

## Contents

<b>Stabilisation Attempts of the Electrical and Optical Properties of Oxide/Cu/Oxide Structures Through the Use of Different Cu:M Alloys</b>	1
<i>Linda Cattin, Guy Louarn, Dhiya Eddine Rabia, Martun Blais, Zouhair El Jouad, Mohammed Addou, Hatem Essaidi, Saad Touihri, Mohammed Ahmed Cherif, Younes Mouchaal, Abdelbacet Khelil, Philippe Torchio, Damien Barakel, Philippe Blanchard, Jean Christian Bernède</i>	
<b>Optoelectronic Characterization of <math>\text{CuIn}(\text{S,Se})_2</math> Thin Grown by Spray Pyrolysis Method for Solar Cells</b>	6
<i>Amal Bouich, Shafi Ullah, Hanif Ullah, Bernabé Mari, Mohamed Ebn Touhami, Bouchaib Hartiti, Diogo M.F.Santos</i>	
<b>Open Circuit Voltage of Organic Photovoltaic Cells using Free Acceptor</b>	11
<i>Zouhair El Jouad, Linda Cattin, Jean Christian Bernède, Mohammed Addou, Asmaa Mohammed-Krarroubi, Abdelbacet Khelil</i>	
<b>Effect of Band Offset and Temperature on the Performance of <math>\text{ZnxCd}_{1-x}\text{S}/\text{SnS}</math> Solar Cell</b>	16
<i>Faisal Baig, Bernabé Maria Soucase, Yousaf Hameed Khattak</i>	
<b>Study of CZTSSe Growth by Chemical Route onto Alternative Substrates for Architectural Integration</b>	20
<i>Ivan Calvet, Ester Barrachina, Diego Fraga, Teodora Stoyanova Lyubenova, Juan Carda</i>	
<b>Structural, Optical and Electrical Properties of Spray Pyrolysis Deposited CdS:Fe Thin Films</b>	26
<i>Lahcen Soussi, Ahmed Rmili, Ahmed Louardi, Abdelhadi El Bachiri, Ouïame Karzazi, Hassane Erguig, Bachir Elidrissi</i>	
<b>Synthesis of Ternary <math>\text{CuGaSe}_2</math> and <math>\text{CuGaS}_2</math> Electrochemical Deposition for Photovoltaic Application</b>	33
<i>Shafi Ullah, Hanif Ullah, Amal Bouich, Rahat Ullah, Miguel Mollar, Bernabé Mari</i>	
<b>Two-Dimensional Electronic Materials for Terahertz Applications: Linking the Physical Properties with Engineering Expertise</b>	37
<i>Amine El Moutaouakil</i>	
<b>Comparative Study on <math>\text{Cu}_2\text{ZnSnS}_4</math> (CZTS) Thin Film using Different Sulfur Precursor</b>	41
<i>Sara Azmi, El Mati Khoumri, Mohssine El Marrakchi, Mohammed Nohair, Souad Tayane, Karima Echcherki, Manuele Dabala</i>	
<b>Modulation on Dye/TiO<sub>2</sub> Bending Energy and Charge Transfer to High Performance Triphenylamine Based Sensitizers in Solar Cells: A DFT Study</b>	47
<i>Zakaria Mohyi Eddine Fahim, Youssef Ait Aicha, Si Mohamed Bouzzine, Mohammed Bouachrine, Mohamed Hamidi</i>	
<b>Improvement the Efficiency of Solar Cell Based on <math>\text{GaAsNSb/Si}</math></b>	52
<i>Abdelkader Aissat, Rachid Bestam, Said Nacer, Wafa Bellil, Jean Pierre Vilcot</i>	
<b>Parameter Identification of Multicrystalline Modules Using Two Methods and Five Improved Mathematical Models</b>	56
<i>Ilham Nassar-eddine, Karima Et-torabi, Redouane Rmaily, Abdellatif Obbadi, Youssef Errami, Smail Sahnoun, Abdelkrim El fajri, Mustapha Agunaou</i>	
<b>Performance Enhancement of Grid-Off Photovoltaic Pumping System-Quasi Z Source Inverter by Hybrid Battery-Supercapacitor Energy Storage</b>	62
<i>Seifeddine Boukebbous, Djallel Kerdoun, Noureddine Benbaha, Hachemi Ammar, Abdelhak Bouchakour</i>	
<b>dSPACE Validation of Improved Backstepping Optimal Energy Control for Photovoltaic Systems</b>	68
<i>Noureddine Benbaha, Fatih Zidani, Mohamed-Saïd Nait-Saïd, Salah Eddine Zouzou, Seifeddine Boukebbous, Hachemi Ammar</i>	
<b>Modelling of Photovoltaic Module with POWERSIM</b>	74
<i>Mustapha El Alaoui, Fouad Farah, Mounir Ouremchi, Karim El Khadiri, Hassan Qjidaa</i>	
<b>Photovoltaic Parameter Extraction Methods for Single and Double Diode Models under Real Changing Environmental Conditions</b>	80
<i>Karima Et-torabi, Ilham Nassar-eddine, Redouane Rmaily, Abdellatif Obbadi, Youssef Errami, Smail Sahnoun, Abdelkrim El fajri, Mustapha Agunaou</i>	
<b>PV Modules Self-Cleaning Solutions and Transmittance Loss Measurements</b>	86
<i>Soukaina Medaghri Alaoui, Salima El Ayane, Dounia Dahlioui, Abdelfettah Barhdadi</i>	
<b>DFT Study of Structural, Electronic and Optical Properties of ZnS Phases</b>	90
<i>Adil Es-Smairi, Nejma Fazouan, Ibrahim Bziz, El Houssine Atmani</i>	
<b>Performance of Photovoltaic Water Pumping System in Adrar, Algeria</b>	94
<i>Amina Bekraoui, Mohammed Yaichi, Malika Allali, Azzadine Taybi, Abdelkader Boutadara</i>	
<b>Modeling of Si-Based Nanowires by Insertion of SiGe Quantum Wells (QWNW)</b>	99
<i>Meriem Safi, Abdelkader Aissat, Houcine Guesmi, Fethi Benyettou, Isabelle Barbezier</i>	
<b>Modelling the Effect of Temperature on the Electrical Performance of an HBT Power Transistor</b>	103
<i>Nadjet Mokeddem, Kheireddine Ghaffour</i>	

<b>A New Design of Lead-Acid Battery Charger Based on Non-Inverting Buck-Boost Converter for the Photovoltaic Application</b>	110
<i>Daoud Rezzak, Abdelkader Sitayeb, Yahia Houam, Khaled Touafek, Nasserline Boudjerda</i>	
<b>Improvement of Performances of Solar Photovoltaic/Thermal Air Collector in South Algeria</b>	117
