

**SAUPEC/RobMech/PRASA 2020: Preliminary programme**  
**River Club conference center, Observatory, Cape Town**

Wednesday 29 January

08:00 TESP REGISTRATION

	CONGO ROOM TESP	ORANGE ROOM	LIESBEEK ROOM	BERG ROOM
09:00	TESP: Opening and Welcome TESP Chairperson: Logan Pillay, Eskom			ROS Introductory Workshop part I Mobile Autonomous Systems & Cognitive Robotics Institute, FH Aachen - University of Applied Sciences
09:15	TESP Presentation			
09:45	TESP and Innovation			
10:15	TESP Breakaway Parallel Session 1	TESP Breakaway Parallel Session 2	TESP Breakaway Parallel Session 3	

12:30 LUNCH

	CONGO ROOM TESP	ORANGE ROOM	LIESBEEK ROOM	BERG ROOM
13:30	TESP Feedback Session			ROS Introductory Workshop part II Mobile Autonomous Systems & Cognitive Robotics Institute, FH Aachen - University of Applied Sciences
14:45	TESP Closing and way forward			
15:00			Real-Time Simulation and Testing with Simulink Opti-Num Solutions – Praneet Kala, Application Engineer	

17:00 REGISTRATION  
At River Club conference venue  
18:00 COCKTAIL  
At River Club conference venue

Thursday 30 January

08:00 REGISTRATION  
08:30 Optional talk: Making IEEE work for you (CONGO ROOM)

	CONGO ROOM			
09:00	Welcome and Introduction George Debbo, President SAIEE			
09:15	Plenary address: Electricity supply systems of the future: challenges and research areas Rob Stephen, President CIGRE			

	CONGO ROOM SAUPEC: Energy Management Chair: Dr. A. Raji	BERG ROOM SAUPEC: Power System Control I Chair: Dr. D. Oyedokun	LIESBEEK ROOM SAUPEC: General Chair: Dr. A. F. Nnachi	ORANGE ROOM RobMech/PRASA: General Chair: Prof. Riaan Stopforth
09:40	24 Energy management opportunities exploration in a residential air source heat pump water heater  Mandlenkosi Sikhonza, Stephen Tangwe and Michael Simon	13 Transient Stability Analysis of a Grid-Integrated Wind Farm Under Fault Condition at the Point of Common Coupling  Edwin Tareka and Sunetra Chowdhury	37 Successes in University – Industry Partnerships – Perspectives from Durban University of Technology  Innocent Davidson	188 Deep Learning and Transfer Learning applied to Sentinel-1 DInSAR and Sentinel-2 optical satellite imagery for change detection  Zainoolabadien Karim and Terence Van Zyl
10:00	73 Energy Trading in Grid-connected PV-Battery Electric Vehicle Charging Station  Erick Arwa and Komla Folly	28 A Comparative Analysis of Different MPC Controllers for Load Frequency Control for Interconnected Power System  Igbineweka Ernest Uyioghosa and Akshay Kumar Saha	91 Wireless Communication For A Modular Heliostat Field  Andreas Liebenberg	268 On the Effectiveness of Silly Walks as Initial Guesses for Optimal Legged Locomotion Problems  Stacey Shield and Amir Patel
10:20	88 Microgrid Energy Management through Levelized Cost of Energy Metric  Greig Swanepoel, George van Schoor, Kenny Uren and Johan Rens	35 Heuristic Secondary Frequency Control of AC/DC Interconnected Power System in a Deregulated Environment  Anuoluwapo Oluwatobiloba Aluko, David Dorrell, Rudiren Pillay Carpanen and Evans Ojo	117 Harmonic Emission of Non-Linear Loads in Distribution Systems – A Computer Laboratory Case Study  Connor Collocott, Kehinde Awodele and Adeyinka Adebayo	226 Batch construction and multitask learning in visual relationship recognition  Shane Josias and Willie Brink
10:40	159 Using cloud cover forecasts for estimating a solar powered vehicles' range.  Carel Landman and Arnold Johan Rix	135 Investigation of Diverse Sampling Time for LFC of Hydro Power System using Discrete LQR with UPFC and RFB  Milan Joshi, Gulshan Sharma and Innocent Davidson	30 An Analysis of the Method for Determining the Lowest Sensitivity of Solar-blind Ultraviolet Corona Cameras  Casper Coetzer, Sanet Groenewaldt and Wilhelm Leuschner	7 The Similarity of Images Generated by Bag Context Shape Grammars  Blessing Ogbuokiri and Mpho Raborife

