

# **2014 3rd International Conference on the Developments in Renewable Energy Technology**

**(ICDRET 2014)**

**Dhaka, Bangladesh  
29-31 May 2014**



**IEEE Catalog Number: CFP1430J-POD  
ISBN: 978-1-4799-4256-5**

# Table of Contents

**Day 2: May 30 (Friday) 2014**

**Technical Sessions A1-A3 (Time: 9:00AM-10:30AM)**

Session A1, Venue: Room-211

Time: 9:00AM-10:30AM

## **PV Applications**

<b>Paper Title</b>	<b>Authors</b>
1 A Two-Seater Light-Weight Solar Powered Clean Car: Preliminary Design and Economic Analysis ""3	Sanjana Ahmed, Ahmed Zenan, Mosaddequr Rahman
2 Savings of Electricity Consumption through Solar Based Recharging Station for Power Assisted Pedal Rickshaw in Chittagong""9	Sujoy Barua, Md. Mahamudul Hasan
3 Potential Rooftop Distribution Mapping using Geographic Information Systems (GIS) for Solar PV Installation: A Case Study for Dhaka, Bangladesh ""33	Taskin Jamal, Weerakorn Ongsakul, Jay Govind Singh, Sayedus Salehin, S.M. Ferdous
4 Performance evaluation of a PV powered solar dryer""P IC	Akil Ahammed, Mohammad Tawheed Kibria, Md. Sayeed-Ur-Rahim Mahadi, Nasif Shams, Saiful Huque
5 Commercially Feasible Solar Water Pumping System Effective for Sustainable Rural Development""P IC	Md. Kamal Hossaine, Sujib Chandra Sutradhar
6 Assessment and Evaluation of Solar Irrigation System in Bangladesh ""39	Deen Muhammad, Mukib Mosleh, Shakir-ul Haque Khan

Session A2, Venue: Room-206

Time: 9:00AM-10:15AM

## **Biomass and Biogas**

<b>Title</b>	<b>Authors</b>
1 Stability Analysis of Standalone Biogas Power Plants in Poultry Farms of Bangladesh ""44	Mohammad Shariful Islam, Asif Islam, Mohammad Zakirul Islam, Enamul Basher
2 Bio-Energy Resources – Contribution Towards Development of Rural Bangladesh""P IC	A S M Monjurul Hasan, Mohammad Samir Ahmed, A S M Muhaiminul Hasan
3 Feasibility Analysis of Deploying Biogas Plants for Producing Electricity and Bio-fertilizer Commercially at Different Scale of Poultry Farms in Bangladesh ""4:	Mohammad Shariful Islam, Asif Islam, Md. Zakirul Islam, Enamul Basher
4 A Sustainable Energy Model Focusing Renewable Energy: A Case Study for Poultry Farms in Bangladesh ""56	Mohammad Shariful Islam, Asif Islam, Md. Zakirul Islam, Enamul Basher
5 A Feasibility Study on Installation of Solid Waste Fuelled Power Plant in Dhaka City Corporation""P IC	Apu Banik, Ashrafal Haq Rony, Md.Monirul Islam

Session A3, Venue: Auditorium

Time: 9:00AM-10:30AM

### Control and Circuit

	<b>Title</b>	<b>Authors</b>
1	Transient Stability Enhancement of Fuel Cell System using D-STATCOM""83	Md. Ashifur Rahman, Mohammad Hasanuzzaman Shawon, Subarto kumar Ghosh, Shimul Kanti Nath
2	Improved Electronic Load Controller and Synchronizer Unit for Mini Grid Connection""88	Paras Karki, Rojesh Dahal, Brijesh Adhikary, Ramesh K. Maskey
3	DSP based Implementation of Fuzzy-PI Electronic Load Controller for Self-Excited Induction Generator""P IC	Ashok Kumar, Jayant Sukhwani, S. P. Singh
4	Efficient Load and Charging Method for Solar Powered Home Lighting System of Bangladesh ""92	Taoufikul Islam, M. Abdul Awal
5	Advanced Decentralized DER Control for Islanded Microgrids""P IC	Jahangir Hossain, Apel Mahmud, Tareq Aziz, Hemanshu Pota, Mithulananthan Nadarajah
6	A Control Method of Wind Power System Using a Doubly Fed Wound Rotor Induction Generator and Suppression of Tower Shadow Effect""95	Eiichi Sakasegawa, Takahiro Miyakawa, Kichiro Yamamoto, Katsuji Shinohara

