of Energy Research, Daejeon, Republic of Korea
The Study on the Effect to the Large Photovoltaic Systems in Low Voltage Distribution Power System
- 5BV.2.37** X. Le Pivert
INES/CEA, Le Bourget du Lac, France
A. Barona
Iberdrola, Madrid, Spain
G. Bloemhof & P. De Boer
KEMA, Arnhem, The Netherlands
J. Bozelie
Liaison, Duiven, The Netherlands
J. F. Cousseau
SAFT, Bordeaux, France
H. Dietschmann
MVV, Mannheim, Germany
G. Kourtis
EAC, Lefkosia, Cyprus
M. Okasinski
Institute of Power Engineering, Warszawa, Poland
E. Raaijen
Exendis, Ede, The Netherlands
Practical Implementation of Electrical Energy Storage in Power Systems with PV: the GROW-DERS Project (Grid Reliability and Operability with Distributed Generation Using Flexible Storage)
- 5BV.2.38** A. Elazari
Millennium Electric, Raanana, Israel
Multi Solar (PVT) Co-Generation Power Station
- 5BV.2.40** S. Sailler, C. Darras, M. Muselli & P. Poggi
University of Corsica, Ajaccio, France
J.C. Hoguet & S. Besse
Helion Hydrogen Power, Aix-en-Provence, France
E. Pinton
CEA, Grenoble, France
ORIENTE: A New Numerical Sizing Software for PV/H2 Hybrid System

- 5BV.2.41** M. Rosa-Clot & P. Rosa-Clot
Scienza Industria Tecnologia, Navacchio, Italy
G.M. Tina
University of Catania, Italy
P.F. Scandura
University of Salento, Lecce, Italy
Water Submerged Photovoltaic Plants
- 5BV.2.42** V. Bobbio
Apri Ambiente, Rome, Italy
M. Rosa-Clot & P. Rosa-Clot
Scienza Industria Tecnologia, Navacchio, Italy
TESPI : Thermal Electric Solar Panel Integration
- 5BV.2.43** F. Almonacid, C. Rus, P. J. Pérez & L. Hontoria
University of Jaén, Spain
Analysis of the Energy Produced by a PV Generator Based on an Artificial Neural Network Methodology
- 5BV.2.44** U. Borup, H. Grau & B.S. Lave
Danfoss Solar Inverters, Sønderborg, Denmark
String Inverters for PV Power Plants
- 5BV.2.45** C. Rus, F. Almonacid, P.J. Pérez & L. Hontoria
University of Jaén, Spain
Artificial Neural Networks Methodology for Maintenance of Grid Connected Photovoltaic Systems
- 5BV.2.46** H.W. Brandhorst Jr., J. Rodiek & S. Best
University of Auburn, USA
Overview of Solar Power Installation Project for Lee County Justice Center
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- 5BV.2.80** S. Devenport, S. Roberts, T. Bruton, K.C. Heasman, L. Brown, A. Cole & I. Baistow
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- 5BV.2.81** M. Pellegrino
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Chinese Academy of Sciences, Beijing, China
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- 5BV.3.6** K. McLean & A. B. Sproul
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- 5BV.3.8** H.W. Brandhorst Jr. & J.A. Rodiek
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- 5BV.3.12** M.A.W. Hoehner, F. Schmidt & D. Schreiber
EuPD Research, Bonn, Germany
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- 5BV.3.13** A.S. Bahaj
University of Southampton, United Kingdom
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- 5BV.3.14** M. Müller
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Innovative PV Hybrid System Concept based on Open Source Components Communication
- 5BV.3.15** T. Vu, X. Le Pivert & J. Merten
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- 5BV.3.18** S. Lakeou & B.O. Latigo
University of the District of Columbia, Washington DC, USA
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- 5BV.3.19** M. Cendagorta, M. Friend, L. López-Manzanares & A. Linares Mena
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- 5BV.3.21** A. Delaille, M. Vervaart, J. Merten & E. Lemaire
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Pakuan University, Bogor, Indonesia
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- 5BV.3.30** A. Mostavan & L. Hartawan
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- 5BV.3.31** A. Mostavan & H. Santosa
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- 5BV.3.32** X. Zou & L. Bian
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- 5BV.3.34** F.L. Marcelo Antunes, F.F. Silva, A. Alencar Freitas, S. Sousa, S. Ximenes, S. Daher & C. Cruz
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- 5BV.3.35** J.L.O. de Oliveira Bernal, G.F. Burani, J.A.B. Baesso Grimoni & M.E. Morales Udaeta
IEE/USP, Sao Paulo, Brazil
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- 5BV.3.36** J. Bione de Melo Filho, P.B. Bezerra & R.B. Fellows
