

**TECHNICAL SESSIONS****WEDNESDAY 27TH JUNE, MORNING**

	3.1, Room #2		4.1, Room #4		5.1 Room #7		2.1 Hall D	
10:15	System operation planning including renewables and pumped-storage power plants	27	Open Design and Local Manufacturing of Small Wind Turbines: Case Studies in Ethiopia and Nepal	48	Modeling and Assessment of Ethiopian 230 KV Power Transmission Network Voltage Stability using User-Defined and Modified Voltage Stability Indices	30	Sustainable Energy for Emerging Nations Development – A Case Study on Togo Renewable Energy	45
10:28	Distribution Network Reconfiguration Method with Distributed Generators Based on an Improved Shuffled Frog Leaping Algorithm	36	Social Impacts of Mini-grids: Towards an Evaluation Methodology	109	Determining Cross-Border Electric Power Transfer Limits: The Case of Zambia and DRC	39	Power Market and Impact of Tariff in Malawi	86
10:41	Analysis of Optimal PV Penetrations Levels with Time-variant Loads in Power Distribution Networks	51	Peer-to-Peer Trading Solution for Microgrids in Kenya	130	VOLTAGE STABILITY ENHANCEMENT CAPABILITIES OF LTCT AND STATCOM IN A POWER SYSTEM	161	Sustainability Metrics for Rural Electrification in Developing Countries	131
10:54	Comparative Analysis of a PSS and TCSC for Small Signal Stability Analysis of a VSC Based HVDC System with Onshore Wind Power Generation	58	Sources of uncertainty for Monte Carlo modelling with Bayesian analysis for Sub-Saharan off-grid solar PV systems	135	Approach for Screening and Ranking Potential Receiving End Points in Planning New HVDC Schemes	50	Sustainable Electrification System for Rural Farms in Zambia: A Case Study of a Farm in Lufwanyama	134
11:07	Impact of Solar Eclipse on Utility Grid Operations	205	Remote Rural Area Water Scarcity Solution: An Innovative Green Energy Mobile DC Water Pump System	141	Modelling and Control of Multiterminal LCC HVDC	83	Economy-Wide Assessment of Interruption of Supply Using Hypothetical Extraction	176
11:21	Estimation of Inverter-based Solar PV Penetration on Medium Voltage Networks Using Grid Impedance	142	A Simulation-based Evaluation of the Benefits and Barriers to Interconnected Solar Home Systems in East Africa	146	Optimal Power Flow Considering Frequency Security Constraint	147	Supporting Social and Gender Equity through the Development of a Socio-Techno-Economic Framework for Micro-grid Deployment: A Case Study with Mining Communities in the DRC	187
11:34	Optimal Scheduling in Offshore Wind Farms Considering Harmonic Losses and Locational Marginal Pricing	193	Solar Powered DC Refrigerator with a Monitoring and Control System	172	Technical Analysis of Barriers to Raising the Power Delivery Ceiling in Nigeria	204	An overview of the Nigerian power sector, the challenges of its National Grid and off-grid development as a proposed solution.	57
11:47	Solar photovoltaic generation and its integration impact on the existing power grid	209	Fuel cell micro-CHP for energy access in rural areas	228	Power System Static Security Enhancement Through Interline Power Flow Controller	99	ENERGY EFFICIENCY AUDITS - A STRIVE FOR ENERGY AUTONOMY	152
12:00	Analysis of the East Africa Power Pool (EAPP) with Renewable Energy Penetration and Proposed Asynchronous Tie Lines	101	Design of Photovoltaic (PV) Solar Power plant to Supply Electricity and To Pump Water to Chele Community	243	Sustainability of Distributed Generation in a Reconfigured Distribution Network	180		
12:13	Impact of Distributed Static RE Generation (PV & Wind) on Global Transient Stability	168			A Study of Electric Power Frequency in Southern Africa, Great Britain and Continental Europe	155		

