



## AMEU CONVENTION SUMMARY 2016

1. **Refilwe Mokgosi, City of Tshwane and Malerato Mohlala, City Power**  
**WIE CONFERENCE FEEDBACK AND UPCOMING PLANS**

2. **Nhlanhla Ngidi, SALGA**  
**SALGA NEW MODELS FOR MUNICIPAL ELECTRICITY UTILITIES – RECOMMENDATIONS FOR FUTURE SUSTAINABLE MODELS FOR MUNICIPAL ELECTRICITY UTILITIES**

3. **Stephen Delport, City of Ekurhuleni**  
**COST-OF-ELECTRICITY SUPPLY STUDY FOR THE CITY OF EKURHULENI.**

The paper provided insight into the recently completed cost of supply study undertaken by the Ekurhuleni Metropolitan Municipality – Energy Department: Electricity Tariffs. This project was challenging in the sense that the successful bidder had to collect information currently in Venus with limited Municipal resources involved. The information gathered had to be analysed in depth, residential, commercial and industrial data and load patterns had to be studied, direct cost had to be allocated to various groups of customers, adjustments had to be made for technical and non-technical losses, EMM pricing objectives and tariffs required to meet revenue requirements will have to be analysed, Eskom purchases and load profiles had to be considered.

4. **Clifford Ntshudisane, Powercom Metering Africa**  
**SMART GRID NETWORK: MANAGING, CONTROLLING AND MONITORING A SMART GRID NETWORK FOR IMPROVED UTILITY OPERATIONAL PERFORMANCE AND REVENUE SECURITIZATION.**

The implementation of a full end-to-end turnkey, advanced prepayment smart metering solution, based on smart grid technology to addresses the major challenges confronting municipal electricity distribution today. Smart Grid allows greater control of the distribution grid, being essential for assuring its viability of operation. This presentation assessed the possibilities of the adoption of a smart grid platform, with all the current and expected future requirements of a modern grid network.

The solutions and capabilities discussed included, smart prepayment, demand side management, real time anti-theft revenue protection, GIS, asset mapping, business intelligence dashboard, transformer load management; outage management; voltage/reactive power management, meter installation automation, etc.



**5. Andre S. Jordaan, PRAGMA**

**ASSET MANAGEMENT– LIFECYCLE COSTING: CAN YOU INVEST IN THE FUTURE AND AFFORD NOT TO APPLY IT?**

The value of Lifecycle costing was demonstrated through a couple examples.

To demonstrate the simple extent of how wrong you can get an investment decision, the concept was applied closer to home. The concept of economic annual cost was applied to an example, to demonstrate how it facilitates the decision as to whether an asset should be replaced or kept in place.

**6. Heinz Fischer, Vetasi Pty Ltd**

**SERVICE DELIVERY AND ASSET MANAGEMENT FOR SOUTH AFRICAN UTILITIES**

Improved SERVICE delivery through an integrated technology approach managing the Incident or Service Request from initiation to completion using the Asset, Work, Spatial and Mobile Technologies in a unified manner while receiving real-time feedback as well as compliance to GRAP17, NERSA and other regulations.

**7. Rob Shongwe, ESKOM**

**THE FOCUS OF ELECTRICAL ENERGY PROTECTION AT A CUSTOMER NETWORK CENTRE LEVEL WITH THE FOCUS ON RESULTS OF NON-TECHNICAL LOSSES PER MV FEEDER, THE ESKOM CASE**

- Systemising Losses Management Processes
- Standardising Losses Management Practices
- Reporting/QA of Losses Management
- Driving Losses Management interventions
- Standardising Losses Management Practices
- Reporting/QA of Losses Management
- Driving Losses Management interventions

**8. Tim Spearing, Lucy Electric**

**MANAGING THE RENEWABLES CHALLENGE IN SECONDARY DISTRIBUTION NETWORKS.**

The generation shortfall and reliable access to electricity remain one of the biggest challenges facing the energy sector and is being addressed through DER and other low carbon technologies.

The unpredictability introduced by embedded generation and other forms of DER to voltage levels and fault currents is making the management of distribution networks much more complex.

As a result increasing the “electrical headroom” of the network tools to proactively manage the network at MV and LV distribution levels are important to maintain quality of service to customers. Also the ability to predict where faults are likely to happen and providing information that will allow the fault to be fixed quicker will improve the quality of service. This paper described real projects that dynamically understand the distribution network and discussed how this could be used to provide actionable information for protection and control systems.



**9. Sanjeeth Sewchurran, eThekweni Electricity**

**GUIDING PRINCIPLES FOR GRID CODE COMPLIANCE OF MEDIUM/HIGH VOLTAGE RENEWABLE POWER PLANT DISTRIBUTED GENERATION INTEGRATION ONTO SOUTH AFRICA'S TRANSMISSION AND DISTRIBUTION NETWORKS.**

All new renewable power plants are required to comply to the SA Renewable Energy Grid Code. This paper outlined the requirements from the grid code version 2.8 that these plants need to comply with together with practical testing methods to certify grid code compliance.