<i>Khaled Touafek, Abdelkrim Khelifa, Hafsia Haloui, Hanane Ben Cheikh El Hocine, Lyes Boutina, Mohamed Tahar Baissi, Ali Malek, Salim Haddad, Ismail Tabet</i>	
<b>Fuzzy Logic Approach to Improve the Performances of Grid-Connected Photovoltaic Power System</b>	122
<i>Mhamed Fannakh, Mohamed Larbi Elhafyani, Smail Zouggar</i>	
<b>Control of a Photovoltaic System Connected to Grid</b>	128
<i>Salma Zouga, Mohamed Benchagra, Abdallah Ailane</i>	
<b>A Customized PV Performance Monitoring System in Qatar's Harsh Environment</b>	134
<i>Farid Touati, Antonio Jr S. P. Gonzales, Yazan Qiblawey, Kamel Benhmed</i>	
<b>Estimation of the Maximum Power Point During a Simultaneous Variation of Load and Solar Irradiation</b>	140
<i>Hafsa Abouadane, Abderrahim Fakkar, Youssef Elkouari, Benyounes Oukarfi</i>	
<b>Improved Maximum Power Point Tracking using Fuzzy Logic Control with SEPIC Converter for Photovoltaic Systems</b>	146
<i>Mohamed Boutouba, Salwa Assahout, Abdelghani El Ougli, Belkassem Tidhaf</i>	
<b>Temperature Effect on ZnGeN<sub>2</sub>/GaN Multiwell Quantum Solar Cells</b>	154
<i>Abdelmoumene Laidouci, Abdelkader Aissat, Jean Pierre Vilcot</i>	
<b>Solar Water Pumping Applications in Morocco: State of the Art</b>	159
<i>Khalid Mergoul, Bouchra Laarabi, Abdelfettah Barhdadi</i>	
<b>Experimental Simulation of the Effect of Soiling on a Solar PV Glass</b>	165
<i>Bouchra Laarabi, Mehdi Rhourri, Dounia Dahlioui, Abdelfettah Barhdadi</i>	
<b>Performance Evaluation of Fixed and Sun Tracking Photovoltaic Systems</b>	168
<i>Mohammed Elibrahimi, Abdellatif Elmouatamid, Mohamed Bakhouya, Kawtar Feddi, Radouane Ouladsine</i>	
<b>PV Power Prediction in Qatar Based on Machine Learning Approach</b>	174
<i>Kamel Benhmed, Farid Touati, Mohammed Al-Hitmi, Noor A. Chowdhury, Antonio Jr S. P. Gonzales, Yazan Qiblawey, Mohieddine Benammar</i>	
<b>Criteria for Identifying More Favourable Areas for Photovoltaic Installations : Case of East Spain</b>	178
<i>Inmaculada Guaita-Pradas, Inmaculada Marques-Perez, Baldomero Segura, Aurea Gallego</i>	
<b>Evaluation of Losses in PV Performances Due to Soiling Effect in Rabat</b>	183
<i>Dounia Dahlioui, Bouchra Laarabi, Soukaina Medaghri Alaoui, Gauthier Dambrine, Etienne Menard, Jay Boardman, Abdelfettah Barhdadi</i>	
<b>Innovative Low Cost Cleaning Technique for PV Modules on Solar Tracker</b>	186
<i>Abdelilah Said, Soukaina Medaghri Alaoui, Youssef Rouas, Gauthier Dambrine, Etienne Menard, Jay Boardman, Abdelfettah Barhdadi</i>	
<b>Innovative Cleaning Technique for PV Modules on Helioslite Biaxial Solar Trackers</b>	190
<i>Dounia Dahlioui, Salima El Ayane, Soukaina Medaghri Alaoui, Abdelfettah Barhdadi, Gauthier Dambrine, Etienne Menard, Jay Boardman</i>	
<b>A Theoretical Study of Hysteresis Behaviors of 2D Mixed Spin-(1/2,1)Ising Nanoparticles</b>	194
<i>Samira Bouhou, Mariam El Hamri, Ismail Essaoudi, Abdelmajid Ainane, Rajeev Ahuja</i>	
<b>Designing a Standalone Photovoltaic Solar Energy System for Different Locations in Algeria</b>	199
<i>Mohamed Salmi, Anouar Bella Baci, Hakim Boursas</i>	
<b>Effect of Three Different Masks Configuration on the Electrical Characteristics of Amorphous Silicon Solar Cells using Plasma Enhanced Chemical Vapor Deposition</b>	202
<i>Kawtar Belrhiti Alaoui, Saida Laalioui, Badr Ikken, Abdelkader Outzourhit</i>	
<b>Electrification of Rural and Arid Areas by Solar Energy Applications - Case study : Boumhaout Village in South of Morocco</b>	206
<i>Brahim Hachim, Dounia Dahlioui, Abdelfettah Barhdadi</i>	
<b>Advance Control of a Isofotón-75W Photovoltaic Module Under Matlab-Simulink</b>	210
<i>Touhami Ghaitaoui, Laribi Slimane, Rachid Maouedj, Tahar Touahri</i>	
<b>Simulation and Optimization Performance of GaAs Homo Junction Solar Cell with BSF Layer</b>	214
<i>Bellal Najat, Dennai Benmoussa</i>	
<b>Thermodynamic Analysis of a Single-Stage Absorption Refrigeration System Using (HFC- Organic Absorbents) as a Working Fluids Assisted by Geothermal Energy</b>	218
<i>Khelifa Salhi, Mounji Hadjiat, Salima Ouali</i>	
<b>Determining the Thermal Properties of Deposits by Infrared Thermography in the Solar Thermal Energy System Piping and the Booster Heating</b>	223

<i>Abderrahim Saifi, Asseya El-amiri, Hicham Halloua, Abdellatif Obbadi, Youssef Errami, Smail Sahnoun, Ahmed Elhassnaoui</i>	
<b>Solar Energy in M'Sila (Algerian Province)</b>	227
<i>Feres Hadji, Nabila Ihaddadene, Razika Ihaddadene, Younes Kherbiche, Merouan Mostefaoui, Abedel Hadi Beghidja</i>	
<b>Numerical Study of Shell and Tube Heat Exchangers with Different Baffle Cuts</b>	232
<i>Ihssane EL Ghandouri, Anas El Maakoul, Mohamed Meziane, Noureddine Choab, Yassin Naim, Said Saadeddine</i>	
<b>Observations of Ice at the Interface Between Snow Accumulations and Photovoltaic Panel Surfaces</b>	238
<i>Robert Pawluk, Yuxiang Chen, Yuntong She</i>	
<b>Energy, Environmental and Economic Study of Different Solar Water Heating Systems in Different Moroccan Climate Zones</b>	243
<i>M. A. Ben Taher, A. Al Jamar, F. Akzoun, M. Ahachad, M. Mahdaoui</i>	