### Technical Sessions B1-B3 (11:00AM-12:30PM)

Session B1, Venue:Room-211

Time: 11:00AM-12:15PM

### Mini and Micro Grid Systems

	<b>Title</b>	<b>Authors</b>
1	Deployment of Renewable Energy Technologies in Bangladesh:Technology Roadmap for Grid-connected PV Systems""P IC	Md. Habibullah,,A S M Monjurul Hasan, Khaza Newaz Muhammad, A S M Muhaiminul Hasan
2	Load Carrying Capability of Renewable Energy Sources of Bangladesh Power System ""386	Md. Khurram Monir Rabby, Nahid Al Masood, Muhammad Mobaidul Islam, Nabeela Kauser Jeny
3	DC Nanogrids: A Low Cost PV Based Solution for Livelihood Enhancement for Rural Bangladesh""392	M. Rezwana Khan, Edward D. Brown
4	Demand Management for Isolated Mini-Grids Supplied by Renewable Generation""397	Peter J. Boait, Joseph Richard Snape
5	Solar Diesel Hybrid Mini-Grid Design Considerations: Bangladesh Perspective""3: 3	ASM Mominul Hasan, Shahriar Ahmed Chowdhury

Session B2, Venue: Room-206

Time: 11:00AM-12:30PM

### **Biomass and Biogas**

<b>Title</b>	<b>Authors</b>
1 Variation of Biogas Production with Different Factors in Poultry Farms of Bangladesh""62	Mohammad Shariful Islam, Asif Islam, Md. Zakirul Islam
2 Options for biogas production in combating climate change in Rangpur District, Bangladesh""P IC	Md. Monzer Hossain Sarker, Tamanna Hossen, Md. Abdur Razzaque
3 Karoch (Pongamia pinnata)- An alternative source of biofuel in Bangladesh""68	M.M. Rahman, Md. Ahiduzzaman, AKM Sadrul Islam, R. Blanchard
4 A Comparative Study on Anaerobic Co-Digestion of Kitchen Waste with Sewage Sludge and Cow Manure""74	Salma A. Iqbal, Shahinur Rahaman, Abu Yousuf
5 Feasibility Study on Electricity Generation from Poultry Litter Based Biogas in Bangladesh""79	ASM Mominul Hasan, Md. Fayyaz Khan, Raqibul Mostafa, Azizul Kaium
6 Cultivation of Chlorella vulgaris with Organic Carbon Sources""P IC	Kauser Jahan, Sarah Bauer, Stephanie Moore, Kassandra Grime, Andrea McFarland

Session B3, Venue: Auditorium

Time: 11:00AM-12:30PM

### **Control and Circuit**

<b>Title</b>	<b>Authors</b>
1 Design of an Optimal Placement Algorithm for Large Scale Photovoltaic in Sub-Transmission Networks""9;	Shahariar Kabir, Olav Krause, Ashraf Haider
2 Single-Phase Grid-Tie Photovoltaic Inverter Using Maximum Power Point Tracking with Flyback Converter"": 7	Ahmed Sony Kamal Chowdhury, K. M. A. Salam, M. Abdur Razzak
3 A Three Level Solar Panel System with an Automated Solar Tracker""; 3	H. M. Moniruzzaman, Munia Patwary, Mosaddequr Rahman
4 Modelling and Simulation of an Efficient Charge Controller for Photovoltaic System with Maximum Power Point Tracking""; 9	Mohammad Nasim Imtiaz Khan, Md. Zaidid Khan, Dewan Fahim Noor, Adib Nahiyani, Md. Ehsanul Haque, Shammya Shananda Saha, Md Rifat Kaiser Rachi, Md. Ziaur Rahman Khan
5 Sun Tracking Schemes for Photovoltaic Panels""324	Marzia Hoque Tania, Md. Samiul Alam
6 Design of a Wind Power Generation System using Permanent Magnet Synchronous Machine along with a Boost Regulator""329	Taohid Latif, M. A. Razzak