11:00 TEA

	CONGO ROOM SAUPEC: HV Engineering I Chair: Prof. J. de Kock	BERG ROOM SAUPEC: Power System Control II Chair: Mrs. K. Awodele	LIESBEEK ROOM SAUPEC: Power Electronics, Machines Chair: Dr. N. Gule	ORANGE ROOM RobMech/PRASA: Robotics Chair: Dr. Herman Kamper
11:30	183 Optical Monitoring of Pollution on MV Bushings  Filipe Fernandes, John Van Coller and Nishal Mahatho	136 Frequency Regulation Studies of Interconnected PV Thermal Power System  Milton Estrice, Gulshan Sharma, Kayode Timothy Akindeji and Innocent Davidson	192 Design of a 90 W Low Cost Solar Emulator for Testing MPPT Algorithms on PV Based Energy Systems  Tristan Kuisis, Muhammed Aswat, Willem Cronje and Ken Nixon	149 Fractional Order Internal Model Control Strategies for a Submersed Nanorobot  Isabela Birs, Cristina Muresan and Ioan Nascu
11:50	72 Measures to Mitigate Overfrequencies at an HVDC Rectifier Station Leonel Fanequico, John Van Coller and Chandima Gomes	197 Optimization of reactive power under load uncertainty  Oliver Dzobo	228 Variable Speed Drive dc-link ride-through improvement using switched capacitors Freeman Chiranga and Lesedi Masisi	207 A Self-Driving Car Architecture in ROS2  Michael Reke, Daniel Peter, Joshua Schulte-Tigges, Stefan Schiffer, Alexander Ferrein, Thomas Walter and Dominik Matheis
12:10	129 Influence of Supply Voltage Frequency on Cavity Partial Discharge Parameters: Simulation Results  Tapiwa Venge and Cuthbert Nyamupangedengu	29 DMPC Scheme on Load Frequency Control with Application to Interconnected Power System  Igbineweka Ernest Uyioghosa and Akshay Kumar Saha	242 A Review on the Condition Monitoring and Fault Diagnosis of Stator and Rotor Interturn Winding Faults in a DFIG-based Wind Turbine System  Ester Hamatwi and Paul Barendse	170 An Experimental Investigation Of 3D Printed Cold Gas Thruster Nozzles  Daniel Jansen, Lourens Visagie and Willem Jordaan
12:30	101 Comparison of Graphene Oxide and Reduced Graphene Oxide Doping on YBCO For Power Applications Mohammed Gaffoor, Alan Lawrence Leigh Jarvis and Solan Perumal	12 Evaluation of performance index methodology for power network contingency ranking  Babatunde Adewolu and Akshay Kumar Saha	256 Impedance Behavioural Study of Silicon Steel Laminated Core Inductor  Chigozie Boniface and Paul Barendse	66 Fused Deposition Modelling for fabrication of a hybrid Vertical Take-off and Landing Unmanned Aerial Vehicle  Matt Marcus and Glen Bright
12:50	8 Performance evaluation of some facts placement methods for available transfer capability enhancement in a deregulated power networks  Babatunde Adewolu and Akshay Kumar Saha	52 Adaptive Model-Based Receding Horizon Control of Interconnected Renewable-Based Power Micro-grids for Effective Control and Optimal Power Exchanges.  Peter Gbadega and Akshay Kumar Saha	173 Line Reactance Criteria for Minimizing Line Current Harmonic Content in Diode Rectifier Connected Wind Generator Systems  Maarten Kamper, Christopher Africa, Hannes Labuschagne and Lethiwe Mdakane	133 Context-Aware Action with a Small Mobile Robot  Daniel Withey, Katlego Mogokonyane, Mayur Tikam, Ross Holder, Mahalingam Veeraragoo and Mxolisi Gambushe