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- 5BV.3.37** A. Beluco
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- 5BV.3.38** P. Arranz-Piera, X. Vallve & J. Gámez
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O. Marcelo
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- 5BV.3.39** S. Gual
AGNEUS PV, Castellar del Vallès, Spain
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- 5BV.3.41** B. Pfaff, A. Pitkowiak & V. Schmeling
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University of Freiburg, Germany
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ECN, Petten, The Netherlands
Roll to Roll Fabrication Process of Thin-Film Silicon Solar Cells on Steel Foil
- 3BV.4.2** S. Boo & H. J. Jeong
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Korea Advanced Institute of Science and Technology, Daejeon, Republic of Korea
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- 3BV.4.3** J. Holovsky, J. Dosek & M. Vanecek
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T. Izak
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- 3BV.4.4** C. Denizot, S. Faÿ & C. Ballif
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Oerlikon Solar-Lab, Neuchâtel, Switzerland
S. Jensen, A. Johansson, M. Lillemose & E. Bezzel
PhotoSolar, Taastrup, Denmark
Thin Film Silicon Solar Cells in a Semi-Transparent Micro-Structured Metal Substrate Configuration
- 3BV.4.5** H. Zhu, E. Bunte, H. Siekmann, J. Worbs & J. Hüpkes
Forschungszentrum Jülich, Germany
Sputtering of ZnO:Al from Dual Tube Targets with Tilted Magnetrons
- 3BV.4.6** J. Bonse, D. Weidauer, H.-U. Pahl & H. Endert
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Micro-Controle Spectra-Physics, Beaune-la-Rolande, France
High Speed Distributed Laser Scribe System for Large Area Thin Film Solar Cell Manufacturing
- 3BV.4.7** J. Hüpkes & A. Gordijn
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IMEC, Leuven, Belgium
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ZSW, Stuttgart, Germany
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- 3BV.4.8** R. Kaur, P.A.B. James & A.S. Bahaj
University of Southampton, United Kingdom
J. Dutton, M. Thwaites & B. Horton
Plasma Quest, Hampshire, United Kingdom
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- 3BV.4.9** J. Owen, J. Hüpkes, L. Nießen, U. Zastrow & W. Beyer
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- 3BV.4.10** U. Paetzold & C. Haase
Forschungszentrum Jülich, Germany
H. Stiebig
Malibu, Bielefeld, Germany
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- 3BV.4.11** W. Reetz, A. Lambert & T. Kirchartz
Forschungszentrum Jülich, Germany
Current-Voltage and Spectral Response based Characterisation of Thin Film Silicon Solar Cells and Modules – Investigation of Primary Error Sources

- 3BV.4.12** W. Zhang, E. Bunte, J. Worbs, H. Siekmann, J. Kirchhoff, A. Gordijn & J. Hüpkas
Forschungszentrum Jülich, Germany
Textured Glass for Silicon Thin Film Solar Cells
- 3BV.4.13** T. Beckers, K. Bittkau & R. Carius
Forschungszentrum Jülich, Germany
C. Rockstuhl & F. Lederer
Friedrich-Schiller University, Jena, Germany
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- 3BV.4.14** C. Liu, L.H. Zhou, X.J. Ye, Z.Q. Qian, X.S. Wang & M.B. Chen
Shanghai Institute of Space Power Sources, China
Surface and Structural Properties of AG/ZNO Reflectors on Flexible Substrates for N-I-P Amorphous Silicon Solar Cells
- 3BV.4.15** J.P. Heiñ, H. Morgner & K. Häfner
Fraunhofer FEP, Dresden, Germany
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- 3BV.4.16** M. Schulte, S. Jorke, K. Bittkau & U. Rau
Forschungszentrum Jülich, Germany
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- 3BV.4.17** N. Wyrtsch, A. Billet, G. Bugnon, M. Despeisse, A. Feltrin, F. Meillaud, G. Parascandolo & C. Ballif
EPFL, Neuchâtel, Switzerland
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- 3BV.4.18** S. Bergfeld, A. Reiß & J. Jetter
4JET Sales and Service, Hückelhoven, Germany
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- 3BV.4.19** Z.D. Eygi, U. Bostanci, R. Turan & Ç Erçelebi
Middle East Technical University, Ankara, Turkey
Optimization of Hydrogenated Amorphous Silicon (a-Si:H) Thin Films Deposited by DC Magnetron Sputtering for a-Si/c-Si Photovoltaic Applications.