**Technical Sessions C1-C3 (Time: 3:00PM-4:30PM)**

Session C1, Venue: Room-211

Time: 3:00PM-4:15PM

**Hybrid Systems**

<b>Title</b>	<b>Authors</b>
1 Prospect of Decentralized Hybrid Power Generation in Bangladesh Using Biomass, Solar PV & Wind <sup>3</sup> ; 7	Mohammad Wahidur Rahman, Md. Shafayat Hossain, Ahmedullah Aziz, Farseem M Mohammedy
2 Solar PV-Diesel Hybrid Mini Cold Storage for Rural Bangladesh <sup>3</sup> ; 3	M. Rezwana Khan, Sufi Iqbal
3 Optimized Model of a Solar PV-Biogas-Diesel Hybrid Energy System for Adorsho Char Island, Bangladesh <sup>3</sup> ; 6	Sayedus Salehin, A.K.M. Sadrul Islam, Rawhatul Hoque, Mushfiqur Rahman, Aynul Hoque, Emrul Manna
4 Optimization of Hybrid Renewable Energy System for a Base Tranceiver Station (BTS) in Bangladesh <sup>4</sup> 22	Aasim Ullah, S.M.Shahnewaz Siddiquee, MD.Emran Hossain
5 Design of a Photovoltaic-Biogas Hybrid Power Generation System for Bangladeshi Remote Area Using Homer Software <sup>4</sup> 27	Md. Moniruzzaman Tanim, Nawshad Ahmed Chowdhury, Mirza Mahbubur Rahman, Jannatul Ferdaus

Session C2, Venue: Room-206

Time: 3:00PM-4:15PM

**Hydro**

<b>Title</b>	<b>Authors</b>
1 Micro/Mini Hydropower for Rural Communities in Nepal: Status and Development Trends <sup>5</sup> IC	Madan Thapaliya
2 Prospects of Utilization of Reversible Pump Turbines in Nepalese Hydropower Plants <sup>5</sup> P IC	Nikhel Gurung, Milan Paudel, Nitish Shrestha, Ashok Bista, Biraj Singh Thapa, Krishna Prasad Shrestha
3 Low Head Hydro Power Generation Using Road Side Canal Water Potential in Bangladesh <sup>4</sup> 32	Satyajit Mojumder, Pankaj kumar Sutradhar, Sourav Saha, M.M. Rahman
4 Pump-as-Turbine (PAT) for Small Scale Power Generation: A Comparative Analysis <sup>4</sup> 36	Ihteaz Muhaimeen Hossain, S.M. Ferdous, Sayedus Salehin, Ahmed Mortuza Saleque, Taskin Jamal
5 Analysis of the Flow Condition in a Cross Flow Turbine <sup>4</sup> 3;	Supriya Koirala, Bhola Thapa, Torbjørn Kristian Nielsen

Session C3, Venue: Auditorium

Time: 3:00PM-4:15PM

**Control and Circuit**

	<b>Title</b>	<b>Authors</b>
1	Matlab Simscape Simulation of an Open Voltage Algorithm based Maximum Power Point Tracker for Battery Charging PV System""335	Muhammad Samiul Alam, Mahir Asif Mohammad, Riku Chowdhury
2	A Review of the State of the Art of Generators and Power Electronics for Wind Energy Conversion Systems""33;	Syed Naime Mohammad, Nipu Kumar Das, Saikat Roy
3	Introducing Dual Axis Solar Tracker with Reflector to Increase Optimal Electricity Generation in Bangladesh""347	Twisha Titirsha, Abu Raihan Mohammad Siddique, Farhana Afrin, Syeda Sanjidah
4	Maximum Power Point Tracking Using Artificial Intelligence""353	MKM Rahman
5	High Efficient LED Light Driver Circuit with Temperature Compensation for SHS""357	Mahmud Ibrahim, Shahriar Ahmed Chowdhury

**Day 3: May 31 (Saturday) 2014**

**Technical Sessions D1-D3 (Time: 9:00AM-10:30AM)**

Session D1, Venue: Room-211

Time: 9:00AM-10:15AM

**Policy, PS and SHS**

	<b>Title</b>	<b>Authors</b>
1	Life Time Costs in Solar Home Systems ""445	Walter Commerell, Rudy Müller, V. Shanmuganandam
2	Policy, planning and implementation practices in Hydropower sector of Nepal ""P IC	Juben Bhaukajee, Hari Prasad Neopane, Suraj Baral
3	An Extensive Overview of Present Situation of Renewable Energy Practices in Bangladesh""44:	Md. Nahid Hossain Khan, A. M. Rahman
4	Optimizing Bangladeshi Solar Home System Efficiency Using Two-Position Mount ""456	Abir Ahmed, Meghan Reha
5	Solar Home System in Bangladesh Prospects, Challenges and Constraints""45:	Al-Amin, Arifa Sultana, Jamirul Hasan, Md.Touhidul Islam, Md. Fayyaz Khan

