AMEU NEWS

THE ASSOCIATION OF MUNICIPAL ELECTRICITY UTILITIES OF SOUTHERN AFRICA



### THE PRESIDENT'S MESSAGE

When the full support of our Exco and members and my wish is that she will have the full support of the many problems that will undoubtedly arise in the course of her Presidency Term.

Most of our readers will know that the executive decision has been taken to the effect that the 2021 Convention will not be "face-to-face". The planning team are looking into various alternative platforms that will give us all the maximum participation and benefits of the proceedings, and ensure that both the technical presentations and the exhibition of products and services meets all our expectations. We believe that it will be a learning experience that will benefit us all, and our industry as a whole.

This is also an opportune time to review where our industry stands in relation to the dramatic and often devastating events of the past 18 months. No one could have foreseen the direct and indirect effects that the pandemic has had on our country and its economy, nor for that matter on the rest of the world. Sadly, the devastation continues in varying degrees in most countries around the world even though there are signs of recovery in certain countries. I am happy to record that as an organisation the AMEU has adapted well to the changes that have inevitably followed. The support now being received from our members to our various online meetings and seminars leaves me with no doubt that we are helping each other to find solutions and cope with many of the difficulties and problems which have resulted in our industry, and individual local day-to-day affairs.

Ours is an essential service and however difficult it may be, I appeal to you all to spare no effort to serve our customers in the most efficient way possible at all times.

My thanks go to our Secretariat, Strategic Adviser and all who have contributed in any way to keep the communication channels open and make this all possible.

At the same time I must record my sadness and deep concern that all too many reports are published from time to time revealing wrong-doing of various sorts, all of which can be traced to inappropriate and sometimes opportunistic activities by people working in the public service arena under the prevailing difficult conditions. This is unacceptable behaviour and needs to be addressed through the appropriate channels.

For us living here on the Southern tip of the African continent I like to think that there is light at the end of the pandemic tunnel now that vaccines are being administered to ever-increasing numbers of our population. May these numbers grow rapidly and help us to return to a new normal as soon as possible..

In closing, I offer my sincere sympathy to all who have lost loved ones in the recent past and wish you all well and good health for the future.

Sincerely,

Refilure Mokgosi

## NETWORK NEWS

## RUSTENBURG

n common with municipalities whose electricity networks are reaching their 30-year design lifespan, consumers in the R24 Region of Rustenburg Municipality, which includes Kroondal, Rietfontein, Boschfontein, Rhenosterfontein, Oorzaak, Donkerhoek, Rietvlei and Zuurplaat, have been experiencing excessive outages in recent years.

The municipality is in the process of rectifying this and has undertaken a detailed survey of the 100km overhead network in the affected areas. This has highlighted a number of problems including cracked insulators, broken stay wires, cross arms and sagging on the overhead line.

An action plan is in place which includes the following steps:

- Seventy sets of Fault Path Indicators have been installed and commissioned on the 11kV rural network and are now directly messaging staff on fault locations. An immediate improvement in locating and rectifying faults has been achieved.
- Auto-reclosers have been installed in 12 locations and a further 3 are still to be installed. These have significantly reduced the line-patrol times that are necessary when faults occur.
- A new 33/11kV substation is in the planning stages that will be located near the load centre of the area. This will not only strengthen the supply but will also reduce certain line lengths and eliminate under-voltages currently being experienced in parts of the network.
- Construction of a new 11kV Bulk Line to Dinnie Estate, which will be fed from Waterkloof Hills, is currently underway and nearing completion. Once commissioned,



the network will be split, reducing the load profile from Kroondal Substation with an improved quality of supply to all areas in the vicinity of the R24.

- Cracked insulators and sagging conductors have been identified as the most contributory factors for frequent power outages on the rural networks. Orders have been placed for the procurement of 11kV Insulators: once these are delivered, the Municipality will roll out a replacement program which will run simultaneously with the tensioning of conductors.
- A tree pruning programme was rolled out by the Municipality in 2019. Many challenges were encountered in the execution of the program, such as access to lines on private property and resistance by some community members. Further steps will be taken in due course.
- In addition, a new 88/11kV substation for the supply of power to new townships in the Greater Boitekong area, is planned and the Pre- Design is in an advanced state. This is expected to be a three-year project.

Like all local authority utilities Rustenburg has had its share of lock-down related problems with re-organising staff working conditions but they have also been successful in eliminating illegal connections in various areas and replacing these with metered supplies, amongst other things.

(Well done Rustenburg... keep up the good work ! Ed.)

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### **TELL YOUR FRIENDS YOU READ IT IN AMEU NEWS**

### **AMEU Branch Affairs - Central**

The Central Branch "virtual" meeting was held on 6<sup>th</sup> May 2021 and was attended by some 70 delegates. It was chaired by Orren Groenewald of Sol Plaatjie Municipality, who also led the proceedings with a well prepared "Safety Moment" in which he outlined various aspects of safety in the work-place including the need for simple and clear rules under which all work processes must always be carried out, to ensure that accidents and the associated damage and injuries are avoided.

Tsolane Mokoena of GLS Consulting gave a talk on asset management and the various ways by which replacement of assets in an electrical network are determined. He touched on the benefits that accrue from carrying out these assessments.