<b>Numerical Approach of Magnetic and Viscous Diffusivity in a Heat Exchanger Cooled by a Non-Newtonian Fluid</b>	249
<i>Ali Tetbirt, Mohammed Ali Djebiret, Mahdi Mokrane, Mammer Ouali, Mohand Berdja, Ferhat Yahi</i>	
<b>Experimental Study on a Constructed Solar Air Heater in a Coastal Area</b>	256
<i>Fatima Chanaa, Rachid Bendaoud, Said Bounouar, Charaf Hajjaj, Hassan Ezzaki, Abdelhaq El Rhassouli, Abdel Ilah Faké, Redouane Rmayli, Mohammadi Benhmida</i>	
<b>Impact of the Parabolic Solar Concentrator's Rim Angle on the Quantity of Reflected Rays and Concentrated Flux on the Receiver</b>	262
<i>Raja Idlimam, Abdellah Bah, Mohamed Asbik, Mustapha Malha, Halima Kazdaba</i>	
<b>Laboratory Erosion Simulation of Antisoiling Glass Mirror</b>	267
<i>Amal Matal, Sanae Naamane, Hassan Bouaouine</i>	
<b>Numerical Analysis of Baffles Effect on Thermal Storage Capacity Inside Hot Water Storage Tank</b>	271
<i>Mohamed Tahar Baissi, Khaled Touafek, Rachid Khanniche, Lyes Boutina, Abdelkarim Khelifa</i>	
<b>Effect of Thermal Conductivity of the Adsorbent Bed and Heat Exchange Coefficient on Solar Adsorber's Behaviour</b>	275
<i>Wassila Chekirou, Nahman Boukheit, Ahcene Karaali</i>	
<b>Optimization and Evaluation of the Photovoltaic System in a Farm Studio Located in Ghardaïa</b>	281
<i>Abdelmadjid Kaddour, Sidi Mohammed El Amine Bekkouche, Boumédiene Benyoucef, Salah Bezari</i>	
<b>Determination of the Performance of a Solar Tower Integrated with a Combined Cycle</b>	285
<i>Madjid Amani, Adel Ghenaiet, Arezki Smaili</i>	
<b>Design Parameters Effect on Annual Energy Production of Proposed Design of Parabolic Trough Solar Plant</b>	291
<i>M. Debbache, H. Karoua, M. Laissaoui, M. Hazmoune, A. Takilalte, A. Bouhallassa, S. Lecheheb, S. Bouaichaoui, A. Hamidat, K. Imessad</i>	
<b>New Perspective of Thermal Effect of a Single-Tank Thermocline Storage System for CSP Plants</b>	297
<i>Mohamed Hajjaj, Abella Bouaaddi, Mohammed Halimi, Choukri Messaoudi</i>	
<b>Optical Analysis of an Evacuated Parabolic Trough Receiver With a Plate Absorber</b>	301
<i>Mohammed Boukhalifa, Mustapha Merzouk, Nachida Kasbadji Merzouk</i>	
<b>Comparative Analysis between PI and ADRC Control of a Variable Speed Wind Energy Conversion System using a Squirrel Cage Induction Generator</b>	306
<i>Hammadi Laghrifat, Ahmed Essadki, Maha Annoukoubi, Tamou Nasser</i>	
<b>LADRC Applied for the Doubly Fed Induction Generator Connected to the Micro-grid</b>	312
<i>Abdellatif Frigui, Ahmed Essadki, Tamou Nasser, Anis Boulal</i>	
<b>Structural Analysis of Wind Turbine Epicyclical Gear System by FEM</b>	319
<i>Kaoutar Daoudi, El Mostapha Boudi</i>	
<b>The Impact of The Sinusoidal Pitch Angle on The Vertical Axis Wind Turbine Type-Darrieus</b>	324
<i>Zineb Zitouni, Hamid Mounir, Abdellatif El Marjani</i>	
<b>Technical and Economic Analysis of Wind Turbine System for Isolated Location at Adrar in Algeria</b>	328
<i>Miloud Benmedjahed, Rachid Maouedj</i>	
<b>Comparative Structural and Modal Analysis of a Wind Turbine Planetary Gear Based on Material Cut Criteria using FEM</b>	332
<i>Abdellah Mohsine, Boudi El Mostapha, Rabie El Alaoui</i>	
<b>Control Strategies of PMSG Wind Energy Conversion System Based on Five Level NPC Converter</b>	338
<i>Youssef Errami, Abdellatif Obbadi, Smail Sahnoun, Mohammed Ouassaid, Mohamed Maaroufi</i>	
<b>The Active and Reactive Powers' Control of the DFIG During Variations of its Parameters</b>	346
<i>Hind Elaimani, Ahmed Essadki, Noureddine Elmouhi, Rachid Chakib</i>	
<b>Dynamic Participation of a DFIG-based Wind Turbine Controlled using Backstepping in Frequency Regulation</b>	352
<i>Mohamed Nadour, Ahmed Essadki, Tamou Nasser</i>	
<b>The Robustness Test of the Double Fed Induction Generator Control Used in a Wind Energy Conversion System in the Voltage Dips Event</b>	358

<i>Noureddine Elmouhi, Ahmed Essadki, Hind Elaimani, Rachid Chakib</i>	
<b>Linear Active Disturbance Rejection Control (LADRC) of a Variable Speed Wind Energy Conversion System using a DFI-Generator</b>	364
<i>Hammadi Laghrifat, Ahmed Essadki, Maha Annoukoubi, Tamou Nasser</i>	
<b>Geolocating Aeola For Use In Wind Turbine Siting</b>	370
<i>Michael S. Davis, Mohammad R. Madani</i>	
<b>Wind Energy to Power Household</b>	376
<i>Djohra Saheb Koussa, Ahmed Boufertella, Mustapha Boudraf, Meriem Kemache, Merriem Tamart, Mourad Haddadi</i>	
<b>Control of PMSG WECS Based on DTC and Backstepping Algorithm</b>	382
<i>Youssef Errami, Abdellatif Obbadi, Smail Sahnoun, Mustapha Agunaou, Mohammed Ouassaid, Mohamed Maaroufi</i>	
<b>Analysis of Wind Data and Wind Energy Potential of the East of Mohammedia, Morocco</b>	390
<i>Mohamed El Yazidi, Mohammed Benzirar, Mimoun Zazoui, Abdelbari Redouane</i>	
<b>Comparison of Power Control Methods of DFIG for Wind Turbines</b>	396
<i>Madiha El Ghamrasni, Hassane Mahmoudi, Ahmed Lagrioui, Badre Bossoufi</i>	
<b>Diagnosis of Rotor Winding Inter-turn Short Circuit Fault in Wind Turbine Based on DFIG using Hybrid TSA/DWT Approach</b>	404
<i>Hamza Sabir, Mohammed Ouassaid, Nabil Ngote</i>	