The presentation showed results from practical grid code compliant testing carried out on site.

**10. Rodolfo Pereda, Ingeteam Power Technology**

**MINIMISING THE IMPACT OF IEC 61850 IN THE NEW AUTOMATION PROJECTS. HOW THE APPROPRIATE TOOLS CAN HELP THE USER TO COPE WITH IEC 61850 STANDARD.**

This article described the challenges that the use of IEC 61850 imposes to the different actors that take part in the different stages of the development of substation automation projects and how some of these challenges could be minimized using the appropriate tools.

The use of IEC 61850 imposes a hierarchical information model with a data naming that need to be understood in order to accomplish the engineering process. Besides, the data exchange among the different IEDs in the system may be done either using a point to point client-server communication profile or a point to multipoint publisher-subscriber profile. These data exchanges are configured during the engineering stage providing the data needed by the different IEDs: protective relays, HMI (Human Machine Interfaces) or RTU (Remote Terminal Units).

Of course, not all the users need to understand the details of the information model, any substation engineer will recognize immediately the concepts of a breaker, re-closer or the ANSI code 51N, but the standards names as XCBR, RREC or PIOC will only be understood after some practice working with the IEC 61850 standard. The use of engineering tools should try to join the traditional concepts and terms with the standard name. This article suggests the use of the descriptive information in the standard file format SCL (System description Configuration Language) to perform this task and explain how the tools can a benefit of this feature.

The document IEC 61850-6 describes the different file formats that can be exchanged among the different tools. It identifies the need of an IED configuration tool and a System Configuration tool. The IED configuration tool in most cases is provided by the IED manufacturer and it is in charge of the configuration of the specific IEDs using the predefined files provided by the manufacturer once they have been configured for the specific project. The system configuration tool is in charge of the network configuration and the data exchange definitions configuring datasets, report control blocks or GOOSE messages.

These two tools can include several tasks. Some of them are the following:

- An IED configuration tool may be used to create the information model exposed by the device selecting the logical nodes and the available data points and linking this



information to the internal data base of the IED. This feature is used by the IED manufacturer and usually is not exposed to the user or system integrator that uses the IED.

- An IED configuration tool may validate the SCL file in order to load it to a specific IED in the project.
- The system configuration tool may be used to modify the different settings.
- The system configuration tool may also configure the graphical aspects of the HMI or the data exchanged with the control center using remote terminal units.

All these features use the same information model described in the SCL syntax but the features exposed to each user role should be controlled so the user cannot modify the aspects that it is not intended to. For instance, the user who adjusts the settings of a protective function may not be the one to select which data is sent to another relay by the GOOSE messaging feature.

This article identified the different users, the information that they need to execute their tasks and the characteristics expected in the tools they need to fulfil their needs. The final section described an example of IEC 61850 tool allocation and how they are used to build a comprehensive system reducing the configuration error probability and minimizing the engineering, commissioning and maintenance time.

#### **11. Bongani Bingwa, Carte Blanche** **PARTNERSHIP(S) BETWEEN INDUSTRY AND MUNICIPALITIES TO ENSURE HIGH LEVEL OF SERVICE OF DELIVERY**

##### **(ROUNDTABLE DISCUSSION)**

#### **12. Thabo Mahlatsi, City of Johannesburg** **FEASIBILITY STUDIES FOR DEVELOPMENT OF WASTE TO ENERGY PROJECT**

- Project conceptualization
- Appointment of service provider
- Waste Quantification and Characterisation
- Completion of feasibility studies and development of specifications for bio digester construction

#### **13. Sanjeeth Sewchurran, eThekweni Electricity** **DRIVERS AND APPLICATION OF SMALL SCALE DG ON MUNICIPAL DISTRIBUTION NETWORK. An eThekweni Electricity case study example**

- Investigate the drivers of small scale distributed generation locally and internationally.
- Look at a case study example of the financial feasibility of a 5 kW rooftop PV system in Durban.
- Outline the NRS 097 standard and guidelines applicable to small scale distributed/embedded generation in SA.
- Identify barriers and possible future drivers for small scale roof top PV.



#### **14. Mark Symons, EyaBantu Professional Services**

##### **SAVING LIVES FROM DEATH OR INJURY DUE TO ILLEGAL ELECTRICAL CONNECTIONS**

(Intro) Development in a first world country,

(Main) Origin and comprehensiveness of the Act and Regs, Key Objective, Position of Installers and Users of Illegal Networks, Labour Department responses, Position of Municipalities and their Employees, Preventative Action in the past and Proposals for the future,

(Conclusion) Citizen's life spans in various countries, Long term considerations.