T GOOD Africa's Bryan Johnson described the types of pre-fabricated equipment that is now available in their "EHouse" MV/HV Substations and switchgear range, and the kinds of installations and situations where this compact equipment can be beneficially used by Utilities.

CTLab's Willie van Wyk discussed the intricacies of power quality in energy grids, the importance of this to equipment in service and the methods, equipment and facilities now available to monitor and record the details of network conditions.

The AMEU Strategic Adviser, Vally Padayachee gave feed-back to attendees on the various matters now receiving attention by the AMEU Executive, include such matters as the ongoing working conditions during the lockdown and the preparation for immunisation. He also covered the discussions taking place with SALGA, Eskom, NERSA and other industry organisations. The problem being experienced in some areas where Eskom are not properly

maintaining street light equipment is also being addressed with the Utility. He also noted that 30 municipal utilities have now received approval for tariffs to cover selfgeneration customers on their networks. The TID roll-over for prepayment meters is also being monitored.

The main presentation was by Archie Jaykaran and was based on a practical approach to asset management in municipalities. He emphasised that this is always a daunting task and that is was very much a "live" operation that is always evolving. He discussed a practical approach to best practices and various other related aspects including understanding the financial implications of the processes.

Readers wanting more details and information should remember that these meetings are now recorded and that a request to the AMEU Secretariat will provide the link necessary to access the recording. Ed.

### **MUNICIPAL AUDITS**

here are 278 municipalities in South Africa, comprising eight metropolitan, 44 district and 226 local authorities. In recent times the Auditor General's annual reports on Municipal accounts often make uncomfortable reading when they contain sentences like "33 received disclaimed audits (the worst rating possible), and 28 councils' books were so bad they were unable or unwilling to submit their financials."

On the other hand it is encouraging to know that many councils continue to function effectively - often under very difficult conditions - and in particular to read that 20 received clean audits.

It is even more encouraging to read that at least one municipal structure, Cape Agulhas Municipality has recently received news that for the  $8^{th}$  consecutive year their audit is again clean. Congratulations to everybody involved !

When asked for comments in respect of the electrical engineering section, Stephen Cooper, Manager, Electro-Technical Services, said that besides the obvious need for the Department to operate efficiently and professionally, it comes down to documentation and good records. All activities must be backed up with readily accessible documentary proof for whatever work has been done and contracts entered into, including all payments made.

Good records are the basis of all activities in the utility, as is the case for every Section or Department of the municipality.

(Footnote; Further research has let me to finding that Witzenberg has also had 8 consecutive clean audits which makes me wonder if there are other towns or cities with similar – or near similar – records. I would appreciate feed-back so that appropriate publicity and well-deserved credit can be given to the people involved.

I look forward to hearing from you, please drop me a line. Ed.)



The 67<sup>th</sup> AMEU Convention will take place "VIRTUALLY" on the 10<sup>th</sup>, 11<sup>th</sup> and 12<sup>th</sup> November, 2021.

It will be co-hosted by eThekwini Metropolitan Municipality and has the theme"Implementing sustainable customer centric electricity utilities in the 4<sup>th</sup> and 5<sup>th</sup> industrial revolution".



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### LETABA HOSPITAL LIGHTING UPGRADE

etaba Provincial Hospital in Limpopo province, South Africa, is located about 12km east of Tzaneen. Originally built as a mission hospital in 1964, it has undergone extensive upgrades to cater for the needs of the community and is now the referral hospital for the surrounding district hospitals within the Mopane region.

It houses over 250 beds and offers various services including internal medicine, family medicine, surgery, paediatrics, pharmacy, nursing, clinical psychology, oral health, allied health and forensic pathology services.

With the passage of time, the need for services in the surrounding community and improved security has increased and the hospital has recently upgraded the lighting throughout the property.

The new security lighting has been supplied by the well known local manufacturer of quality lighting products, BEKA Schréder. Since its installation, security levels have increased and the number of security-related incidents has reduced dramatically.

The lighting consists of BEKA SOLAR units and the BEKA SERIES 30 LED bulkheads for general area lighting.

A solar lighting solution was chosen in order to ensure that the security of the patients was not compromised during periods of load shedding and to provide energy savings.

The BEKA SOLAR units were supplied with LEDLUME-MINI LED streetlights to illuminate the roads in the hospital grounds, and area lighting in front of the staff housing was provided with BEKA SOLAR units supplied with decorative ZELA LED post tops.

The <u>BEKA SOLAR</u> has been designed and manufactured in South Africa and offers a renewable lighting solution to operate reliably in any of our very challenging African environmental conditions. It has sufficient autonomy to cater for up to four continuous overcast or rainy days, to continue its reliable night operation. The BEKA SOLAR is theft-and vandal-resistant. Various battery technologies are available to meet specific customer requirements.

The <u>BEKA SERIES 30</u> has been installed around the exterior of the buildings. This LED bulkhead luminaire range has been designed for decorative and efficient bulkhead lighting applications in modern architectural environments. It has been locally manufactured from high-quality materials, is energy-efficient and requires very low maintenance. BEKA Schréder locally develops and manufactures energy-efficient LED lighting products, designed and suitable for local conditions. They are very proud to be associated with the Department of Health and Welfare and Leshika Consulting Engineers in providing a successful lighting solution for this project.