<b>3D-Printing of a Functional Small-Scale Wind Turbine</b>	410
<i>Michael S. Davis, Mohammad R. Madani</i>	
<b>Investigation into the Effects of Static Electricity on Wind Turbine Systems</b>	416
<i>Michael S. Davis, Mohammad R. Madani</i>	
<b>Voltage Stability Improvement of an Asynchronous Wind Turbine using Static Var Compensator with Single Input Fuzzy Logic Controller</b>	423
<i>Mohammed Mokhtari, Smail Zouggar, Mohamed Larbi Elhafyani, Taoufik Ouchbel, Nacer K M'sirdi, Azziz Naaman</i>	
<b>Modified Unified Control of VSC-HVDC Based Offshore Wind Farm Connected to Onshore Large-Scale Photovoltaic Power Station</b>	429
<i>Seghir Benhalima, Fadoul Souleyman Tidjani, Mounir Benadja, Miloud Rezkallah, Ambrish Chandra, Abderaouf Raddaoui, Halima Ikaouasseen</i>	
<b>Channeling of Static Electricity Within Wind Turbines for Transmission into the Power Grid</b>	435
<i>Michael S. Davis, Mohammad R. Madani</i>	
<b>A Low Cost Method to Convert Automotive Alternator for Wind Electricity Generation</b>	441
<i>Tuanku Badzlin Hashfi, Hussain Shareef, Saad Saleem Khan, Md. Mainul Islam</i>	
<b>Modeling and Power Controls of Wind Energy Conversion Systems Based on Doubly Fed Induction Generator</b>	445
<i>Manale Bouderbala, Badre Bossoufi, Hala Alami Aroussi, Ahmed Lagrioui, Mohmmmed Taoussi, Yasmine Ihedrane, Madiha El Ghamrasni</i>	
<b>An Improved Control Strategy for DFIG Wind Turbine to Ride-Through Voltage Dips</b>	451
<i>Ahmed Lazrak, Ahmed Abbou</i>	
<b>Fiber Orientation Effect on the Behavior of the Composite Materials of the Horizontal Axis Wind Turbine Blade (HAWTB)</b>	457
<i>Omar Rajad, Mounir Hamid, Saïf ed-Dîn Fertahi, Abdellatif El Marjani</i>	
<b>Damage Identification of Wind Turbine's Blades using Power Spectral Density and Kriging Analysis</b>	463
<i>Mohammed Awadallah, Ameen El-Sinawi, Isam Janajreh</i>	
<b>Deployment and Experimental Evaluation of Micro-Grid Systems</b>	470
<i>Abdellatif Elmouatamid, Mohamed Bakhouya, Radouane Ouladsine, Najib Elkamoun, Khalid Zine-Dine, Mohammed Khaidar, Mohamed Riduan Abid</i>	
<b>Numerical Investigation on the Flow Field Around a Wind Turbine Nacelle Anemometer</b>	476
<i>Madjid Tata, Smaili Arezki, Ouahiba Guerri</i>	
<b>GIS Based Multi-Criteria Decision Analysis for Renewable Energy Sites Selection:Comparative Study</b>	482
<i>Fatma Elmahmoudi, Oum Elkheir Abra, Ouafae Serrar, Abdelhadi Raihani, Lhousine Bahatti, Mohamed Rafik</i>	
<b>Pulsating Modelisation Study of Dynamic Stall Applied to HAWT</b>	489
<i>Noura Belkheir, Rabah Dizene</i>	
<b>LQR Controller Design for a Nonlinear, Doubly Fed Induction Generator Model</b>	494
<i>Hicham El azri, Ahmed Essadki, Tamou Nasser</i>	
<b>Feasibility Study of a Wind Farm in El Golea Region in the Algerian Sahara</b>	500
<i>Sabiha Kheder-Haddouche, Sidi Mohammed Boudia</i>	
<b>Long Term Forecasting of Wind Speed for Wind Energy Application</b>	506
<i>Nihad Aghbalou, Abderafi Charki, Saida R. Elazzouzi, Kamal Reklaoui</i>	

<b>The Idea of Feeding a Rural Area in Comoros with a Micro-Grid System with Renewable Energy Source with Hydrogen Storages</b>	513
<i>Said Mohamed Mariama, Angel Scipioni, Bernard Davat, Mohammed El Ganaoui</i>	
<b>Techno-Economic Optimization of Grid-Tied Hydrogen-Renewable-Based Power Plant with Management Strategy</b>	518
<i>Hammou Tebibel</i>	
<b>Improved Direct Torque Control of a Doubly Fed Induction Generator in a Wind Energy Conversion System</b>	524
<i>M. Taleb, M. El Haroussi, A. Ba-Razzouk</i>	
<b>Wind Energy Resource Assessment at three Sites in the Algerian Highlands</b>	530
<i>Rachid Maouedj, Miloud Benmedjahed, Djamel Saba, Brahim Barbaoui, Abdelkrim Mammeri, Touhami Ghaitaoui, Slimane Laribi</i>	
<b>Analysis and Control of the Wind Turbine in Different Operation Modes</b>	536
<i>Abdeldjalil Dahbi, Rachid Maouedj, Brahim Berbaoui, Abdellatif Reama, Mehdi Adel</i>	
<b>A New Study of Direct-Driven Wind Energy Conversion System Under Variable Wind Speed</b>	541
<i>Khayra. Roummani, Khaled. Koussa, Fateh. Ferroudji, Farouk. Meguellati, Yousef. Bakkou, Lakhdar. Saihi</i>	
<b>Design and Control of a Small Scale Wind Turbine Emulator with a DC Motor</b>	547
<i>Yassine Sirouni, Soumia El Hani, Nisrine Naseri, Ahmed Aghmadi, Khadija El Harouri</i>	
<b>Optimization of Off-grid Photovoltaic Powered Reverse Osmosis System using Response Surface Methodology</b>	553
<i>Yousra Jbari, Souad Abderafi</i>	
<b>Standing Wave Thermoacoustic Refrigerator: The Principle of Thermally Driven Cooling</b>	559
<i>Zahra Bouramdane, Hajar Hafis, Abdellah Bah, Mohammed Alaoui, Nadia Martaj, Stephan Savarese</i>	
<b>Supervising PV/Battery/Diesel System Connected to Grid using Fuzzy Logic</b>	565
<i>Taoufik Laagoubi, Mostafa Bouzi</i>	
<b>The Study of Bolted Sandwich Structure used for Electric Vehicles</b>	572
<i>Soukaina Ounss, Hamid Mounir, Abdellatif El Marjani</i>	
<b>An Improved Approach of Control for a Battery Charger Based Forward Converter and SEPIC</b>	577