- 3BV.4.20** S. Ulrich & B. Szyszka
Fraunhofer IST, Braunschweig, Germany
Comparison of SnO₂ Based Transparent Conductive Oxides for Use in a-Si:H/ μ -Si:H Solar Cells
- 3BV.4.22** T. Wahl, D. Walter, C. Neugebauer, T. Schlenker, E. Ams, C. Kuhn & D. Manz
Manz Automation, Reutlingen, Germany
Scribe Line Tracking System for Thin Film Solar Panel Production

- 3BV.4.23** M.H. Rein, J. Mayandi, B.R. Olaisen & A. Holt
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A. Bentzen
REC Solar, Sandvika, Norway
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Annealing Effect on ITO Films Sputtered with Argon, Oxygen and Hydrogen
- 3BV.4.24** A. Antony, R. Roldán, P. Carreras, P.A. Frigeri, O. Nos, J.M. Asensi & J. Bertomeu
University of Barcelona, Spain
M. Vetter, J.P. Borrajo & J. Andreu
T-Solar Global, Ourense, Spain
Influence of Back Reflector Layers on the Performance of p-i-n Type a-Si:H Thin Film Photovoltaic Modules
- 3BV.4.25** S. Chatterjee, Ö. Tüzün, S. Roques & A. Slaoui
INESS, Strasbourg, France
Role of Hydrogen Dilution in Silane on Optical Properties of ECR-PECVD Deposited a-Si:H Films
- 3BV.4.26** W. Dewald, V. Sittinger, W. Werner & B. Szyszka
Fraunhofer IST, Braunschweig, Germany
Influence of Strong Magnetic Fields on DC Magnetron Sputtered ZnO:Al Films from Ceramic Targets
- 3BV.4.27** R. Merz, M.A. Bouattour, M.B. Schubert & J.H. Werner
University of Stuttgart, Germany
In Situ Series Connection for Multi-Junction Thin Film Cells
- 3BV.4.29** V. Terrazoni-Daudrix, F.-J. Haug & C. Ballif
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Final Results of the European Project Flexcellence: Roll to Roll Technology for the Production of High Efficiency Low Cost Thin Film Solar Cells
- 3BV.4.30** V. Sittinger, W. Dewald, B. Szyszka & W. Werner
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Evaluation of RF Superimposed DC Magnetron Sputtering of Al-doped ZnO Films

- 3BV.4.31** A. Gordijn, S. Schicho, J. Kirchhoff, W. Reetz, T. Kilper, H. Zhu, E. Bunte & J. Hüpkens
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Ultra-Short Deposition Times for a-Si/ μ -Si Tandem Cells on Texture-Etched ZnO:Al
- 3BV.4.32** D. Chaudhary, S. Jost, M. Klindworth, F. Leu, J. Martin, M. Martinek, S. Novak, A. Salabas, N. Schrader, A. Taha, D. Wettler, W. Wieland, D. Zorzi & C. Ellert
OC Oerlikon Solar, Trübbach, Switzerland
Development of PECVD Reactor for Thin Film Solar Application
- 3BV.4.34** E. Amanatides & D. Mataras
University of Patras, Greece
Process Drifts Modeling during the Initial Growth Stage of Microcrystalline Silicon Thin Films
- 3BV.4.35** C. C. Chang, D.K.T. Chu & J.W. Ma
Du Pont Apollo, Hong Kong, China
Status and Performance of Thin Film Solar Cell in Du Pont Apollo
- 3BV.4.36** A. Preiss & S. Krauter
Photovoltaic Institute Berlin, Germany
Yield Prediction and Comparison of a-Si Modules
- 3BV.4.37** S. Sheng, Y.K. Chae, X. Yang, L. Li, D. Wang, M. Frei & C. Eberspacher
Applied Materials, Santa Clara, USA
High Performance Amorphous-Microcrystalline Si Tandem Solar Cells Fabricated on Next-Generation ZnO-Based TCO Glass Using Large Area PECVD Cluster Systems
- 3BV.4.38** R. Bartlome, Y. Siquin, S.A. Meyer & C. Ballif
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Versatile Thin-Film Photovoltaic Laser Scribing System
- 3BV.4.39** X. Yang, Y. Chae, S. Sheng, L. Li & C. Eberspacher
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