For further enquiries, contact Johan van Deventer at 011 238 0000 or pta@beka-schreder.co.za







### In memorium - BOB WALLIS

t is with deep regret that we record the death of an Honorary Member of the AMEU and a once active member of the AMEU Affiliates, Robert Stanley Wallis.

Bob, as he was affectionately known, was born in the UK in Portsmouth on the 11th January 1947, and died on 5<sup>th</sup> May 2021.

He started his engineering career in the late 60's with the Central Electricity Generating Board (CEGB) in the UK as a substation designer. In 1969 he moved to Kitwe in Zambia on contract with the Copperbelt Power Company.

After completion of his contract he was offered a position with ASEA Reunert in South Africa, which marked the start of the next phase of his career and a long association with the industry, and his life in South Africa.

He moved into marketing and until 1999 spent periods with GEC, Telemecanique and Schneider Electric as their Commercial Director respectively. Here he was instrumental in putting together the merging of Telemecanique and Merlin Gerin, which subsequently migrated to Schneider Electric.

In 2000, he set up his own company specializing in commercial management training and in 2003 became Merz and McLellan's Business Development Consultant. Whilst serving Merz he applied his skill and experience to much more than Business Development and became a key player in the asset management and utility management professional services offered by the firm.

Bob was a hugely versatile employee who was passionate and knowledgeable about electrical engineering and his negotiating skills were second to none, particularly when negotiating tender agreements. Through his efforts Merz South Africa was awarded a contract to analyse and report on the assets of City Power.

Richard Frantz, a dear friend and work colleague of his at Merz described him as "one of the good guys".

Bob attended his first AMEU Convention in East London in 1977 and soon played an active role in its affairs. He represented the affiliate company, Merz and McLellan, in the AMEU for many years and participated with enthusiasm in whatever project called for his attention. He was the driving force in organising the Affiliates exhibitions at AMEU Conventions and was responsible for the provision of a total of 362 exhibition stands in five conventions, including organising the exhibition in the tent at the Polokwane Convention in 2005.

He was elected Chairman of the Affiliate section for the period November 2007 to 2009 and one of his projects was the development of the new AMEU logo that was adopted for branding promotional and other products.

Bob's passion for the AMEU and his often forthright manner and courage to raise difficult issues combined to drive him to work tirelessly for the Association and its members, and to urge the Executive Council and Branch members to address these

LEADING THE ELECTRICITY DISTRIBUTION INDUSTRY





for the benefit of the industry. His challenging of our current thinking on many matters has brought considerable value to our debates and activities, not least of which have been supply chain management and marketing of the organisation.

He retired shortly after the death of his wife and moved to their holiday home in Kenton-on-Sea where he devoted his time to everything from cooking to restoration of his classic MG car, which he did in 2014. Other interests included model making, game viewing and photography, bowls, his Rotary Club interests and the occasional professional assignment. He was also known to dress up as Santa for the neighbours' kids over Christmas.

His son Simon encapsulates it all well by saying .. "What made my dad such a special person was his ability to give unconditionally, often to the detriment of himself or his plans. There was never a task too large he would not go out of his way to do for you. He loved unreservedly and supported those he loved to the ends of the earth. He will be dearly missed."

We record heartfelt sympathy to the family on behalf of all his friends who are numbered amongst our readers, Max Clarke, Editor.

### In memorium - CHRISTO KAPP

t is with great sadness that we bid farewell to Christo Kapp who lost his life in a motor vehicle accident on Thursday, 18 March 2021. He would have turned 39 years of age in June.

Christo spent the past 18 years in the lighting industry and served with distinction in a number of specialist lighting companies including Tuchward Lighing, Giant Light, BEKA Schreder and Antley Lighting where he held the position of National Sales manager/ Lighting Designer, until his untimely death.



Much of his training was received under the tutelage of the well known lighting specialist Murray Cronje, whom he held in high regard.

Christo was an integral employee at Antley Group and was responsible for the company's lighting designs. His work was his passion and he was highly rated as one of the best in the lighting industry in South Africa.

He leaves a wife and a 6 year old son to whom we extend sincere condolences on behalf of his many friends in the AMEU and the lighting industry. Rest peacefully Christo, you are sadly missed. ED

### **ASSET MANAGEMENT**

Presentations on asset management in electricity utilities are not uncommon items at our AMEU Branch meetings. Perhaps what is not always sufficiently emphasised in these discussions is the benefit that a professional report on a utility's assets can provide when it comes to prioritising capital requirements in annual budgets. A comprehensive report of this nature will not come cheaply, but the savings that can be achieved by the correct prioritization and allocation of funds based on the information that it contains can be well worth the outlay.

The City of uMhlatuze is one such example where benefits have flowed from such a process.

(Any other Utilities like to send a comment on their experiences? ED)

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### SARPA NEWS

he prepayment metering system, STS, in common use world-wide, was created in South Africa in 1993 as a result of Eskom's initiative in their "electricity for all" program. It is registered under the relevant International Standards and is used in more than 100 countries and in over 50 million meters.