<i>Abdelilah Hassoune, Mohamed Khafallah, Abdelouahed Mesbahi, Tarik Bouragba</i>	
<b>The Nexus of Energy for Free and World Society</b>	583
<i>Veronika Wittmann, Dieter Meissner</i>	
<b>High Physical Parameters Adjustment of the npp+ Solar Cell Structure using PC1D</b>	589
<i>Hamza Mokhliss, Khalid Rais</i>	
<b>Fuzzy Logic Controller to Improve Photovoltaic Water Pumping System Performance</b>	595
<i>Abdelhak Bouchakour, Abdelhalim Borni, Layachi Zaghba, Sief Eddine Boukebbous, Amor Fazzani</i>	
<b>The Processing of Active Infrared Thermography Data by a Hybrid Neural Algorithm for the Evaluation of Thermal Barrier Coating Thicknesses</b>	600
<i>Hicham Halloua, Abderrahim Saifi, Asseya El-amiri, Abdellatif Obbadi, Youssef Errami, Smail Sahnoun, Ahmed Elhassnaoui</i>	
<b>Temporal Monitoring of Temperature and Incident Irradiance for Predicting Photovoltaic Solar Module Peak Power and Efficiency Using Analytical Expressions of Model Physical Parameters</b>	606
<i>Mhammed Zaimi, Hicham El Achouby, Asmaa Ibral, El Mahdi Assaid, Mohammed Salaheddine El Maliki, Rachid Saadani</i>	
<b>Modeling and Robust Integral Sliding Mode Control for a Quadrotor Unmanned Aerial Vehicle</b>	613
<i>Moussa Labbadi, Mohamed Cherkaoui, Yassine El houm, M'hammed Guisser</i>	
<b>Simulation of Bubble Dynamic Behavior in Subcooled Flow Boiling, Application to Energy Systems Design</b>	619
<i>Amal Igaadi, Rachid El Amraoui, Hicham El Mghari</i>	
<b>Performance of Statcom in a Power Grid</b>	625
<i>Ethmane Mahmoud, Abdel Kader Mahmoud, Mohammed Maaroufi, Ahmed Yahfdhou</i>	
<b>Approaches and Processes for Recovering Reverse Osmosis Discharges from Desalination Plants</b>	631
<i>Dalila Belhout, Zoubir Belgroun, Mohammed Abbes, Zahia Tigrine, Djilali Tassalit</i>	
<b>Specific Electricity Consumption Optimization of Raw Grinding Workshop in a Moroccan Cement Plant</b>	637
<i>Fahd Belmajdoub, Souad Abderafi</i>	
<b>Optimal Power Flow Solution Including Stochastic Renewable Resources</b>	643
<i>Fatima Daqaq, Mohamed Ouassaid, Rachid Ellaia, Ahmed Tchvagma Zeine</i>	
<b>Energy Yield and Efficiency Assessment of Photovoltaic Grid-Tied System: Outdoor Approach</b>	649
<i>Mohamed Boulaid, Rachida Oaddi, Abdellah Tihane, Abdeslam Elfanoui, Ahmed Ihlal</i>	
<b>Parametric Study of Thermal Renovation of an Administrative Building Envelope in Region of Chefchaouen (Morocco)</b>	654
<i>Abdelghafour Lamrani, Mohamed Rougui</i>	
<b>The Performances of Hybrid Filter in Elimination of AC-AC Converters Harmonics Pollution</b>	659

<i>Ibtissam Bessadet, Hamza Tedjini</i>	
<b>Experimental Characterization of a Double-Effect Absorption Heat Pump-MED System Driven by Parabolic Trough Collectors</b>	665
<i>Aicha Chorak, Patricia Palenzuela, Diego-César Alarcón-Padilla, Abdellatif Ben Abdellah</i>	
<b>Design of a PV Powered Charging Station for PHEVs</b>	673
<i>N. Tutkun, A. N. Afandi</i>	
<b>High-Fidelity Simulation and Parametric Analysis of Static Indirect Freeze Desalination Process</b>	678
<i>Khadije El Kadi, Isam Janajreh</i>	
<b>Comparative Analysis of Thermal Performance of Cooling Circuit for Marine Engine</b>	684
<i>Youssef Jihani, Adam Adham, El Mostafa Mabsate</i>	
<b>Optimisation of the Distillation Column of Petroleum Fractions using ANN Method</b>	689
<i>A. Ould Brahim, S. Abderafi, T. Bounahmidi</i>	
<b>Thermal Insulation and Operation by Photovoltaic Solar Energy of a Bioreactor</b>	695
<i>Mohamed Ouakarrouch, Fatima Kifani-Sahban, Najma Laaroussi, Mohammed Garoum, Samir Men Layakhaf</i>	
<b>The Efficient Co-culture Fermentation Process, for Producing 2G Bioethanol</b>	700
<i>Mohamed Anouar Kamzon, Souad Abderafi, Tijani Bounahmidi</i>	
<b>Examination of Some Eco-Friendly Compounds, Extracted from Algal Biodiesel as Environmental Natural Inhibitors for Mild Steel Corrosion</b>	706
<i>Djamel Daoud, Djillali Ghobrini</i>	
<b>Valorization of Moroccan Olive Cake in Small Scale Burner Through Stirling Engine: Case Study</b>	710
<i>Nadia Rassai, Noureddine Boutammachte, Kaoutar Laazaar</i>	
<b>CFD Modelling of a Biomass (Olive Pomace) Combustion in a Fixed Bed</b>	715
<i>Ilias Bakhattar, Mohammed Allae Bennini, Mohamed Asbik, Abdellah Elorf, Brahim Sarh, Toufik Boushaki</i>	
<b>Cultivation of <i>Chlorella vulgaris</i> using Saline Medium from a Dairy Effluent</b>	721
<i>Djillali Ghobrini, Tomás Brányik, Leïla Kebbab, Bastien Poutout, Kamal Aïboud</i>	
<b>Two-stage Anaerobic Upflow Biofilm Reactor for Simultaneous Hydrogen and Methane Production from Food Waste</b>	726
<i>Gamal Hassan, Sherien Elagroudy, Mohamed Abo-Aly, Mohamed Azab El-Liethy, Isam Janajreh, Fatma El-Gohary</i>	
<b>Performance and Combustion Characteristics of a Diesel Engine Fueled with Waste Vegetable Oils</b>	731
<i>Abdullah Ali A Abuhabaya, Fengshou Gu</i>	
<b>Infrared Thermography Detection of Flex Cracks in Multi-Layer Ceramic Capacitors (MLCCs)</b>	738
<i>Asseya El-amiri, Hamza Mokhliss, Abderrahim Saifi, Hicham Halloua, Abdellatif Obbadi, Youssef Errami, Smail Sahnoun, Ahmed Elhassnaoui</i>	