13:10 LUNCH

	CONGO ROOM SAUPEC: Power System Stability Chair: Prof. I. Davidson	BERG ROOM SAUPEC: Load Modeling Chair: Prof. R. Naidoo	LIESBEEK ROOM SAUPEC: HV Engineering II Chair: Prof. J. van Coller	ORANGE ROOM RobMech/PRASA: Biometrics Chair: Prof. Glen Bright
14:10	161 Echo State Network (ESN) Based Generator Speed Prediction of Wide Area Signals in a Multimachine Power System Umar Attai Abu, Komla Folly, Iroshani Jayawardene and Ganesh Kumar Venayagamoorthy	126 Load models for technical and tariff analysis of medium voltage feeders  Lolo Johannes Buys and Trevor Gaunt	109 Evaluation of the Behaviour of HFCTs for Corona Measurement under HVDC Application  Herry Sibanyoni, Jerry Walker and Jules Djeumen	82 On automated ear-based authentication  Aviwe Kohlakala and Johannes Coetzer
14:30	111 Review of Sequential Steps to Realize Power System Resilience.  Okeolu Samuel Omogoye, Komla Folly and Kehinde Awodele	221 Estimating financial viability of behind-the-meter peak shaving based on load profile shape: a shopping mall case study Johannes Mostert and Bernard Bekker	204 An Investigation Into an Appropriate optical Calibration Source for a Corona Camera  Casper Coetzer, Nicholas West, Andrew Van Tonder and Andre Swart	84 Dynamic fusion of human and machine decisions for efficient cost-sensitive biometric authentication Johannes Coetzer, Jacques Swanepoel and Robert Sabourin
14:50	154 Investigating the Impact of HVDC on the Damping Subsynchronous Resonance  Christophe Basila Tambwe and Rudiren Pillay Carpanen	227 Characterisation of the primary heat replacement element event for a horizontal electric water heater  Tyron Reddy, Sewpersad and Yen	246 Challenges of Planning Future High Voltage Power Systems Networks  Vasu Chetty and Innocent Davidson	182 User Classification by Keystroke Dynamics using Text Retrieval Methods  Thato Mokoena and Deon Sabatta
15:10	194 A Review of Power System Instability Prediction Methods Using Phasor Measurement Unit Data Teboho Machabe, Ellen de Mello Koch and Ken Nixon	234 Preliminary Tests on the Suitability of the Beta PDF to Model the Residential Load for New Planning Applications Munyaradzi Justice Chihota and Bernard Bekker	201 Investigation of Corona Partial Discharge at Variable Applied Frequency  Thandeka Khumalo, Zakhele Skosana and Cuthbert Nyamupangedengu	184 Circular Interpolation Techniques towards Accurate Segmentation of Iris Biometric Images for Infants  Norman Nelufule, Gugulethu Mabuza-Hocquet and Anton de Kock
15:30	211 A Review of the Impact of Integrating Wind Generation on Transient Stability  Siyanda Ncwane and Komla Folly	245 Short-Term Load Forecasting using Minimalistic Adaptive Neuro Fuzzy Inference Systems  Evan Weyermüller, Hendrik Vermeulen and Matthew Groch	189 Investigating the Effects of Creepage Discharges on the Breakdown Voltage of Natural Ester Oil Impregnated Pressboard in Power Transformers  Bakhekile Ndlovu and Cuthbert Nyamupangedengu	99 Confident in the Crowd: Bayesian Inference to Improve Data Labelling in Crowdsourcing  Pierce Burke and Richard Klein

