

Impact of Integrated Clean Energy on the Future of the Mediterranean Environment 2011

Energy Procedia Volume 6

**Beirut, Lebanon
14-16 April 2011**

**ISBN: 978-1-62748-409-1
ISSN: 1876-6102**

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2011) by Elsevier B.V.
All rights reserved.

Printed by Curran Associates, Inc. (2013)

For permission requests, please contact Elsevier B.V.
at the address below.

Elsevier B.V.
Radarweg 29
Amsterdam 1043 NX
The Netherlands

Phone: +31 20 485 3911
Fax: +31 20 485 2457

<http://www.elsevierpublishingsolutions.com/contact.asp>

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com



Contents

Tin Oxide n- type Semiconductor Inverted to p- type Semiconductor Prepared by Sol-gel Method M.A. Batal and Fares Haj Jneed	1
TiO ₂ doped with SnO ₂ and studying its structural and electrical properties Mustafa Afuyoni, Ghassan Nashed, ISS and Mohammed Nasser	11
Design and Experimental Study for Using PV/T Collectors in the Faculty of Mechanical Engineering University of Aleppo Marderos Ara SAYEGH*, Nabhan KHAYATA and Tamar NAHHAS	21
Numerical Investigation of Horizontal Ground Coupled Heat Exchanger A.Benazz, E. Blanco, M.Aichouba, José Luis Río and S. Laoued	29
Influence of depletion region width on performance of solar cell under sunlight concentration. Khalaf AL ABDULLAH and Bashar BAKOUR	36
Hydrogen production over CuIn ₃ Se ₅ /WO ₃ hetero-junction Lyakout Djellal, Bachir Bellal and Mohammed Trari	46
Using Fouggara for Heating and Cooling Buildings in Sahara S. Amara, B. Nordell and B. Benyoucef	55
Computational modeling of the transport and electrochemical phenomena in solid oxide fuel cells Hocine. Mahcene, Hocine Ben Mouss, Hamza. Bouguettai Djamel. Bechki and Mostefa Zeroual	65
PVSST 1.0 sizing and simulation tool for PV systems M. Chikh, A. Mahrane and F. Bouachri	75
Synthesis and characterization of (Pani/n-si)solar cell K.M.Zaidan, H. F. Hussein, R.A. Talib and A.K. Hassan	85
Thermo acoustic - MHD electrical Generator Antoine ALEMANY, Armands KRAUZE and Mahmoud AL RADI	92
Exploitation of albian geothermal water in South Algeria Salima Ouali, Zahia Benaïssa, Maïouf Belhamel, Abdellah Khellaf, Kamel Baddari and Mebrouk Djeddi	101
Thermal requirements and temperatures evolution in an ecological house M A Boukli Hacene, S Amara and N E Chabane Sari	110
Analysis of solar radiation measurements at Ghardaïa area, south Algeria Kacem Gairaa and Saïd Benkaciali	122
Numerical Simulation of Solar Absorption Machine Sahar Fayad, Rafic Younes and Said Abboudi	130
Wind farm feasibility study and site selection in Adrar, Algeria Mourad DJAMAI and Nachida KASBADJI MERZOUK	136
Kinetic study and modeling of heavy metals removal by adsorption onto peanut husks incinerated residues Samir TAHA, Sophie RICORDEL and Ibrahim CISSE	143
Influence of Air Mass on the Performance of Many Types of PV Modulus in Baghdad Ala H. Shnishil, Sami S. Chid, Mohammed J. Yaseen and Tariq J. Alwana	153
Design and realization of LED Driver for solar street lighting applications M. Fathi, A. Chikouche and M. Abderrazak	160
Optimization of the photovoltaic pumping system control Chergui M.I and Bourahla M.	166
Numerical Study of the Convection in the Air Gap of a Solar Collector F. Z. Ferahta, S. Bougoul, D. Ababsa and C. Abid	176
Instantaneous performance of the first Integrated Combined Cycle System in Algeria. Omar Behar, Abdallah Kellaf, Kamal Mohamedi and Maïouf Belhamelb	185
Study of energy transfer by electron cyclotron resonance in tokamak plasma Ghoutia Naima Sabri and Tayeb Benouaz	194
Numerical Results on Operating Parameters Influence for a Heat Recovery Adsorption Machine W.Chekirou, R. Boussehain, M. Feid, A. Karaali and N. Boukheit	202
Study of two types of cylindrical absorber of a spherical concentrator Nadir BELLEL	217
New strategy of upgrading slum areas in developing countries using vernacular trends to achieve a sustainable housing development Tamer Abdel Aziz1 and Indjy M.Shawket	228
Using Mud Bricks as a Temporary Solution for Gaza Reconstruction Dr. Samar Sheweka,	236
Effect of Deposition Time on the Optical Characteristics of Chemically Deposited Nanostructure PbS Thin Films M.M.Abbas, A. Ab-M. Shehab, A-K. Al-Samuraee and N-A. Hassan	241