<b>Numerical Investigation of the Latent Heat Storage During the Melting Driven Natural Convection Around Heat Source Embedded in a Rectangular Cavity: Application to the Passive Cooling</b>	743
<i>Hamza Faraji, Mustapha Faraji, Mustapha El Alami</i>	
<b>Formulation and Thermal Potentials of an EcoMaterial for Civil Engineering</b>	749
<i>Fati Zoma, David Yemboini Kader Toguyeni</i>	
<b>Cooling Performance of an Earth to Air Heat Exchanger in Hot Semi-arid Climate: Parametric study</b>	754
<i>Hassan Mahach, Brahim Benhamou</i>	
<b>Thermal Performance of a Residential Building in Ben Guerir City: A Comparative Evaluation for an Optimized Thermal Load Needs</b>	759
<i>Sara El Kadiri, Samir Idrissi Kaitouni, Badr Ikken, Rabie El Otmani</i>	
<b>Impact of Building's Orientation and Insulation on Energy Consumption: Case Study in Different Thermal Zones of Morocco using TRNSYS Software</b>	767
<i>Imane Srhayri, Abdellah Bah</i>	
<b>An Energetic, Environmental and Economic Performance Analysis of a Hot Water Production of a Hotel</b>	772
<i>F. Akzoun, Y. Serroukh, M. A. Ben Taher, A. Al Jamar, M. Mahdaoui, M. Ahachad</i>	
<b>A Thermo-Economic Analysis of Solar Energy-based Heating Systems for Greenhouse Application</b>	777
<i>Yasmine Achour, Driss Zejli</i>	
<b>Energy Efficient Houses Meeting both Bioclimatic Architecture Principles and Moroccan Thermal Regulation</b>	783
<i>Khalid El Harrouni, Mohamed Filali, Hassane Kharmich, Majid Mansour, Najma Laaroussi, Mohammed Garoum</i>	
<b>The Effect of Clay Consistency on the Thermophysical Properties of Composite Material Clay-straw</b>	791
<i>Yassine Chihab, Saad Raefat, Mohammed Garoum, Najma Laaroussi, Rachid Bouferra</i>	
<b>The Photovoltaic Energy Potential of Roofs in Zaouiat Sidi-Abdeslam</b>	796
<i>Widad Yossri, Ayoub El Baraka, Asmae Khaldoun</i>	
<b>Urban Surface Albedo as a Tool of a Bioclimatic Design in Semi-aride Climate: Case of Fez</b>	802
<i>Kaoutar Ouali, Khalid El harrouni, Moulay larbi Abidi</i>	

<b>Eco-Friendly Fired Clay Bricks</b>	808
<i>Yosra El Boulli Rguibi, Ayoub El Baraka, Asmae Khaldoun</i>	
<b>Rheology of Clay and Clay Housing in Bensmim</b>	814
<i>Houda Ghailane, Ghita El Boukili, Asmae Khaldoun</i>	
<b>Modeling and Performance Evaluation of an Air-Soil Exchange System in Energy Efficient Buildings</b>	820
<i>Abdelhak Kharbouch, Anas El Maakoul, Mohamed Bakhouya, Driss El Ouadghiri</i>	
<b>Dynamic Life Cycle Assessment in the Building Sector</b>	826
<i>Patrice Megange, Pierre Ngae, Amir Ali Feiz, Ahmed Melhaoui, Amer Chpoun, Thien-Phu Le</i>	
<b>Numerical Study of the Impact of Clay-Straw Walls on the Energy Performance of a Residential Building</b>	831
<i>Mouatassim Charai, Haitham Sghiouri, Ahmed Mezrhah, Mustapha Karkri</i>	
<b>Thermal Performance of a Hemp Concrete Residential Building Envelope in Tangier-Morocco</b>	836
<i>Houda Lidoh, Samir Idrissi Kaitouni, Badr Ikken</i>	
<b>Air-Conditioner On-Off Optimization Control under Variant Ambient Condition</b>	844
<i>Mohammed Al-Azba, Zhaohui Cen, Said Ahzi</i>	
<b>A New Intelligent MPPT Based on ANN Algorithm for Photovoltaic System</b>	849
<i>Jawad Chorfi, Malika Zazi, Mohamed Mansori</i>	
<b>Modified Predictive Model Control based MPPT for Standalone PV in Distribution System</b>	855
<i>Halima Ikaouassen, Kawtar Moutaki, Abderraouf Raddaoui, Miloud Rezkallah</i>	
<b>Optimization of the Fuzzy MPPT Controller by PSO for the Single-Phase Grid-Connected Photovoltaic System Controlled by Sliding Mode</b>	861
<i>Abdelhalim Borni, Abdelhak Bouchakour, Layachi Zaghba, Abdelkrim Thameur, Abdelkader Lakhdari, Noureddine Bessous</i>	
<b>Comparative Study of MPPT and Pitch Angle using PI and Fuzzy Logic Controllers</b>	868
<i>Ibtissam Kharchouf, Ahmed Essadki, Mohammed Fdaili, Tamou Nasser</i>	
<b>A Self-Tuning Fuzzy PI Controller for Three-Level Boost Converter</b>	874
<i>Imane Ait Ayad, Elmostafa El Warraki, Abdellatif Nouri</i>	
<b>Control of the DFIG using a Fractional Regulator with Five Multilevel Inverters Powered by PV</b>	880
<i>Sihem Ghoudelbourk, Abdelkrim Rechach, Mohamed Larbi Mihoub</i>	
<b>An Efficient Fuzzy Logic Based MPPT Control Strategy for Multi-Source Hybrid Power System</b>	886
<i>Soro S. Martin, Ahmed Chebak, Abderazak El Ouafi, Mustapha Mabrouki</i>	
<b>A Fuzzy Logic and Sliding Mode Control for a Grid-Connected Current Source Inverter Photovoltaic System</b>	894
<i>Abdellahi Sidi Mohamed Nabgha, Mohamed Ouassaid</i>	
<b>Active Power Filter for Power Quality in Grid Connected PV-System using an Improved Fuzzy Logic Control MPPT</b>	900
<i>Mouna Tali, Ahmed Esadki, Tamou Nasser, Boualem Boukezata</i>	
<b>Effect of the Charges Injection Contact on the Performance of Organic Light Emitting Diode (OLED)</b>	907
<i>Samira Mehdi, Abdelkader Aissat</i>	
<b>An Optimal Radius of Influence Domain in Element-Free Galerkin Method</b>	911
<i>Imane Hajjout, Manal Haddouch, El Mostapha Boudi</i>	
<b>Deep Learning Algorithm Applied to Daily Solar Irradiation Estimations</b>	915