Session D2, Venue: Room-206

Time: 9:00AM-10:15AM

### **PV Technology**

	<b>Title</b>	<b>Authors</b>
1	Optimizing Anode Microstructure of Intermediate Temperature Solid Oxide Fuel Cell Based on Gadolinium Doped Ceria. ""4: 4	Al Jumlat Ahmed, Sathish P
2	Power Calculation of GaN/AlGa <sub>N</sub> Based Thermo-Photovoltaic Heterostructure ""4: 8	Sumit Narayan Saurov
3	The Effect of Irradiation on Different Parameters of Monocrystalline Photovoltaic Solar Cell ""4: 2	Md. Nazrul Islam, Mohammad Ziaur Rahman, Sharif Mohammad Mominuzzaman
4	Current Photovoltaic Technologies and Prospect of Thin Film Photovoltaic in Bangladesh ""P IC	Mayn Uddin Tomal, Khandker Ahmed, Aasim Ullah, Alamgir Mollah Robin
5	Simulation of I-V Characteristics of Quantum Dot Based Solar Cell: Stability Estimation ""4: 8	Ashraful Haider Chowdhury, Mubdiul Islam Rizu, Jerin Tasnim

Session D3, Venue: Auditorium

Time: 9:00AM-10:00AM

### **Control and Circuit**

	<b>Title</b>	<b>Authors</b>
1	Arc Suppression in Moderate Voltage DC Grid for Solar PV Applications ""35;	M. Rezwana Khan, Md. Fayyaz Khan
2	Design and implementation of a Grid Connected Single Phase Inverter for Photo Voltaic System ""365	Md. Jahangir Hossain, Md. Raqibull Hasan, Monowar Hossain, Md. Rafiqul Islam
3	Investigation of Z-source inverter for Fuel Cell System in a Zero Energy Building ""36;	Muhammad Musthafa Roomi, Ali Maswood
4	A Simulink Based Generalized Model of Photovoltaic Cell/Array ""376	Aneek Islam, Md. Iqbal Bahar Chowdhury

**Technical Sessions E1-E3 (Time: 11:00AM-12:30PM)**

Session E1, Venue: Room-211

Time: 11:00AM-12:30PM

**Socio Economic Aspects**

<b>Title</b>	<b>Authors</b>
1 Renewable Energy Programs for Rural Electrification: Experience and Lessons from India ""465	Debajit Palit, Gopal K Sarangi
2 Developing 3Rs (Reduce, Reuse & Recycle) Strategy for Waste Management for Urban Areas in Bangladesh: A Socioeconomic and Climate Mitigation Option""46;	Ahmedul Hye Chowdhury, Md. Rajib Ul Haque, Tafazzal Hossain
3 Renewable Energy Developments in the Philippines""P IC	'Donnalyn C. Cabaces, Allan B. De Villa, Manilyn A. Vicencio
4 A Model of a Renewable Electricity System for Telecom Base Stations in Rural Bangladesh""477	Shanshil Ahmed Shibly, Md. Nafis Akand, K. M. A. Salam, Hafiz Abdur Rahman
5 Living in Harmony: Designing a Multi-functional Education Facility that Has Positive Sustainable Impact on Environment & Society""482	Christian Vansomeren, Johnmary Migadde, Mitavachan Hiremath, Mohamed Abdelrazik, Samuel Goda, Hans Holtorf
6 Swarm Electrification - Suggesting a Paradigm Change through Building Microgrids Bottom-up""487	Sebastian Groh, Daniel Philipp, Brian Edlefsen Lasch, Hannes Kirchhoff

Session E2, Venue: Room-206

Time: 11:00AM-12:30PM

**PV Technology**

<b>Title</b>	<b>Authors</b>
1 Perspective of Heterojunction GaAs Solar Cell and Inspection of Its Efficiency Using Device Simulator""522	Farhan Shadman Chowdhury, Md Asif Reza Taraque, Yeasir Arafat
2 An Intricate Analysis on Increasing the Efficiency of Germanium Solar Cell and Its Illustration Using TCAD""527	Farhan Shadman Chowdhury, Md Asif Reza Taraque, Yeasir Arafat
3 Efficiency Calculation of Single Junction Silicon Solar Cell at Different Doping Concentrations""532	Farhan Shadman Chowdhury, Md Asif Reza Taraque, Yeasir Arafat
4 Influence of Thermal Annealing on CdTe Thin Film Deposited by Thermal Evaporation Technique""537	Kaji Rahman, Faiazul Haque, Naveed Khan, Mohammad Islam, Mohammad Alam, Zeid Al Othman, Kamaruzzaman Sopian, Nowshad Amin
5 Growth Optimization of ZnS Thin Films by RF Magnetron Sputtering as Prospective Buffer Layer in Thin Film Solar Cells""P IC	Faiazul Haque, Kaji Rahman, Mohammad Islam, Md Akhtaruzzaman, Kamaruzzaman Sopian, Nowshad Amin
6 Design and Optimization of Dye-Sensitized Solar Cell Fabrication""P IC	Syed Abdullah, Mohammad Rezaul Karim, Md. Taslim Raza, Abdulrahman Alahmari, Ashraful Islam