At the 2018 SARPA Convention the issue of what was referred to as rogue meters was raised following reports of investigations that were under way into suspicious meter installations in a municipal utility. The phenomenon was soon detected in other municipalities and was very quickly recognised as a serious threat to the industry.

"Rogue meters" were defined as a meter foreign to a utility's fleet and which was not installed by the Utility or an agent of the Utility. The accepted definition also included that the prepayment revenue does not go to the Utility.

Investigations soon revealed that these meters often have a foreign Security Group Code and meter number sequence, and are purchased from a non-Utility vendor. The motivation to the consumer for its installation usually includes that "it is a check or sub-vending" meter.

On-going investigations now show that criminal elements have entered the industry in many ways and on a scale that is having a serious impact on the revenue of Eskom and many municipal Utilities. These fraudulent installations are being found in various increasingly complex installations and initiatives are now underway to find effective ways to combat the scourge.

A task team has been established to consider ways in which to combat this phenomenon and progress on this front will be reported at the next SARPA convention. All stakeholders have been tasked with considering ways in which to address the matter and the task team welcome suggestions in this regard.

If anyone has already unearthed suspicious installations or have suggestions to combat this problem, please forward them to the SARPA Technical Advisor, Rens Bindeman, without delay at sarpa@vdw.co.za

### SOLAR WATER HEATERS

fforts to clean up the environment (and the air we breathe) are ongoing world-wide and are vital in our modern societies. One such local project is the Department of Mineral Resource and Energy's Solar Water Heaters program.

Polokwane Municipality is participating in this project and has received 10 000 geysers. These are allocated to low-cost housing and indigent residences and 197 geysers of the tubular type have been installed so far.

There are many challenges to be overcome within these installations including such things as the water connection points not being in the house, warn out roof structures and rotten corrugated iron or asbestos that is not strong enough to carry the weight, and the lack of funding for such items to be addressed. Also, roof leaks after installation are a problem and inappropriate materials being supplied such as plastic taps, and screws instead of nuts and bolts.

The roll out is planned to continue with the flat-type of geysers from May 2021, and about 2 000 units are planned as part of this phase of the roll-out.

Valuable lessons have been learned in the process to date. These include the key requirement of public participation and the identification of beneficiaries. Ongoing communication with communities is essential as well as ensuring that the design of the units is relevant for the area and the type of housing structures to which they will be affixed. It is worth noting that one manufacturer did not supply units to the specification.



### **IT'S ALL ABOUT TRAINING**

epending on your source, training is defined as "The action of teaching a person a particular skill or type of behaviour" or something in similar vein!

In the electrical engineering field this covers a very wide range of activities starting from those skills required in the manufacture and assembly of the smallest of electronic components and devices, to the largest power station equipment and everything in between.

So why train? Well, it all comes down to doing it right. If you do it right first time round you maximise the life of the item or product, you will get the job done quicker and you will avoid unexpected breakdowns and the associated costs.

Most people are aware of the fact that for the installation of house wiring, proper training and a formal trade test of the artisan doing the job is mandatory. Rules and regulations are the order of the day, and with good reason.But do you know that MV Cable jointing, terminations and related activities require no such test ?

For various reasons there is a trend for utilities to switch from PILC to XLPE cable for their MV distribution circuits. This change means that a different skill set is required by the artisan involved with the jointing and termination of the new products, and for the transition joints that are essential when connecting XLPE cables into existing PILC circuits.

Also, most modern switchgear connections that are now common-place and widely used in our South African networks, require special termination systems. The need for long-life, trouble-free terminations underlines the need for installations to be done using the correct materials and applied correctly the first time around. It makes economic sense to do it right first time and a properly trained artisan does the job in half the time with no wastage of costly materials!

The well known company TANK, have long understood the need for and the benefits of using the right equipment for the job at hand, and a properly trained artisan to carry out the procedures involved. Since 2019 no less that 282 artisans have been trained in their facilities and a further substantial additional number have registered their requests for training.

Their Training Academy provides instruction for both Low and Medium voltage cable jointing and terminations. The facility and the courses have become recognised by the industry as one of the leaders in the field. The instruction promotes general principles and uses internationally and nationally recognised experts in their fields to transfer their knowledge to attendees.



The curriculum uses SANS 10198- 9, 10 and -11 as its base and learners are tutored in the theoretical as well as practical aspects of Jointing and Termination of cable, and cable accessories. Assessment and moderation are carried out and performed by trained and experienced external professionals from EWSETA, in order to control the process and confirm the training outcome.

The results of the training courses over the years have been very encouraging and have led to them being considered as a prerequisite for contractors appointed to work on national and municipal networks.



For any further enquiries please contact Kobus van Eeden; Phone: +27 (0)21 700 4380; Fax: +27 (0)21 701 0128; Email: kobus.vaneeden@tank.co.za



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### PEOPLE



#### Phindi Baleni

Many of our readers will know that President Cyril Ramaphosa recently appointed Ms Phindile Baleni as the Director-

General in the Presidency and Secretary of Cabinet. Not many will remember that she has a long history of association with matters electrical and in particular, has had a long and productive working relationship with the AMEU.