#### **15. Knox Msebenzi, PIESA**

##### **NUCLEAR POWER GENERATION – A NECESSARY OPTION FOR AFRICA**

- Nuclear energy is a viable and necessary energy source option for the continent, as part of a mix.
- It is a clean energy source
- Any risks are manageable
- This paper looked at the reality of the situation in Africa in terms of power, with focus on South Africa.

#### **16. Rodney Swartz, Siemens (Pty) Ltd**

##### **SCADA LANDSCAPE OF THE FUTURE**

The paper covered the basics of current Electrical SCADA systems and what the pros and cons are. It looked at how a SCADA system can be transformed into an Advanced Distribution Management System (ADMS) and how it can add value to Utilities. Its aim was to address the needs of smaller munics with no SCADA to the Metros with existing SCADA. For the smaller munics - how to get a basic SCADA going; and for the Metros - how to move to a more advanced system

#### **17. David Leigh, Matra Engineering Services**

##### **EARTHING: CAN WE AFFORD TO HAVE EVERYBODY CONFUSED ABOUT THIS IMPORTANT TOPIC?**

Despite the importance of this subject, the average electrician has a very poor understanding about the objectives and implementation measures. The situation amongst engineers is not much better.

This is partly due to the lack of formal training provided by the institutions and mixed messages from the commercial sector.

However, like so many topics in electrical engineering, it is a matter of understanding the basic concepts and eliminating misconceptions.

To this end, we need to exploit the powerful learning tools which are available via the humble PC. Why should trainers and lecturers be limited to "talk & chalk" tools when technology can offer so much more?



#### **18. Kobus Van Den Berg, STS Association**

##### **THE STS PREPAYMENT STANDARD – TID ROLLOVER IN 2024 – MANAGING THE CHANGE**

Program for the management of keychanges to all prepayment meters in the field to cater for the rollover of the date and time field in the current system. This date and time field will expire in 2024. As a result, all meters must be changed to a new base date, requiring the changing of meter keys in the field.

This paper presented the issue at hand and the program to successfully implement the key rollover program.

The paper was an awareness session for the municipalities to prepare them for this change, which will affect all their meters.

#### **19. Brighton Mwarehwa, Schneider Electric**

##### **COST/BENEFIT ANALYSIS OF UTILITY MANAGEMENT SYSTEMS IMPLEMENTATION**

Smart Grid software solutions are one of the key topics in the power utilities world nowadays. The special focus is put on investments in utility management systems (UMS). On one hand, UMS applications provide optimal and efficient usage of existing network capacities and resources as well as integration of the emerging renewable energy sources in the network. In this way, the important issue of conservation of the environment is satisfied.

On the other hand, optimization and efficient daily operation of the network in real-time assure important savings to the utility. Consequently, compliance with regulatory requirements is assured as well as the extra benefits for the utility.

In this paper, cost/benefit analysis of investment in UMSs was conducted. Real market cost data and information about different possible benefits from actual utility's experiences were used. Furthermore, different cases were analysed - utilities of different sizes, different market cases and UMSs of different scope - in order to assure the accuracy and sensibility of the analysis.

Finally, the results were presented in a simple way – in which any utility can easily identify their own case and obtain the high-level information regarding potential costs and benefits.

#### **20. Teslim Mohammed Yusuf, SANEDI**

##### **SMART GRIDS**

The South African Electricity Supply Industry (ESI) is characterised by significant challenges including: ageing infrastructure, high electricity costs and insufficient generation capacity to meet rapidly rising demand. One might argue that if such challenges are faced by the ESI, what is the value proposition that Smart Grids present?



**21. Lerato Libate, SANEDI**

**BUILDING SMART CAPACITY: TRAINING AND DEVELOPMENT**

Based on the skills assessment for smart grids, there is a significant need for investment in training and Development. In transitioning the energy system will require integration of the entire energy system.

**22. Dileep John, ESKOM**

**CUSTOMER COMPLIANCE APPROACH (CCA) – A NEW INNOVATIVE BEHAVIOUR CHANGE APPROACH TO IMPROVE REVENUE RECOVERY AND ENERGY PROTECTION**

Electricity theft is one of the biggest challenges facing power utilities in the world and South Africa's Eskom is no exception. Up to 2010, the approach that was used was a conventional one making use of auditing and new technologies. Very limited headway was being made and in a bold move, Eskom launched a behavioural change campaign which then got improved to Customer Compliance Approach (CCA). CCA brought a unique skill set – the ability to combine traditional communications with the power of the law, thus opening up a powerful new communication channel to build perceptions and change behaviours.

Within a behaviour change framework, some of the key elements of the campaign include a partnership approach with key organisations in the private and public sector, an anonymous reporting line in partnership with Crime Line, community based mobilisation, mass media communication, and a strong compliance drive working closely with the South African Police Services, including the Hawks and the National Prosecuting Authority. The 2014/2015 results speak for themselves with close to R1 billion achieved in revenue recovery and prevention and a ROI of 2993%

**23. John Cato, ECSA**

**ECSA'S PROPOSED NEW COMMITMENT AND UNDERTAKING.**