**TECHNICAL SESSIONS****WEDNESDAY 27TH JUNE, AFTERNOON**

	1.2, Room #2		4.2, Room #4		5.2, Room #7		5.3, Hall D	
13:50	A smart distribution box controller for customer-based operations	84	POWERING GAUTRAN STATIONS AND DEPOT BUILDINGS BASED ON RENEWABLE ENERGY RESOURCE	73	Thermal Modeling of Power Transformers with Unbalanced Loading	41	(room preparation)	
14:03	DEVELOPMENT OF A SMART CALCULATOR TO DETERMINE THE INSTALLED SOLAR REQUIREMENT OF HOUSEHOLDS AND SMALL BUSINESSES	96	Evaluating the Cost Effectiveness of Energy Efficient Appliances	95	Artificial Neural Network-based Capacitance Prediction Model for Optimal Voltage Control of Stand-alone Wind-Driven Self-Excited Reluctance Generator	144		
14:16	Lightning Risk Assessment of Rooftop Photovoltaic Systems: A Case Study Approach	122	Development and Implementation of a Web Based Sustainable Alternative Energy Supply for a Retrofitted Office	120	Estimation of No-load losses in distribution transformer design	156	Power Loss Estimation in Silicon Photovoltaic Cells Using Impedance Spectroscopy	42
14:29	A simulation Model for the Analysis of Security Attacks in Advanced Metering Infrastructure	157	Energy and cost analysis of an optimally controlled grid-connected Hybrid Solar Water Heating System in Bloemfontein	153	Reactive Power Compensation Techniques for Fixed Speed Wind Turbine Generators	183	Learning curves in the wind and solar sectors in South Africa	138
14:42	Smart Metering System for Energy Management	181	Design of a Solar Powered Desalination Plant	214	Improvement of piston engines operation as distributed generation to reduce carbon emissions	221	Estimation of global and direct solar radiation in Tunisia based on geostationary satellite imagery	60
14:56			Design of a Grid-Connected Solar System for Borehole Pumps	223	An Application of Dissolved Gas Analysis (DGA) in the Assessment of Transformer Failures: A Focus on Geomagnetic Disturbances (GMDs)	231	Optimum Tilt and Azimuth Angles for Solar Photovoltaic Systems in South-West Nigeria	108
15:09			Brackish Water Desalination Using Solar Still with Built-in Heat Exchanger Coupled to Solar Collector	236	Both way effects of PV Generator MPPT on BLDCM Centrifugal Pump BEPT Performance	233	OPTIMIZATION OF PV SYSTEMS USING LINEAR INTERACTIONS REGRESSION AND ANFIS MPPT TECHNIQUES	159
15:22			Generation expansion planning: A survey	94	Automated Efficiency Testing of Converter-Fed Induction Motors	133	Design Strategies of an Off-Grid Solar PV Plant for Office Buildings: A Case Study of Johannesburg	211
15:35					Analysis of a Doubly Fed Induction Generator Through Modeling and Simulation Using MATLAB	192	Effects of Grass and Concrete Reflective Surface on the Performance of Dual Axis Bifacial Solar PV Systems	216
15:48					Real-Time Control of a Doubly-Fed Induction Machine for Variable Speed Constant Frequency Wind Power System Through Laboratory Test Rig	61		

TECHNICAL SESSIONS

POSTGRADUATE FORUM: WEDNESDAY 27TH JUNE, MORNING

PG Forum: Design, Hall C	
10:20	Locomotives Energy Management with Inter-Vehicle Train Couplers
10:32	Design Optimisation and Performance Evaluation of Flux Switching Machines for Geared
10:44	Applying Internet of Things in Monitoring and Control of an Irrigation System for Sustainable Agriculture for Small-Scale Farmers in Rural Communities
10:56	Electrical Design for a Combined Cooling, Heating and Power for Go-Green Data Centers
11:08	Design of a Low-Cost System to Monitor Geomagnetically Induced Currents in Transformer Neutrals
11:20	Green Building Design Strategies for an Energy Efficient HVAC System
11:32	Life Cycle Cost Comparison between Motors Equipped with VSD and Dampers for Pumps and Fans
11:44	Design and Implementation of a Solar Energy Measurement and Monitoring System.
11:56	Investigation and Characterization of Al paste as back surface field (BSF) for High Efficiency Si Solar cell
12:08	HYBRID SOLAR-WIND POWER SYSTEM FOR TRUCK REFRIGERATION