Impact of the equivalence ratio and the mass flow rate on turbulent lean premixed prevaporized combustion Fethi Bouras and Azeddine Soudani	251
Evaluating impact of electrified vehicles on fuel consumption and CO2 emissions reduction in Lebanese driving conditions using onboard GPS survey Charbel Mansour, Elias Zgheib and Sabine Saba	261
Towards a green building law in Egypt opportunities and challenges Usama Dlfiky	277
Experimental study of coupling complexation-adsorption of Cu(II) on activated carbon Mustapha Chikhi, F. Balaska, R.Benchaabi, A. Ayat, K. Maameche and A-H. Meniai	284
Simulation of a solar domestic water heating system I.ZEGHIB and A.CHAKER	292
Rheological study and valorization of waste sludge from wastewater treatment plants in the dredging operation of hydraulic dams Larbi Hammadi, Alain Ponton and Mansour Belhadri	302
Wear damage of carbon-polyethylenimine composite Ahmed HEBBAR and Noureddine MAHMOUDI	310
Algerian energy strategy in the context of sustainable development (Legal framework) A.Ghezloun, S.Chergui and N. Oucher	319
Quasi-Steady State Modeling of an Air Source Heat Pump Water Heater Farouk Fardoun, Oussama Ibrahim and Assaad Zoughaib	325
A non-linear time series prediction method for missing daily flow rate data of Middle Firat Catchment A. Albostan, B. Barutcu and B. Onozz	331
Studying, Testing and simulating floor heating solar system Heba AL Maleh and Hussen Ali Tine	337
Refrigerants and their impact in the environment. Use of the solar energy as the source of energy Samira Benhadid-Dib, Ahmed Benzaoui	347
Renewable Energy Controller System Elie Barakat and Nisrine Sinno,	353
Economic and environmental analysis for grid-connected hybrid photovoltaic-wind power system in the arid region D.Saheb-Koussa, M.Koussa, M.Belhamel and M.Haddadi	361
Optimization of Greenhouse Climate Model Parameters Using Particle Swarm Optimization and Genetic Algorithms Abdelhafid Hasni, Rachid Taibi, Belkacem Draoui and Thierry Boulard	371
Use of fiber <i>Luffa Cylindrica</i> for waters traitement charged in copper. Study of the possibility of its regeneration by desorption chemical Ykhlef LAIDANI, Salah HANINI and Ghania HENINI	381
Design of an ORC system operating with solar heat and producing sanitary hot water E. Bou Lawz Ksayer	389
Creating an Inductive Model of Industrial Development with Optimized Flows for reducing its Environmental Impacts A. MAMOUNE and A. YASSINE	396
Behavior of the intervertebral disc subjected to physiological couples Mohammed BENDOUKHA	404
Simulation of the opti-physical parameters of selectives surfaces of absorber by the FDTD method. « applied to solar water heater » F.HADDAD, A. CHIKOUCHE and M. LAOUR	413
Stack Pressure and Airflow Movement in High and Medium Rise buildings Maatouk Khoukhi and Asma Al-Maqbali	422
Modelling of biomass combustion process Monica Roman, Eugen Boba!u and Dan Seli!teanu	432
Study of adsorption of copper on biomass <i>pleurotus mutilus</i> and the possibility of its regeneration by desorption Ghania HENINI, Ykhlef LAIDANI and Fatiha SOUABI	441
Supervision and control to improve the productivity of batch reactor equipped with a mono-fluid heating / cooling system Ghania HENINI, Fatiha SOUABI and Ykhlef LAIDANI	449
Assessment of wind and solar energy resources in Batna, Algeria. Mounir AKSAS and Amor GAMA	459
Performance and Evaluation of Aqua Ammonia Auto Air Conditioner System Using ExhaustWaste Energy. Khaled S. AIQdah	467
Environmental, economic and social aspects of the electrification on the non-interconnected islands of the Aegean Sea Kasselouri B, Kambezidis H., Konidari P, Zevgolis D,	477
Resolution of the heat equation in the square form four Djedid. TALOUB and Abdelhadi BEGHIDJA	487
Investigation of the behavior of a three phase gridconnected photovoltaic system to control active and reactive power with DPC I.Hamzaoui, F.Bouchafaaa*, A.Hadjammar	493
Smart Control of UPCQ within Microgrid Energy System C. Benachaiba, Ahmed M. A. Haidar, M. Habab and O. Abdelkhalek	503
Optimization of energy management of a photovoltaic system by the fuzzy logic technique F. Chekired*, A. Mahrane, M. Chikh and Z. Smara	513
Improvement of the electrical energy quality using a Shunt Active Filter supplied by a photovoltaic generator R. Belaidi, A. Haddouche, M. Fathi, M. Mghezzi Larafi and A. Chikouche	522
Numerical study of the vertical solidification process Nouri Sabrina, Benzeghiba Mohamed and Benzaoui Ahmed	531