15:50 TEA AND POSTERS  
Poster details at end of programme

19:30 DINNER  
At River Club conference venue. Please confirm attendance at registration

Friday 31 January

08:00 REGISTRATION  
 08:30 Optional talk: Making IEEE work for you (CONGO ROOM)

	CONGO ROOM SAUPEC: Renewable Energy Chair: Prof. A. Khan	BERG ROOM SAUPEC: Transmission & Distribution Chair: Prof. T. Gaunt	LIESBEEK ROOM SAUPEC: Energy Manag. +Smart Grids Chair: Prof. A. Saha	ORANGE ROOM RobMech/PRASA: Pattern recognition Chair: Dr. Willie Brink
09:00	273 Sub-Synchronous Resonance (SSR) in Series Compensated Networks with High Penetration of Renewable Energy Sources Tinashe Chikohora and David Oyedokun	22 Impact of Integrating Residential Solar PV Clusters on Voltage Profile in Urban Distribution Network Tawanda Maseva and Sunetra Chowdhury	195 Design and Construction of a Smart Meter for DC Energy Trading in Rural Environments Willem Cronje, Vincent Matlou and Milliscent Mufunda	172 Improving Unsupervised Acoustic Word Embeddings using Speaker and Gender Information Lisa van Staden and Herman Kamper
09:20	34 Statistical Assessment of Potential Wind Energy Sites in Coastal and Southern Part of Namibia Edwin Tareka and Sunetra Chowdhury	115 Detection of electricity theft in low voltagenetworks using analytics and machine learning Mabatho Hashatsi, Chizeba Maulu and Mercy Shuma-Iwisi	15 Development of Solar Irradiation Forecast Confidence Intervals for Solar Electric Vehicle Energy Simulations Christiaan Oosthuizen, Barend Jacobus Van Wyk, Yskandar Hamam, Yasser Alayli and Dawood Desai	218 End-to-End Text-To-Speech synthesis for under resourced South African languages Thapelo Nthite and Mohohlo Tsoeu
09:40	164 Comparison of grounding methods for utility scale PV plants. Herme Charles Smit and Arnold Johan Rix	199 Dissolved Gases Analysis of canola-based ester oil under creepage discharge Hlengiwe Mnisi	167 A review on the use of Recommendation and Value Estimation Systems to determine Protection Based Distributed Generation Penetration Limits Emmanuel Nxumalo and Kehinde Awodele	130 Building Undirected Influence Ontologies Using Pairwise Similarity Functions Tamlin Love and Ritesh Ajoodha
10:00	81 Short-term Wind Power Forecasting Based on Spatial Correlation and Artificial Neural Network Qin Chen and Komla Folly	241 A Study into the Effect of Current Harmonics on the Maximum Loading Capability of Transformers within Solar Power Plants Bonginkosi Thango, Jacobus Jordaan and Agha Francis Nnachi	90 Load and load growth models for rural microgrids, and how to future-proof designs Rofhiwa Takalani and Bernard Bekker	116 A Prediction Model to Improve Student Placement at a South African Higher-Education Institution Tasneem Abed, Ritesh Ajoodha and Ashwini Jadhav
10:20	89 Modelling a wind turbine as a low-pass filter for wind to electrical power calculations Warren Farmer and Arnold Rix	259 Transformer models and meters in MATLAB and PSCAD for GIC and leakage dc studies Pitambar Jankee, Hilary Chisepo, Victor Adebayo, David Oyedokun and Trevor Gaunt	215 Preliminary analysis of the impact of design-stage uncertainties on the performance of microgrids Daniello Mouton and Bernard Bekker	108 Quantisation and Pruning for Neural Network Compression and Regularisation Kimesha Paupamah, Steven James and Richard Klein
10:40	144 Modelling of Wind Turbine Power Curves (WTPCs) Based on the Sum of the Sine Functions and Improved version of Particle Swarm Optimization (IPSO) Arman Goudarzi and Farzad Ghayoor	262 Frequency Components of Geomagnetically Induced Currents for Power System Modelling David Oyedokun, Michael Heyns, Pierre Cilliers and Ct Gaunt	127 Investigating the performance of an R-Criterion based protection method when applied on PV Solar microgrid Gabriel Machinda and Kehinde Awodele	119 Comparison of Recurrent Neural Network Architectures for Wildfire Spread Modelling Rylan Perumal and Terence van Zyl