Her connections with electricity go back to her days when she and Paul van Niekerk did most of the leg work to get City Power set up as a free-standing company within the City of Jo'burg cluster of utility companies in the early 2000's

The Governments plan to rationalise the electricity distribution industry and the resulting establishment of the EDI Holdings Company to oversee this, saw Phindi appointed as CEO of the new entity. She occupied this position with distinction until its disbandment by the Government in 2011.

Under her guidance there was a close working relationship between the AMEU and EDI Holdings, as well as with individual municipal electrical utility managers, as the plan to form Regional Electricity Distributors was developed.

AMEU Past President Hannes Roos recalls that during the period when he was driving the restructuring process within Ekurhuleni Metro - the designated Anchor metro within the proposed "RED 2" distributor - Phindi was a regular attendee at meetings and played an important role with her inputs and leadership.

In due course, she was appointed to head up NERSA, the energy regulator, and continued her close association and work with the electrical industry as a whole, and municipalities in particular.

She attended AMEU Conventions and was a key speaker on various occasions.



Mongezi Ntsokolo City Power has announced the appointment of their new CEO, Mongezi Ntsokolo, who took

over the reins of the Utility from 1st April 2021. Many of our readers will know that he has held senior positions in Eskom over a number of years including as Group Executive for Generation, Transmission, and Distribution.

He joined Eskom in 1991 as a Senior Engineer in the Distribution section and progressed to Group Executive in 2003.During this period he served as Chairperson of Eskom's Rotek Industries board, and was a board member of Eskom Enterprises. He left in 2018.

He also served as Chairperson for the Southern African Power Pool (SAPP) management for two years, and has been part of several international electricity utilities.

City Power's Board Chairperson Adv. Lindiwe Maseko said the arrival of the new CEO will bring stability to City Power. "We have many long-term plans ahead to turn around the entity, and for that to come to fruition we need a stable leadership to help steer the ship to the right direction".

While there are some challenges that Mr Ntsokolo will inherit, the entity has been doing well on a number of fronts, including unqualified audits, and realizing profit for the year ended 30 June 2020, owing to the support initiatives introduced. Immediate tasks expected for Mr Ntsokolo to turn around the entity include dealing with the overdraft and revenue collection, issues relating to supply chain management, network stability, infrastructure vandalism and cable theft, outage response times, and material availability.



Nancy Maluleke Ms. Nancy Maluleke has been appointed as

**Chief Operating** 

Officer (COO) for City Power.

The position of COO has recently been introduced into the City Power structure to help beef up oversight at the executive level and put more focus on operations as part of the company's strategic vision and to ensure maximum returns.

Nancy has held the position of Group Executive Metering Services since June 2018 and recently acted as the company's CEO.

She has extensive managerial experience in the industry having worked for Eskom, Anglo American and City of Ekurhuleni among others. She also serves as a board member in various organizations.

Her extensive experience and knowledge of operations at City Power at different levels coupled with her qualifications, will stand her in good stead in her new position.

Her technical and operational expertise will help turn City Power around and ensure it is a respected electricity utility in the country.

She holds a Master's Degree in Engineering Management and GDE Project management both from the University of Witwatersrand, B-Tech in Electrical/Electronic Engineering from University of Johannesburg and a certificate in commercial accounting among others.

On behalf of our readers AMEU News wishes all three incumbents a happy and successful stay in their new positions"



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### Hexing Electrical SA (Pty) Ltd.

Hexing Electrical SA (Pty) Ltd, a subsidiary of Hexing Electrical, started its business in South Africa in 2012. Hexing SA has the ability to provide metering products and service to municipalities, distribution utilities and sub metering companies both in South Africa and its neighboring countries, from its locally based offices and testory in Johannesburg South Africa.

HEXING







TOP

### SABS NEWS: NRS 111: ELECTRICAL INSTALLATION MEASURING EQUIPMENT -

## Part 1: for completion of test reports and related applications on electrification electrical installations

Industry Work Group membership: Dr A Beutel, Eskom; V Nundlal (Project Leader), Technical Governance; F Brandow, Ekurhuleni Municipality; H Somo, City Power Johannesburg Pty (Ltd); H Groenewald, Eskom Distribution; J Maudu, Eskom Distribution

The responsibilities and tests to be performed to verify that an electrical installation is safe and in accordance with applicable legislation are laid out in the Electrical Installation Regulations and SANS 10142-1 (in the case of domestic installations). The equipment used to perform these tests is not treated with the same strictness in legislation, despite its critical part in ensuring safe installations. It was therefore decided to compile NRS 111 for use when specifying this test equipment, using existing SANS and IEC standards as the basis.

Part 1 of NRS 111 covers the specification of the electrical measuring equipment used for the testing of single phase subsidized or unsubsidized electrification installations, i.e. cases where the supply authority, or their authorized electrical contractor, is responsible for performing the electrical safety tests on the installation and for issuing an abridged or complete Certificate of Compliance (CoC) in line with Annexure 1 of EIR 2009 and accompanying test report. The aim is to ensure that this equipment is as robust, reliable, practical and cost-effective as reasonably possible, without the need for detailed and extensive contract documents.