<i>Erol C. Akbaba, Emre Yüce, Bulent G. Akinoglu</i>	
<b>Effect of Temperature and Thickness of the Weld Bead on the Durability of Welded Rectangular Profiles under Damped Loads for Electrical Vehicles Utilization</b>	919
<i>Imane Amarir, Hamid Mounir, Abdellatif El Marjani</i>	
<b>Analysis and Comparison of Line Voltage Stability Indices</b>	925
<i>Aziz Oukennou, Abdelhalim Sandali</i>	
<b>Modeling and Thermal Analysis of Small Scale Desalination System using Humidification-Dehumidification Process Driven by Solar Energy</b>	931
<i>Azzedine Lahnizi, Abdessamad Fikri, Ismail Driouch, Elhachmi Essadiqi, Mustafa Faqir, Mohamed Ghazi, Mohamed Mada, Abdellatif Benabdellah</i>	
<b>Proton Exchange Membrane Fuel Cell Modelling and Power Control by P&amp;O Algorithm</b>	937
<i>Nisrine Naseri, Soumia El Hani, Ahmed Aghmadi, Khadija El Harouri, Mohamed Salek Heyine, Hamza Mediouni</i>	
<b>Substrate Effect on InGaN Optoelectronic Properties</b>	942
<i>Wafa Bellil, Abdelkader Aissat, Jean Pierre Vilcot</i>	
<b>Simple and Low-Cost Solution System for a Small Scale Power Photovoltaic Water Pumping System</b>	946
<i>Said Aissou, Djamila Rekioua, Toufik Rekioua, Seddik Bacha</i>	
<b>Artificial Neural Network Modeling to Predict the Moisture Removal Rate of a Desiccant Liquid Dehumidifier System</b>	952
<i>Fatih Bouzeffour, Belkacemi Djelloul</i>	

<b>An Improved No-load Voltage Model for Proton Exchange Membrane Fuel Cell Systems Using Curve Fitting Method</b>	956
<i>Saad Khan, Hussain Shareef, Addy Wahyudie</i>	
<b>Output Power Estimation of High Concentrator Photovoltaic using Radial Basis Function Neural Network</b>	960
<i>Mensah K. Anaty, Yaser I. Alamin, Khalid Bouziane, Manuel Pérez García, Reda Yaagoubi, José Domingo Álvarez Hervás, Merouan Belkasmí, Mohammed Aggour</i>	
<b>Real-time Implementation of Robust Controller for PV Emulator Supplied Shunt Active Power Filter</b>	966
<i>Hamza Afghoul, Fateh Krim, Antar Beddar, Badreddine Babes</i>	
<b>Modeling and Simulation of PV Generator Characteristics under LabVIEW</b>	972
<i>Boualem Bendib, Hocine Belmili, Sabri Boulouma, Hachemi Rahmani, Fateh Krim</i>	
<b>Hybrid Stand-Alone Photovoltaic/Batteries/Fuel Cells System for Green Cities</b>	978
<i>Hanane Hassani, Djamilia Rekioua, Said Aïssou, Faïka Zaouche, Seddik Bacha</i>	
<b>Energy and Exergy Performance of Three Sensible Heat Storage Systems During Charging</b>	984
<i>Ashmore Mawire, Katlego A. Lentswe, Denis Okello, Karidewa Nyeinga, Robert Lugolole</i>	
<b>Cobalt Hydroxide/Heteroatom Doped Graphene Composite as Electrocatalyst for Oxygen Reduction Reaction</b>	990
<i>Omar Benabdallah, Zineb Edfouf, Siham Idrissi, Abdelfettah Lallaoui, Qiliang Wei, Xiaohua Yang, Shuhui Sun, Fouzia Cherkaoui El Moursli</i>	
<b>Magnetite Versus Quartzite: Potential Candidates for Thermocline Energy Storage</b>	995
<i>Yousra Filali Baba, Ahmed Al Mers, Hamid Ajdad, Abdelfattah Boutatem</i>	
<b>Novel High-Performance Ti<sub>2</sub>(HPO<sub>3</sub>)<sub>3</sub>/Reduced Graphene Oxide Anode Composite Prepared By One-Step Hydrothermal Route</b>	1000
<i>Abdelfettah Lallaoui, Zineb Edfouf, Omar Benabdallah, Siham Idrissi, Mohammed Abd-Lefdil, Fouzia Cherkaoui El Moursli</i>	
<b>Li-Ion Battery Charger Based on LDO Regulator for Portable Device Power Management</b>	1004
<i>Mounir Ouremchi, Mustapha El Al Aoui, Fouad Farah, Karim El Khadiri, Hassan Qjidaa, Ahmed Lakhssassi, Ahmed Tahiri</i>	
<b>Numerical Investigation of Temperature and Current Density Distribution on (PEM) Fuel Cell Performance</b>	1008
<i>Yassine Amadane, Hamid Mounir, Abdellatif El marjani, Ettouhami Mohamed Karim</i>	
<b>A Computational Fluid Dynamics (CFD) Investigation of two PEM Fuel Cells with Straight Single-Channel(SC):SC-40mm and SC-50mm</b>	1014
<i>Yassine Amadane, Hamid Mounir, Abdellatif El marjani, Ettouhami Mohamed Karim</i>	
<b>Hybrid PEM Fuel-Cell-Diesel-Solar Power System Design with Fuzzy Battery Management System and Weather Forecasting for Electric Boats</b>	1020
<i>Waleed Obaid, Abdul-Kadir Hamid, Chaouki Ghenai</i>	
<b>A New Hydraulic Device to Convert Vehicles' Mechanical Energy into Electrical Energy</b>	1027
<i>Francisco Duarte, Adelino Ferreira, Paulo Fael</i>	
<b>Numerical Simulation of FSI Model for Energy Harvesting from Ocean Waves and Beams with Piezoelectric Material</b>	1033
<i>Yassin Belkourchia, Hamzah Bakhti, Lahcen Azrar</i>	
<b>Energy production by electric vehicle Vehicle-to-Grid (V2G) Application</b>	1038
<i>Khadija El Harouri, Soumia El Hani, Imad Abouddrar, Ahmed Aghmadi, Nisrine Naseri</i>	
<b>Two proposed Control Algorithm of the Management of Supercapacitors-Batteries combination in Photovoltaic Energy Storage</b>	1044
<i>Zineb Cabrane, Mohammed Ouassaid, Mohamed Maaroufi, Saloua Marhraoui, Nezha El Hichami</i>	
<b>Hybrid Power System Design for Electric Boat with Solar Irradiance Forecasting</b>	1050
<i>Waleed Obaid, Abdul-Kadir Hamid, Chaouki Ghenai</i>	
<b>Gasification Comparison between Plasma and Entrained Flow: Analysis of the Power Plant</b>	1055