Session E3, Venue: Auditorium

Time: 11:00AM-12:30PM

**Wind, Wave and Tide**

	<b>Title</b>	<b>Authors</b>
1	Possibility of a Tidal Power Plant in Sandwip Island of Bangladesh""563	Amit Kumar Sikder, Md. Tariqur Rahman, Monirul Islam, Nishat Anjum Khan, Aminul Hoque
2	Wind Energy Assessment using Weibull Distribution in Coastal Areas of Bangladesh""568	Subarto Kumar Ghosh, Mohammad Hasanuzzaman Shawon, Md. Ashifur Rahman, Shimul Kanti Nath
3	Assessment of Wind Energy Potential by Weibull Distribution in Isolated Islands""574	A. K. Azad, M. G. Rasul, M. M. Alam, S. M. Ameer Uddin, and Sukanta Kumar Mondal
4	Monthly and Seasonal Assessment of Wind Energy Potential in Coastal Area of Bangladesh""57:	Asif Islam, Mohammad Shariful Islam, Mohammad Zakirul Islam
5	Estimation of Annual Energy Delivered by a Variable Speed Wind Generating System using Historical Wind Data""586	M. H. Haque, K. G. Jayaratne, C. W. Bernardo
6	Wind Power Generation Scale Mapping of Bangladesh at Different Turbine Heights ""592	Mohammad Shariful Islam, Asif Islam, Mohammad Zakirul Islam

**Technical Sessions F1-F2 (Time: 2:30PM-4:00PM)**

Session F1, Venue: R-211

Time: 2:30PM-4:00PM

**General**

	<b>Title</b>	<b>Authors</b>
1	Construction, Fabrication and Performance Analysis of an Indigenously Built Serpentine Type Thermosyphon Solar Water Heater""494	Md. Sayeed-Ur-Rahim Mahadi, Muhammad Faisal Hasan, Akil Ahammed, Mohammad Tawheed Kibria, Saiful Huque
2	Study of Utilization of Wind Induced Vibrations in Generation of Electricity	Abhiram B Aithal, Anirudh G Deshpande, Dinesh P A
3	Feasibility Analysis and Prospect of Applications of Micro Concentrated Solar Power in Bangladesh ""49:	Abu Sowad, Mohammad Faizul Karim
4	A Forecast of Wind Farm Performance at Different Locations of Bangladesh""598	Mohammad Shariful Islam, Asif Islam, Md. Zakirul Islam, Abu Mohammad Zafar Sadeque
5	Socio-economic Impact of using Roof Top Solar Oanels- a Case Study Conducted in the Rural Areas of Greater Sylhet, Bangladesh""489	Kazi Wohiduzzaman, F.M. Mahafugur Rahman, Choudhury Md. Mukammel Wahid
6	Design of a Wind Farm in the Coastal Island Sandwip, Bangladesh""5: 4	Choudhury Md. Mukammel Wahid, F.M. Mahafugur Rahman, Kazi Wohiduzzaman, Nasima Akther Rima, Farha Diba Honi

Session F2, Venue: R-206

Time: 2:30PM-4:00PM

**PV Technology and Geothermal**

	<b>Title</b>	<b>Authors</b>
1	Geothermal Energy and Its Scope in Bangladesh ""37;	Md. Hassanuzzaman, Al-Shahriar, Syed Tanvir Faisal
2	Temperature Dependent Performance Analysis of Intersubband Thermophotovoltaic Structure""53;	Sumit Narayan Saurov
3	Effect of Strain on the Efficiency of InGaN-based Multijunction Solar Cell""545	Md. Aminur Rahman, Md. Rafiqul Islam
4	Performance Optimization of Planar Heterojunction Organic Solar Cells""549	Md. Saiful Islam, Sudipta Chakma, Md. Rafiqul Islam
5	Analysis of Phase Separation in InGaN Epitaxy for Advanced Solar Cells""554	Md. A. Hamid Howlader, Apurba Kumar Saha, Md. Soyaeb Hasan, Md. Rafiqul Islam
6	Current-Voltage Characteristics of CdS/CdTe Thin Film Solar Cells: An Analytical Approach""559	Md. Monirul Haque, Md. Moshir Rahman, Md. Iqbal Bahar Chowdhury