POSTGRADUATE FORUM: WEDNESDAY 27TH JUNE, AFTERNOON

PG Forum: Systems, Hall C	
13:50	Generation expansion analysis in low data settings
14:02	Modelling and Optimization of Hybrid RE for Powering Remote GSM Base Station
14:14	Solar Photovoltaic Power Estimation: A One Day Analysis Using Neural Network as a Technique
14:26	Impact of Electrical Power Systems on the Environment in Kenya, Rwanda and Tanzania
14:38	Agent Based System for improved Control and Monitoring of a Solar Driven DC Microgrid
14:50	A Review of Grid Tied PV Generation on Radial LV Distribution Networks
15:02	Detection of Underground Power Cable Theft: Strategies and Methods
15:14	Enhancing Security in Distributed Internet-of-Things Based Communication System for Agent Driven Smart Micro-grid
15:26	Economic Analysis for Distributed Energy Supply Wind-Thermal Pumped Storage System and Technical Performance
15:38	RENEWABLE ENERGY INTEGRATION ENHANCEMENT USING ENERGY STORAGE TECHNOLOGIES
15:50	Renewable Energy: Enhancement in the Operation and Design of Hybrid Power Systems

TECHNICAL SESSIONS

THURSDAY 28TH JUNE, MORNING

	1.1 Room #2		3.2 Room #4		5.4 Room #7		5.5 Hall D	
09:45	Load Management Optimization to Reduce The Demand Side Energy Cost	15	Power Systems Inspection Robot for Contactless Busbar Voltage Measurement and Underground	68	EFFECT OF ANODE STOICHIOMETRY AND BACK PRESSURE ON THE PERFORMANCE OF PEMFCs	3	Signal Injection by Active Load Modulation for PEM Fuel Cell Diagnostics	5
09:58	Electricity consumption and load profile segmentation analysis for rural microgrid customers in Tanzania	113	Islanding Time Evaluation in Residential Microgrids	116	Characterization of Lithium NCM and Sealed Lead Acid Batteries using Electrochemical Impedance Spectroscopy	52	Hybridization of Battery, Supercapacitor and Hybrid Capacitor for Electric Vehicles	7
10:11	Forecasting Energy Demand For Microgrids Over Multiple Horizons	136	PROTECTION OF TERMINAL DISTRIBUTION TRANSFORMERS: A CASE STUDY OF KENYA POWER	123	A Novel Solar PV Micro-Grid Connected System with Battery and Ultra Capacitor Support for Fast Changing Environmental Conditions	162	A Variable Sampling Frequency and Genetic Algorithm Fitted Predictive Controller for More Electric Aircraft Electrical Power System Shunt Active Power Filter	21
10:24	Customer segmentation for East African Microgrid Consumers	139	Lessons learned on Protection coordination considerations within inverter-based microgrids	158	The Value of Behind-The-Meter Energy Storage for Buildings: A Case Study on a University Building in South Africa	185	Experimental Study of Capacitance and Thermal Stability of Polymer Based Composites Dielectric Material for Electrostatic Capacitor Applications.	151
10:37	Using Internet of Things to Regulate Energy Consumption In a Home Environment	160	Towards Power System Stability in the Presence of dc Injection	164	Storage Batteries the Future for Energy Storage	208	Impacts of UVC-LEDs for the disinfection of Mycobacterium tuberculosis	220
10:51	Rural Microgrid Load Profile Benefit Assessment	198	Voltage Dip Measurements to Locate Faults on High Voltage Reticulation Feeders	234	Hybrid Battery Technologies with Battery Management System in Power and Energy Sectors	210	Performance Prediction of a Photovoltaic System through Three-dimensional Thermal Modelling and Simulation Studies	70
11:04	Development of an ANN-based Estimated Electricity Billing System	35	Investigating Induced Overvoltage Transients in Microgrids and its Components	117			Roof-Top Solar Power Augmentation to Auxiliary Supply of Passenger Train	235
11:17	Geospatial Framework for Estimating Household Electricity Demand for Urban Infrastructure Planning in Select African Countries	179	Investigation into the Issues Associated with closing an automated Normally Open (N/O) point on three Medium Voltage (MV) Networks where Fault Location, Isolation and Service Restoration (FLISR) is planned	76			aCar - A Electric Vehicle Concept for Sub-Saharan Africa	92
11:30	A Comparative Analysis and Simulation of Load Shaping Techniques	195	Analysis of Soil Resistivity and its Impact on Grounding Systems Design	97			Analysis of the "sheet" charge concentration at the AlGaN/GaN interface	25
11:43	Load Management using Multiple Sequential Load Shaping Techniques	196	Moehoek 22kV Power Distribution Feeder. Reliability Assesment-Perfomance Indices	20				