Contents

Implementation of a MPPT fuzzy controller for photovoltaic systems on FPGA circuit F. Chekired, C. Larbes, D. Rekioua and F. Haddad	541
Poultry processing industry waste to energy conversion Cosmin Marculescu and Constantin Stan	550
Thermal-chemical treatment of solid waste mixtures Cosmin Marculescu	558
A comparative study between parabolic trough collector and linear Fresnel reflector technologies Najla El Gharbi, Halima Derbal, Sofiane Bouaichaoui and Nouredine Saida	565
Investigation of an evaporative air cooler using solar energy under Algerian climate S. Elmetenani, M.L. Yousf, L. Merabeti, Z. Belgroun and A. Chikouche	573
Energy and exergy analysis of solar drying process of Mint Amel BOULEMTAFES-BOUKADOU and Ahmed BENZAOUI2	583
The Living walls as an Approach for a Healthy Urban Environment Dr. Samar Sheweka,	592
Impacts of atmospheric pollution on climate change – laboratory studies G. EL Dib	600
Yield of an improved solar still: numerical approach M. Boubekri and A. Chakerb	610
Experimental Investigation of the Performance of Evacuated- Tube Solar Collectors under Eastern Mediterranean Climatic Conditions Michel Hayek, Johnny Assaf and William Lteif	618
Electric Load Disaggregation in Smart Metering Using a Novel Feature Extraction Method and Supervised Classification Khaled Chahine, Khalil El Khamlichi Drissi, Christophe Pasquier, Kamal Kerroum, Claire Faure, Thierry Jouanne and Michel Michou	627
Fuzzy Logic Control for the tracking of maximum power point of a PV system F.Bouchafa, I.Hamzaoui and A.Hadjammar	633
SOFC fuel cell heat production: Analysis Abdenebi Hafsia, Zitouni Bariza, Haddad Djamel, Ben Moussa Hocine, George M. Andreadis and Abdessemed Soumia	643
Integration Limit of Renewable Energy Systems in Small Electrical Grid Gilles Notton, Ludmil Stoyanov, Motaz Ezzat, Vladimir Lararov, Said Diaf and Christian Cristofari	651
Hybrid Photovoltaic/Wind Energy Systems For Remote Locations Gilles Notton, Said Diaf and Ludmil Stoyanove	666
Comparison of Two Common Maximum Power Point Trackers by Simulating of PV Generators A. Zegaoui, M. Aillerie1, P. Petit1, J.P. Sawicki1, A. Jaafar3, C. Salame and J.P. Charles	678
New architecture for high efficiency DC-DC converter dedicated to photovoltaic conversion Pierre Petit, Abdallah Zgouai, Jean-Paul Sawicki, Michel Aillerie and Jean-Pierre Charles	688
Photovoltaic Cell/Panel/Array Characterizations and Modeling Considering Both Reverse and Direct Modes A. Zegaoui, P. Petit, M. Aillerie, J.P. Sawicki A.W. Belarbi, M.D. Kracha, and J.P. Charles	695
Environmental criminality Field and legal study Dr. Janane EL-KHOURY	704
CFD and PIV investigation of unsteady flow through Savonius wind turbine Ivan Dobrev and Fawaz Massouh	711
Optimal study design for Wind farm in Arwad Island E. Rodeyna Amer and Dr. Fareed Abou Hamedb	721
Experimental investigation on a double-slope solar still with partially cooled condenser in the region of Ouargla (Algeria). M. Zeroual, H. Bouguettaia, D. Bechki, S. Boughal, B. Bouchekima and H. Mahcene	736
The effect of reverse current on the dark properties of photovoltaic solar modules J. Sidawi, R. Habchi, N. Abboud, A. Jaafar, Faisal Al Allouch, G. El Haj Moussa, M. Aillerie, P. Petit3, A. Zegaoui and C. Salame	743
Hybrid Options Analysis for Power Systems for Rural Electrification in Algeria D.Saheb-Koussa, M.Koussa, M.Haddadi and M.Belhamela	750
Comparison of two methods of improving dehumidification in air conditioning systems: hybrid system (refrigeration cycle – rotary desiccant) and heat exchanger cycle Marderos Aar SAYEGH, Mohammad HAMMAD and Zakwan FARAA	759
Comparison Study to Select an Optimum Photovoltaic Pumping System (PVPS) Configuration upon Experimental Performances Data of Two Different DC Pumps Tested at Ghardaïa Site A Boutelhig, A.Hadjarab and Y Bakelli	769
Unsteady Loads Evaluation for a Wind Turbine Rotor using free wake method Said CHKIR	777
A MAS integrated into Home Automation system, for the resolution of power management problem in smart homes Hussein Joumaa, Stéphane Ploix, Shadi Abras and Grégory De Oliveira	786
Potential of a Hybrid Wind-Diesel-Compressed air system for Nordic Remote Canadian Areas H. Ibrahim, R. Younès, A. Ilinca, D. Ramdenee, M. Dimitrova, J. Perron, M. Adegnon, D. Boulay and C. Arbez	795
Concentration Heating System with Optical Fiber Supply S. Amara, B. Nordell, B. Benyoucef and A. Benmoussat	805
Integration of Wind Energy into Electricity Systems: Technical Challenges and Actual Solutions H. Ibrahim, M. Ghandour, M. Dimitrova, A. Ilinca, J. Perron	815
Corrigendum to “Using Fouggaras for Heating and Cooling Buildings in Sahara” (Energy Procedia 6 (2011), 55-64) S. Amara	825