11:00 TEA

	CONGO ROOM SAUPEC: Smart & Microgrids Chair: Prof S. Chowdhury	BERG ROOM SAUPEC: Quality of Supply Chair: Dr O. Dzobo	LIESBEEK ROOM SAUPEC:Renewable Energy +Reliability Chair: Prof. Ken Nixon	ORANGE ROOM RobMech/PRASA: General Chair: Prof. Herman Engelbrecht
11:30	153 Reinforcement Learning-based Control System of a Hybrid Power Supply Francisca Daniel and Arnold Rix	10 Distributed Generation Interconnection with Improved Unified Power Quality Conditioner for Power Quality Mitigation Osaloni Oluwole and Akshay Kumar Saha	120 SAUPECRenewable Energy+Reliability Chair: Prof. A. Saha	253 The Ollie: A Case Study in Trajectory Optimization with Varied Contacts Nicholas Anderson, Stacey Shield and Amir Patel
11:50	272 Development and automation of a 12 kW-capacity gasifier for energy generation Ilesanmi Daniyan, Lanre Daniyan, Adefemi Adeodu and Osazele Momoh	150 Removal of Nuisance Signals in Electric Grid Disturbance Data Rastko Zivanovic	121 The Impact of Water Surface Albedo on Incident Solar Insolation of a Collector Surface Shahina Salim Patel and Arnold Johan Rix	102 Human eye inspired log-polar pre-processing for neural networks Leendert Rimmelzwaal, Amit Mishra and George Ellis
12:10	217 Preliminary Study of Fault Detection on an Islanded Microgrid Using Artificial Neural Networks Itani Phfula, Ellen De Mello Koch and Ken Nixon	156 Application of Active Filters for Distribution Network Performance Enhancement Alaba Ojo, Kehinde Awodele, Adoniya Sebitosi and Mdu Mzulwini	263 Development of a Cost-effective Solar/Wind/Fuel-cell Independent Power Plant for a Remote Base Transceiver Station Tshildzi Ramunenyiwa, Kehinde Awodele and Okeolu Samuel Omogoye	76 Linear Quadratic Gaussian Control of a Quadrotor with an Unknown Suspended Payload Anton Erasmus and Willem Jordaan
12:30	110 A Software Defined Approach for Improving Resilience in Smart Distribution Grids Gerhard Brown, Neco Ventura and Joyce Mwangama	60 Durability Analysis of Metal Oxide Varistor under Direct Current Switching Surges Daniel Rodrigues van Niekerk and Pitshou Bokoro	251 Power Quality Evaluation of Electrical Loads in a Typical Commercial Building Tshwanelo Mathwai, Kehinde Awodele and Alaba Ojo	240 3D Pose Estimation and Tracking of an Electricity Pylon Emmanuel Ali and Fred Nicolls
12:50	178 Effect of flake size of natural graphite precursor on graphene oxide supercapacitor for energy storage Solan Perumal, Alan Lawrence Leigh Jarvis and Mohammed Gaffoor	238 A system based protection test solution for Eskom sub-transmission lines Emmanuel Raubenheimer, Tlotlollo Hlalele and Adedayo Yusuff	264 Real-Time Simulation of Power System Wide Area Protection Bright Tetteh, Kehinde Awodele and Komla Folly	214 Learning fine-grained control for mapless navigation Fred De Villiers and Willie Brink