Three types of specifications for the measuring equipment are included: those common to all equipment, requirements from IEC standards specific to each type of equipment and additional tests specific to each type of equipment. The purpose of the latter is to verify the correct operation of the measuring equipment for this specific application. Specifications for plugs, sockets, cables, batteries, battery chargers and electromagnetic compatibility are also included. Normative references include the Electrical Installation Regulations and SANS 10142-1.

The following measuring equipment is to be used:

- Insulation resistance measuring equipment.
- Supply-side polarity measurement: voltage measuring equipment comprising voltage probes and a meter, or twopole voltage measuring equipment.
- Polarity measuring equipment that plugs into a socket outlet.
- Loop impedance measuring equipment.
- Earth leakage measuring equipment.
- Combined testers.

NRS 111-1 was compiled by an industry work group and is currently in the process of being approved by the NRS Management Committee. A positive aspect was active participation by representatives of two equipment suppliers.

It is hoped to commence with compilation of other part(s) of NRS 111 soon, pending NRS Mancom approval, so that other applications of this measuring equipment may also be covered.

For further queries, please contact Vishal Nundlal at SewchaV@eskom.co.za or Dr Andreas Beutel at BeutelAA@eskom.co.za.

### SABS turnaround strategy update

ot all of our readers will be aware that SABS was placed under administration in October 2018 to facilitate its return to financial sustainability. The Turnaround Strategy includes right-sizing the organisation to build a more competitive business to ensure its future operations.

While the implementation of the Strategy is in progress, the global business environment has been adversely hit by the negative economic impact of the COVID 19 Pandemic and the South African economy, and SABS and its clients have all been severely affected, with some having to cease operations or scale down.

The SABS has a fundamentally strong core business that has been a pillar of support to South African and international businesses for over 75 years. The top priority is to strengthen client engagements and communications whilst continuing to deliver valueadding quality assurance services that meet expectations.

Implementing the turnaround, improve on service delivery and return SABS to financial sustainability, has required initiating the legislated Section 189 process as set out in the Labour Relations Act, Act 66 of 1995.

Additional information can be requested via e-mail or by contacting SABS Contact Centre on 0861 277 772 or email info@sabs.co.za.

### **AFFILIATES AFFAIRS**

he most recent Main Meeting of the Affiliates took place as a virtual meeting on 1<sup>st</sup> June and was attended by about 40 delegates, It was opened by the Chairman, Gordon Arons who called for a short period of silence in memory of recently deceased Bob Wallis, a past Chairman of the Affiliates and an Honorary Member of the AMEU.

Gordon excused himself from further participation due to another commitment and handed the chair to the Vice-Chairman Paddy Padayachee, who then conducted the further proceedings.

Membership was reported as 101 paid up and 43 unpaid.

The Treasurer reported that the finances were in a satisfactory position as there had been no major expenses. The interest received from investments amounted to +/- R11k.

It was confirmed that the Annual Affiliates golf day had been cancelled for 2021 and would be re-instated for 2022.

Discussions took place around arrangements for the 2021 Convention and it was confirmed that this will be held on the 10<sup>th</sup>, 11<sup>th</sup> and 12<sup>th</sup> of November as a virtual event. A presentation by Dion

The recent news item that recorded the event of pieces of a rocket tumbling somewhere in the upper atmosphere, that eventually landed in the ocean, highlights a matter that sooner or later will affect us all.

Consider this - recent estimates give the number of satellites orbiting the earth as 6200. Of these about 3000 are now defunct and have become space junk. The European Space Agency estimates that there are about 129 million items of debris also circling the earth. These range from small (1mm flecks of paint) to 10 cm and larger. They include things like nuts, bolts, frozen coolant, rocket parts; in low earth orbit Abrahams gave an overview of the software package that will be used for the meeting with particular reference to the facilities available for companies wishing to exhibit on virtual stands during the meeting. A special meeting will be held on 11<sup>th</sup> June during which more detail will be given of the features available to exhibitors.

The meeting noted that the annual "Business Leaders Breakfast" has been postponed.

Vally Padayachee, the AMEU Strategic Adviser reported that 35 papers had been received for the Convention and that vetting and selection is now taking place. Other matters being considered by the AMEU EXCO include the problem of the GCC examination paper questions (previously reported), the MISA project for simplified purchasing contracts that conflicts with certain requirement of the MFMA governing Municipal Finances, the TID roll-over for prepayment meters, and the debate around the proposal to increase the rating of generators requiring licensing from the existing 1MW to a proposed10 MW.

It was noted that funding to assist Branches has been suspended while virtual meetings are being held and would only resume once normal face-to-face meetings resume.

The PIESA Advisory Work Group was due to hold a meeting on 4th June and this would be followed by a Board meeting on the  $15^{\rm th}\,$  June .

CIGRE is holding its conference on the 4th November.

It was reported that the NRS Association is looking into various matters including battery storage safety issues, and SARPA training and meetings were proceeding on schedule. WiE are now also doing online training.

The MoU with the SAIEE is now in place and consideration is being given to a webinar based on "Municipal City of the Future" that would look into the effects of the multiplicity of changes now taking place to keep pace with 4IR and 5IR developments.