TECHNICAL SESSIONS

THURSDAY 28TH JUNE, AFTERNOON

	1.3 Room #2		3.3 Room #4		5.6 Room #7		5.7 Hall D	
15:45	High Impedance Fault Classification and Localization Method For Power Distribution Network	32	Implementation of Substation SCADA and Automation Systems in the Port of Durban	66	MITIGATION OF LOW VOLTAGE CONTINGENCY OF DOUBLY FED INDUCTION GENERATOR WIND FARM USING STATIC SYNCHRONOUS COMPENSATOR IN SOUTH AFRICA	6	Microcontroller-Based Monitoring and Controlling of Environmental Conditions in Farming	85
15:57	Challenges in Power Systems Operations, Analyses, Computations and Application of Cloud Computing in Electrical Power Systems	65	Single carrier and Multicarrier Digital Modulation Performance under Impulsive and Background Noise: BPSK, QPSK, 8PSK and 8QAM	107	A CONFIGURATION FOR OUTPUT VOLTAGE BOOST OF A THREE-PHASE, 3-LEVEL MULTILEVEL LEVEL INVERTER	33	Development of an Intelligent Electronic Load Controller for Stand-Alone Micro-Hydropower Systems	114
16:09	Analytical Condition Monitoring System for Liquid-immersed Transformers	121	Simultaneous Monitoring of the Thévenin Equivalent Impedance at Multiple PCC's on a Network	170	A THREE-PHASE, 5-LEVEL MULTILEVEL LEVEL INVERTER WITH OUTPUT VOLTAGE BOOST	37	Cost Optimization and Design of a Hybrid Distributed Generation System for a DC Microgrid	118
16:21	Characterisation of harmonic distortions produced by small domestic back-up generators	132	Accurate Metering of Apparent Power based on General Power Theory	184	A Comparative Analysis of a Three-phase Neutral Point Clamped Multilevel Inverter	69	Characteristics of Solar Power Generation	72
16:33	A Critical Investigation of Transformer Reactive Power and Temperature Increases Under DC	173	Design of IEC61850 based SCADA operation for automation of upgraded Nkula Substation in Malawi	225	Investigation of Ripple Current in Pulsewidth Modulation Techniques for Flying Capacitor Multilevel Inverters	71	A Study on Recycling of Carbon Dioxide to Renewable Energy	207
16:45	EFFICIENT ENERGY MANAGEMENT SYSTEM USING PIR SENSOR	174	Comparison of Voltage Calculation Techniques for Varying Load Distribution in DG-integrated Networks	47	Real-Time Implementation and Comparative Analysis of $\alpha\beta$ and gh Reference Framed SVPWM Techniques for a Three-Level NPC Induction Motor Drive	77	Model based of a Pico Conduit Hydropower Generation System	230
16:57	Design of Energy Monitoring System for the Boiler and Chiller Plants in Netcare private Hospital	241	An On-line Thévenin Equivalent Estimation Algorithm and its Application to Condition Monitoring	89	LOSS STUDY AND ASSESSMENT OF EQUIPMENT	17	AUTOMATED IRRIGATION AND WATER LEVEL MANAGEMENT SYSTEM USING RASPBERRY PI	237
17:09	BCIT Integrated Grid Laboratory Planning Framework	171	Optimal Sizing and Placement of Solar Photovoltaic based DGs in the IEEE 9 bus system using Particle Swarm Optimization Algorithm.	38	New Switched-Multi-Source Inverter Topology with Optimum Number of Used Switches	125	An Experimental Study of Adsorption Cooling System by Using Low Grade Heat Source	239
17:21	LOSS ALLOCATION TO LOAD NODES BASED ON NODES-EDGES SETS IN ELECTRIC POWER NETWORK	62	Description of Data Acquisition and Monitoring System of an Innovative PV/Th Solar Concentrator	202	LOSS STUDY OF MMC-BASED HVDC CONVERTERS USING DATASHEET PARAMETERS.	18	Improving Reliability on Distribution Systems by Means of Network Reconfiguration	67
17:33	Towards Module-Level Performance and Health Monitoring of Solar PV Plants using LoRa Wireless Sensor Networks	55	Advances in Telecontrol and Remote Terminal Units (RTU) for Power Substations	246			Minimization of frequency error as a result of load increase on power system network	201