13:10 LUNCH  
 14:15 RobMech/PRASA AGM (ORANGE ROOM)

2	Sunrise, Sunset and Temperature Now-cast model comparisons for local Safe Drone Flights Predictions Riaan Stopforth and Shaniel Davrajh	41	Multiband Multi-rate Narrowband Software Defined Radio waveform using Continuous Phase Modulation Azka Zaheer, Muhammad Zeeshan and Muhammad Waqas Khan	53	Low Cost PLC Uninterrupted Power Supply for use on AGVs with a Removable Battery Banks Alex Macfarlane, Theo van Niekerk and Udo Becker	65	LiDAR-based 3D Mapping and Localisation System for Ground Penetrating Radar Samuel Ogunniyi, Daniel Withey, Stephen Marais and Gerrie Crafford
74	Evaluation of Dielectric Elastomers in Applications as Low Cost, Small-Scale Actuators Ingrid Botha, Glen Bright and James Collins	85	Autonomous Vision Based Landing Strategy for a Rotary Wing UAV Reghard Grobler and Willem Jordaan	104	Theoretical 3-D Monitoring System for Human-Robot Collaboration Mishkar Bhana and Glen Bright	128	Autonomous Landing of a Multirotor Aircraft on a Docking Station Benjamin Nelson, Jacques Du Preez, Theo van Niekerk, Russell Phillips and Riaan Stopforth
134	Haptic System Interface Design and Modelling for Bilateral Teleoperation Systems Syeda Nadiyah Fatima Nahri, Shengzhi Du and Barend Jacobus Van Wyk	219	Real-Time Optimization Method for Complimentary Filter using Signal-to-Noise Ratio Maximization Winston Dyason, Riaan Stopforth, Theo van Niekerk and Russell Phillips	224	Development of a low cost rotor position sensor Sidwell Nkosi, Lloyd Patsika and Lesedi Masisi	4	Shape tracing app for movement disorder detection Vered Aharonson, Sarah Ward, David Rubin, David Anderson and Michiel Postema
18	Detecting inter-sectional accuracy differences in driver drowsiness detection algorithms Mkhuseli Ngxande, Jules-Raymond Tapamo and Michael Burke	19	The effects of image smoothing on CNN-based detectors Vusi Skosana and Mkhuseli Ngxande	43	Towards Improving Human Arithmetic Learning using Machine Learning Tessa Hall and Herman Kamper	48	Exploring the Classification of Security Events using Sparse and Dense Representation of Text Eduan Kotzé, Burgert Senekal and Walter Daelemans
63	Application of local polynomial approximation and machine learning methods for fault diagnostic Katlheho Moloi, Bolanle Tolulope Abe, Jacobus Jordaan and Agha Francis	64	Automating predictive maintenance using oil analysis and machine learning Sarah Keartland and Terence van Zyl	83	Hand vein-based biometric authentication using two-channel similarity measure networks Emile Beukes and Johannes Coetzer	114	Inter- and Intra-domain Knowledge Transfer for Related Tasks in Deep Character Recognition Nishai Kooverjee, Terence van Zyl and Steven James
118	Sentiment Analysis as an Indicator to Evaluate Gender disparity on Sexual Violence Tweets in South Africa Jude Oyasar, Mpho Raborife and Pravesh Ranchod	131	Archiving 4.0: Application of Image Processing and Machine Learning for the Robben Island Mayibuye Archives Daria Kern, Manuel Zweng, Stanley Sello, Antoine Bagula and Ulrich Klauk	132	Assessment of the Cup-to-Disc ratio method for Glaucoma detection Afolabi Oluwatobi, Gugulethu Mabuza-Hocquet and Fulufhelo Nelwamondo	138	Combining primitive DQNs for improved reinforcement learning in Minecraft Matthew Reynard, Herman Engelbrecht, Herman Kamper and Benjamin Rosman
155	Generation of metrics by semantic segmentation of high speed lightning footage using machine learning Jason Smit, Hugh Hunt, Tyson Cross, Carina Schumann and Tom Warner	165	Image processing-based identification of dicentric chromosomes in slide images Sarah Galloway, Johannes Coetzer and Neil Muller	177	Learning Options from Demonstration using Skill Segmentation Matthew Cockcroft, Shahil Mawjee, Steven James and Pravesh Ranchod	190	Sunspot Identification and Tracking with OpenCV Ruben du Toit, Gunther Drevin, Nicolaas Maree and Du Toit Strauss
208	Hindsight Reward Shaping in Deep Reinforcement Learning Byron de Villiers and Deon Sabatta	231	Load and energy profile developments using occupancy and interactions/activities in the residential building Agnes Ramokone, Olawale Popoola and Ayodele Temitope	258	Automatic classification of medical X-ray images with convolutional neural networks Xolisani Nkwentsha, Anicet Hounkanrin and Fred Nicolls		