Discussions took place on the e-bulletin now being published at 2-weekly intervals by the Secretariat and companies were invited to submit appropriate material for publication.

The next meeting will be held on 27<sup>th</sup> July.

### **IN CASE YOU MISSED IT**

they travel at about 22 000 mph (+/-35 000km/h) and have the potential to cause serious damage to satellites.

If something about the size of an average cell-phone should hit a telecoms satellite a huge chunk of internet connectivity will be lost. Most of these items will continue circling in orbit for a long time, while others will start a slow descent to earth and hopefully burn up before reaching ground. But clearly the opportunity for satellite-debris collisions is growing and the new wave of mega-constellation telecommunications satellites from the likes of Starlink and OneWeb are exacerbating the problem. Starlink alone intends to eventually launch more than 40,000 satellites.

In the interim, satellite operators have been doing a good job of dodging the junk, largely thanks to the world-leading US military's Space Surveillance Network and similar systems in China, Russia and Europe. Watch this space, we live in interesting times!

### Greenhouse gases... Climate change... and what's being done?

n spite of the escalating steps being taken to curb the rate at which global warming is taking place, reports keep on highlighting that it is a fact of modern life and is still happening.  $CO_2$  concentrations - one of the culprits in the basket of green-house gases - have risen from around 300 ppm to over 400 ppm in the past 70 years (ppm = parts per million).

One indicator of the changes taking place is the melting of the polar ice caps, coupled to rising sea levels.

Since 1993 a French/EU-US mission has launched a series of projects to monitor the rise in sea level using highly specialised high-accuracy satellites for this ongoing work. The latest, "Sentinal-6 Michael Freilich" satellite was launched early in 2021 and is now sending sea level data to the research team. The satellite has an expected life-span in excess of 5,5 years and is orbiting over the poles at an altitude of 1336km. Its instruments are powered by PV panels (clearly visible in the picture) and the satellite weighs in at a little more than 1100kg.

In the nearly 30 years since this research started it has been established that the average sea level is rising at a rate of 3,2mm each year.

This may not seem very significant but something of the order of 600 million people live in low-lying parts of the world and sea level rise is a significant threat to their safety.

#### SO, WHAT'S BEING DONE?

With electricity being the fundamental essential service for modern communities, the move to renewable generation is a high priority. While the major polluting countries like China, USA, Russia and European counties still have a long way to go, a start has been made..

Depending on one's information source, generation of electricity from renewable sources was of the order of 25% to 30% world-wide in 2018, and is expected to reach about 42% by 2040.



Small countries like Iceland and Costa Rica are blessed with geo-thermal heat sources and are generating about 95 - 100% of their electricity from renewable sources. Norway and Uruguay are at a similar level with hydro playing an important role. New Zealand is at about 80% and increasing, from both hydro and geo-thermal.

The United Kingdom is of the order of 30% - 40% with wind playing a major role as the energy source. South Africa stands at about 10%.

A new development is now in the pipeline; seagrass apparently sequesters CO<sub>2</sub> at a high rate, 35 times faster than tropical rainforests. Thanks to bottom trawling, dredging, pollution, coastal developments and other human activities scientists calculate that something like 90% of the UK's seagrass forests - and the creatures that inhabit them - have been damaged or completely destroyed in the last century,

The good news is that a 2 hectare seagrass restoration project was launched off the Welsh coast in Pembrokeshire last year and now another has been launched in the English Channel, off the southern coast near Plymouth. Sandbags containing seagrass seeds have been dropped on the sea bed and in time will germinate and start re-colonising the ocean floor.



### UK plans for reaching net zero

he United Nations' plans for reducing CO<sub>2</sub> emissions and effectively halting climate change, include setting a goal for all nations to try to reach net zero by 2050. This is based on the latest research that confirms that global green-house gas emissions need to drop by a half by 2030 in order to reach the goal.

Many countries including major emitters like the USA, China, and European Union member states are actively working towards these goals. Even regions, cities and businesses are co-operating and setting their own targets.

To this same end, the United Kingdom's government has recently announced a 10-point plan that they intend implementing across the country to meet the 2050 deadline. As with all such plans it cannot be copied and pasted because of the varying conditions and circumstances applicable in each nation, but it does provide useful ideas and food for thought.

**1. WIND:** The UK already has about 10GW of wind generation (mainly off-shore and North Sea based) and the target is 40GW including 1GW of "floating" wind.



**2. HYDROGEN:** Although the projects to produce low carbon hydrogen and the areas of optimum use are still in the early stages of development, a target of 5GW has been proposed for 2030.



**3. NUCLEAR:** Delivering new and advanced nuclear power including small modular reactors is part of the plan. Demonstration projects of both small modular reactors and advanced modular reactors are planned for 2030.



**4. ELECTRIC VEHICLES:** No new petrol and diesel cars and vans will be sold after 2030. The government has pledged approximately R560bn for support of expanded UK-based EV manufacturing and charging infrastructure.



**5. PUBLIC TRANSPORT:** Measures to shift travel to more attractive rail and bus services plus incentives for pedestrians and cyclists are among the measures being planned.