<i>Luca Mazzoni, Isam Janajreh, Sherien Elagroudy</i>	
<b>Tin Phosphite SnHPO<sub>3</sub> a New Anode Material for Li-ion Batteries</b>	1062
<i>Siham Idrissi, Zineb Edfouf, Omar Benabdallah, Abdelfettah Lallaoui, Fouzia Cherkaoui El Moursli</i>	
<b>Modeling and Simulation of Direct Coupling of an Electrolyzer to PV System for Hydrogen Production</b>	1067
<i>Rajae Gaamouche, Amine Abbou, Abdelbari Redouane, Abdennebi El Hasnaoui, Bouchra Belhorma</i>	
<b>Nickel Orthophosphate Ni<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>: New Conversion-type Anode Material for Lithium ion Batteries</b>	1072
<i>Hasna Aziam, Youssef Tamraoui, Bouchaib Manoun, Jones Alami, Ismael Saadoun</i>	
<b>State of Charge Estimation of Supercapacitor Using Artificial Neural Network for Onboard Railway Applications</b>	1076
<i>Sadiq Eziani, Mohammed Ouassaid</i>	
<b>Co<sub>3</sub>-xMnxO<sub>4</sub> as a High Capacity Anode Material for Lithium Ion Batteries</b>	1082



<i>Loubna Hdidou, Ilham Bezza, Youssef Tamraoui, Mouad Dahbi, Fouad Ghamouss, Hassan Hannache, Ismael Saadoune, Jones Alami, Bouchaib Manoun</i>	
<b>Open Circuit Voltage of a Lithium ion Battery Model Adjusted by Data Fitting</b>	1087
<i>H. Hemi, N. K. M'Sirdi, A. Naamane, B. Ikken</i>	
<b>Degradation of Lithium-Ion Batteries in Electric Vehicles at High Temperatures: A Case Study</b>	1092
<i>Kawtar Benabdelaziz, Mohammed Maaroufi, Badr Ikken</i>	
<b>A New Mobile and Hybrid Desalination Unit with Solar Energy and Enhanced Reverse Osmosis</b>	1098
<i>Meryem Bachar, Ahmed Naddami, Ahmed Fahli, Mohamed Hilal</i>	
<b>High-Voltage Lithium-Ion Capacitors Based on Glutaronitrile Electrolytes</b>	1103
<i>Mouad Dahbi, Fouad Ghamouss, François Tran Van, Daniel Lemordant, Mérièm Anouti</i>	
<b>Residential Microgrid Load Management and Optimal Control in grid Connected and Islanded Mode</b>	1106
<i>Mohammed Laour, Fethi Akel, Douadi Bendib, Madjid Chikh</i>	
<b>Robust Control of Three Phase Grid Connected PV System Based on ADRC and Fuzz</b>	1110
<i>Imad Abouddrar, Soumia El Hani, Hamza Mediouni, Ahmed Aghmad, Mohamed Saleck Heyine</i>	
<b>Multi-Objective Energy Management of a Grid-Connected Photovoltaic-Wind-Battery Hybrid System using Deterministic Approach</b>	1116
<i>Meryeme Azaroual, Mohammed Ouassaid, Mohamed Maaroufi</i>	
<b>Demand Side Management Strategy by Optimal Day-ahead Load Shifting in Smart Grid</b>	1123
<i>Rajaa Naji El idrissi, Mohammed Ouassaid, Mohamed Maaroufi</i>	
<b>Evaluation of Communication Latency for Future Time-Critical Smart Grid Measurement and Control Systems</b>	1129
<i>Frank Ball, Kashinth Basu, Tatiana Balikhina, Ali Maqousi</i>	
<b>A Review on Distribution System State Estimation Techniques</b>	1135
<i>Meriem Majdoub, Abdelaziz Belfqih, Jamal Boukherouaa, Omar Sabri, Bouchra Cheddadi, Touria Haidi</i>	
<b>Supervisory of a Domestic Electrical Plant Based on Ethernet Network</b>	1141
<i>Tevi Gabriel Jean-Philippe, Amadou Seidou Maiga, Abdourahimoun Daouda, André Ibrahim Foulani, Bouchra Laarabi</i>	
<b>Feasibility Study of Energy Hybrid Systems for Villages of The Southern Moroccan Coastline</b>	1147
<i>Abdelbari Redouane, Prince Acouetey, Abdennebi El Hasnaoui, Imad El Harraki</i>	
<b>An End to End Real Time Architecture for Analyzing and Clustering Time Series Data: Case of an Energy Management System</b>	1153
<i>Hanaa Talei, Driss Benhaddou, Mohamed Essaïdi</i>	
<b>Energy Efficient Medium Access Control Protocol for Wireless Sensor Networks</b>	1160
<i>Abdul Razaque, Muder Almiani, Meer Jaro khan, Mukazhanov Nurzhan Kakenuly, Yaser Jararweh</i>	
<b>Smart Buildings For Smart Grids: A Real-world Testbed</b>	1166
<i>Safae Bourhnane, Mohamed Riduan Abid, Rachid Lghoul, Khalid Zine-Dine, Najib Elkamoun, Mohammed Khaidar, Mohamed Bakhouya, Driss Benhaddou</i>	
<b>Impact of Anthropogenic Aerosols on Solar Beam Radiation Serving CSP Fields (Heliostat) in Morocco</b>	1172
<i>Abdelkader Beyoud, Najem Hassanain, Ahmed Bouhaouss</i>	
<b>Distributed Voltage and Frequency Control of Islanded AC Microgrids</b>	1176
<i>Mohamed Ghazzali, Mohamed Haloua</i>	
<b>Analysis of Cyber-Physical Security in Electric Smart Grid - Survey and challenges</b>	1182
<i>Hans John Dcruz, Baskaran Kaliaperumal</i>	
<b>A New Approach for Photovoltaic Power Prediction Based on Chaos Theory</b>	1188
<i>Hasnaa Bazine, Mustapha Adar, Mustapha Mabrouki, Ahmed Chebak</i>	
<b>Simulation Study of three PV Systems</b>	1194
<i>Mustapha Adar, Hasnaa Bazine, Youssef Najih, Caouthar Bahanni, Mustapha Mabrouki, Ahmed Chebak</i>	
<b>Adaptive Control of a Multilevel Inverter (5L) Connected to the Single Phase Electrical Grid</b>	1199
<i>Abdelaziz Fri, Rachid El Bachtiri, Abdelaziz Elghzizal</i>	
<b>Remote Solar Panels Identification Based on Patterns Localization</b>	1205
<i>Hicham Tribak, Youssef Zaz</i>	
<b>Comparison of Machine Learning Algorithms for the Power Consumption Prediction - Case Study of Tetouan city</b>	1210
<i>Abdulwahed Salam, Abdelaaziz El Hibaoui</i>	