9	Available transfer capability enhancement with facts: perspective of performance comparison Babatunde Adewolu and Akshay Kumar Saha	33	Overcurrent Protection Philosophy Using Microprocessor Based Relays For a South African Power Distribution Network Lindokuhle Dlamini and Ali Hasan	42	Generator Dynamic Response During Total and Partial De-blocking of a Bipolar MTDC System Oluwafemi Oni, Andrew Swanson and Rudiren Pillay Carpanen	86	Power Quality Assessment of A Wind Power-Integrated System into the Power Grid Katlheho Moloi, Yskandar Hamam and Jacobus Jordaan
92	Linear Electric Machine-Based Gravity Energy Storage for Wind Farm Integration Christoff Botha and Maarten Kamper	106	PD Magnitude Variation with Voltage in Single Cavity and Double Cavities Isaac Kyere, Cuthbert Nyamupangedengu and Jerry Walker	124	DC Power Quality Emulator Riekert Jansen van Vuuren and Gerhard Botha	146	Transmission Line Damping Effects on Power System Inertia Response Michael Rainey and David Oyedokun
158	Impedance Matching of Direct Grid-Connected Renewable Energy Synchronous Generators Dillan Ockhuis and Maarten Kamper	166	Use of Electrical Energy Storage to Improve the Voltage Stability of a Power System with Large Amount of Wind Generation Ziphezinhle Kazi, Kehinde Awodele, Bongane Nhlapo and Adeyinka Adebayo	187	The Effect of Thermal Transient on the Leakage Current of Metal Oxide Arresters Ayanda Dlamini, Pitshou Bokoro and Wesley Doorsamy	196	Review of Control Strategies for Lithium-ion Battery Energy Storage Systems in Distribution Networks Johann Bierman and Bernard Bekker
202	SCADA and Substation Automation Systems for the Port of Durban Power Supply Upgrade Siphokazi Mrukwa and Akshay Kumar Saha	225	Comparison of DC voltage control strategies for multi-terminal HVDC network during AC faults. Sindiwe C. Malanda, Innocent Davidson and Grain P Adam	229	Thin Film Photovoltaic Module Characterisation Based in Indoor and Outdoor Methods Siyasanga Innocent May, Lawrence Pratt and Pitshou Bokoro	233	Balancing between Demand and Trading in Microgrids Masimba Gomba
250	Comparative Analysis of Load Compensation Techniques in Low-Voltage Distribution Networks Using Passive Components Anesuise Nyanjowa, Kehinde Awodele and Alaba Ojo	265	Realtime Thévenin Equivalent Impedance at a PCC in the Italian Power Grid George Gabriels, David Oyedokun and Simona Ruggeri	266	Active Distribution System State Estimation on Modified IEEE 33 bus test system Jeff Watitwa and Kehinde Awodele	3	Electric Vehicle User Behaviour and Demand Response Nithin Isaac