6. AIRCRAFT and SHIPPING: Research and Development is currently under way in both these fields with amounts of approximately R300m allocated to "Flyzero" (a 12-month study driven by the Aerospace Technology Institute) and approximately R400m allocation to a Clean Marine Demonstration Program.



**7. BUILDINGS:** Gas-fired boilers are commonly used for water heating in UK buildings. These will be banned in new-builds from 2025 and it is planned to replace existing systems with a target of 600 000 heat-pumps per year. Support will also be provided for solar panels and building insulation. Heat pump website



8. CARBON CAPTURE: Four industrial clusters incorporating CCUS (Carbon Capture Use and Storage) are planned in various locations. A support budget of approximately R20bn has been proposed.



**9. ENVIRONMENT:** Tree planting is being encouraged and the Government plans to protect and improve 30% of all UK land by 2030 to create a "wild-life rich habitat".



**10. GREEN FINANCE AND INNOVATION:** A target of 2,4% of GDP by 2027 has been set for R&D investments. Sovereign Green Bonds will be issued and a new Infrastructure Bank established.



Images sourced from internet

### **TECHNOLOGY UPDATE..**

n American company "Boom Supersonic" has unveiled a 1/3<sup>rd</sup> scale prototype of a future supersonic passenger jet – "Overture" - that will carry 55 passengers, have a range of 8 300km and fly at 2300km/hr. It is planned for commissioning in 2029.

The prototype, XB-1, is due to undergo test flight during 2021. It is powered by three GE engines that will provide 55kN of thrust.



The full-scale version is planned to be flying in 2030 and will be 26,8m long and have a carbon-composite airframe that maintains strength and rigidity under the high temperatures and stresses of super-sonic flight.

#### A little bit of history (with a nod to electrical engineers)

The only supersonic passenger aircraft ever built and operated as a commercial venture for any length of time was the Concorde. This was an Anglo-French project that started with its first flight in March 1969. Twenty machines were built of which 14 were used in commercial transatlantic flights from 1976 to 2003. The Concorde carried from 92 to a maximum of 128 passengers.

This explosive noise was so loud that people living under the flight-path experienced extreme physical discomfort and in some cases, material damage to windows and other items on their properties. The flight path was designed so that the aircraft only went through the sound barrier over the ocean, where the "boom" created no practical difficulties.

It cruised at 2158km/hr (a little over 2x the speed of sound) and took less than 3 ½ hours to fly from London to New York.

In July 2000 an Air France Concorde crashed on taking off in Paris after a piece of scrap metal lying on the runway caused serious tyre and airframe damage. All 105 people on board and 4 people on the ground died. Although the enquiry cleared the Concorde of any faults, the gradually increasing maintenance and operational costs coupled with the need to upgrade the electrical control and monitoring circuitry, and a reduced demand for seats on the trans-Atlantic flights, rendered the service economically unsustainable and flights ceased.

(The breathtaking ability of these and all modern aircraft to fly, including the marvel of jet engines and modern airframes that make it possible, makes it easy to forget that these and all modern aircraft are entirely dependent on their electrical and electronic equipment to operate. Yet another example of the vital role played by electricity and electrical engineers in modern civilisation. ED)

(The other similar supersonic plane was the Soviet-built Tupolev Tu-144, which flew in the late 1970s mainly between Moscow and Almaly in Kazakhstan, Central Asia, but ceased operating after experiencing some fatal crashes.)

The transatlantic flight was the preferred option for the Concorde because of the objections to the sonic boom that occurs every time the plane moves from sub-sonic to supersonic speed. (The sound barrier is at approximately 1200km/hr at sea level).



### **More about Electric Cars**

start-up American company, Aptera Motors, based in San Diego, California, has developed a three-wheel, two person electric car that does not require any charging for normal usage.

The vehicle incorporates about 3 m<sup>2</sup> of solar panels in the body design and can travel some 70 km a day in "most regions". A back-up battery which can be charged as a conventional "plug in" is included in the design and extends the range up to 500km



for a one-hour charge.

The car is built from light-weight resin composite material and weighs 800kg with a 60kWh battery pack. It is 4,4m long overall and 2.2m wide and stands 1,4m high.

### **MORE NEWS ON TIDAL DEVELOPMENTS**

The next generation of under-sea turbines designed to generate electricity directly from tidal currents in the Shetland Island area is now operating. The site is off the north coast of Scotland in Bluemull Sound, Shetland Islands, and the turbine is a direct-drive 100kW machine that is expected to slash the cost of tidal energy by about 30%.



The Scottish tidal energy developer NOVA Innovation installed the first two 100kW (M100) turbines in Bluemull Sound, Shetland in 2016, creating the world's first offshore tidal array. A third turbine was added in 2017.



### **CONTACT DETAILS**

Max Clarke - Editor 134 Garden Village, Garden Rd., Bordeaux, Randburg, 2125, Tel: 011 285 0940 / Cell: 083 273 9519 E-mail mppc@mweb.co.za Jean Venter - AMEU General Secretary P O Box 868, Ferndale, 2160 Tel: 011 061 5000 E-mail: ameu@vdw.co.za

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