

INFRASTRUCTURE

NEWS

APR
2024

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SUSTAINABILITY

Edition



GAUTENG PROVINCE
INFRASTRUCTURE DEVELOPMENT
REPUBLIC OF SOUTH AFRICA



GGT2030
GROWING GAUTENG TOGETHER

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GPG Infrastructure

FUTURE FIT

- R329M SOLAR PROGRAMME HARNESSSES CLEAN ENERGY & REDUCES RELIANCE ON THE GRID



THIS PROGRAMME IS PHENOMENAL! IT IS A BIG THING, THAT A PROVINCIAL GOVERNMENT WITH LIMITED RESOURCES, IS ABLE TO INTERVENE, TO SAVE LIVES AND MAKE SURE THERE IS AN UNINTERRUPTED SUPPLY OF ENERGY. SO THAT THERE IS RELIABILITY. THAT THE CARE GIVERS WILL BE ABLE TO GIVE CARE TO OUR PEOPLE

Written by
Tlissetso Ngoedi & Zubenathi Ngqikiza

The Department of Infrastructure Development (DID) is pioneering and pacesetting the delivery of Premier, Panyaza Lesufi's, Gauteng Energy Response Plan through the implementation of the first of its kind, R329 million investment in the GPG Solar PV and Battery Energy Storage System (BESS) Programme. This just energy transition programme has already rolled out solar systems at 27 health facilities inclusive of 10 hospitals across Gauteng including; Thelle Mogoerane Regional, Jubilee, South Rand and Kopanong hospitals. Over 12 400 solar panels have been installed through this programme. Thirteen Small Medium and Micro Enterprises (SMMEs) were appointed, creating 237 direct job opportunities, 187 indirect jobs and 50 work opportunities for Expanded Public Works Programme (EPWP) participants.

This large scale roll out of Solar PV and Battery storage technology will provide a sustainable energy mix and drastically reduce the impact of loadshedding through the provision of alternative energy in Gauteng Provincial Government health facilities. Critically, this solution will mitigate against the disruption of critical health care services across Gauteng. Premier, Panyaza Lesufi said, "We are spearheading the GPG Solar PV & BESS Programme, Microgrid and Solar High Masts programmes. This will ensure that all our healthcare facilities remain open during loadshedding. Through this transformative initiative, we have installed Solar Photovoltaic (PV) and battery storage systems at 27 government healthcare facilities. Additionally, we are working to provide a stand-alone solution to meet basic power needs for low-income households within our townships, informal settlements and hostel communities. This is testament to our



unwavering dedication of shaping a resilient energy landscape for Gauteng".

The MEC for Human Settlements and Infrastructure Development, Lebogang Maile said, "The magnitude of this rollout is the equivalent of the installation of six micro-grids solutions installed in less than eight weeks. This programme has already installed a total solar PV generation capacity of 6.5 MW (megawatts) at 27 health care facilities across Gauteng in less than 8 weeks. Over a period of 15 days, we have generated enough energy to power 8 000 households. Similarly, our forecasted cost saving over the next year is R66 million, which is the equivalent of 12.8 GWh (gigawatt hours) energy generation from the programme. This will lessen the demand for electricity

on the grid by the equivalent of 11 000 average households annually. The systems installed at our health care facilities are complemented with a battery storage capacity of close to 16,00 MWh (megawatt hours)".

MEC Maile added, "It is a competency of national and local government to provide energy. However, because of the strategic nature of Gauteng Province, we could not sit on our hands. As the Gauteng Provincial Government, we had to do something! We are a government which believes in being proactive, a government that is caring, a solution oriented government, so wherever there are problems, we work to find solutions. We are happy that we are able to execute this programme within budget, time and quality. This programme is phenomenal! It is a big

thing, that a provincial government with limited resources, is able to intervene to save lives and make sure there is an uninterrupted supply of energy. So that there is reliability. That the care givers will be able to give care to our people".

According to Patrick Ntuli, Facility Manager of the 820 bed, Thelle Mogoerane Regional Hospital, where the GPG Solar PV & BESS Programme has been implemented, "This important programme is a great relief to us. We anticipate much needed cost-savings as we are set to reduce the cost of electricity and purchasing diesel for our generators. The energy bill of running this hospital is massive. Significantly, this solar solution stores energy through battery-based systems and will ensure

Continues on the next page

that we have sufficient energy for critical hospital functions such as our theatres to ensure that our patients lives are not at risk. Additionally, it guarantees that our laboratories and medical wards which require electricity for lighting, medical devices and refrigerators will be always operational. Thelle Mogoerane offers a 24-hour casualty, obstetric, gynaecological, ophthalmology, mortuary, radiography services and an otolaryngology clinic. The health facility caters for community members from surrounding areas which includes Vosloorus, Spruitview, Thokoza and Eden Park.

According to Jacqueline Ngidi, the Facility Manager at Lilian Ngoyi Community Health Center, "This programme has already made a huge difference. We have suffered a lot because of loadshedding, generator breakdowns and cable theft. During these disruptions patients were not attended to and we had to move them to another facility. However, since the DID has installed the solar system, we do not have a problem – we now have continuity of health care services. Previously, due to energy instability, I was having sleepless nights but now I sleep soundly. The Department of Infrastructure Development did a great job. We worked smoothly together. The DID team kept us informed throughout the installation. Some of our medicines are temperature sensitive and need to be refrigerated. During loadshedding we had a lot of wastage, now we have a reliable energy source and our medicines will not spoil. We were also burning a lot of diesel which had a huge cost, this cost is now drastically reduced. I am grateful that the DID has installed solar at our health care facilities so that our patients can receive the best care.

In addition, to the GPG Solar PV & BESS Programme, the DID is rolling out the Microgrids and Solar High Mast programmes on behalf of our Client, the Department of Human Settlements, to provide alternative energy solutions in informal settlements and hostels to



mitigate service delivery interruptions experienced during loadshedding and facilitate the just energy transition. According to MEC Maile, "The DID is implementing a range of alternative energy solutions for six hostels including George Goch, Jeppe, Denver, LTA, MBA and Murray and Roberts. These solutions focus on water heating, internal and external common area and food preparation area lighting. The DID and our Client have conducted social facilitation and environmental impact assessments. Twelve informal settlements located in five municipalities inclusive of Soul City, Siyahlala and Jabulani will benefit from microgrids and solar high masts implemented by the DID. Harnessing energy generated from the sun, microgrids and solar high masts systems captures, stores and distributes clean electricity to entire communities".



CHAMPIONS

OF BUILT ENVIRONMENT SUSTAINABILITY IN GAUTENG

Written by
Sthabile Cele

For over a decade, the Department of Infrastructure Development (DID) has been the sustainability trend setter in the public sector, transitioning the coal face of service delivery and leading sustainable green infrastructure through the delivery of environmentally responsive built environment solutions at health, education and social facilities in Gauteng.

According to the HoD for Infrastructure Development, Masabata Mutlaneng, "Increased population growth, mitigation and immigration make the

impetus to harness decarbonisation technologies such as this GPG Solar PV & BESS Programme more urgent. We must drastically reduce carbon emissions. We have witnessed the devastating socio-economic impact from power outages as a result of loadshedding. Crucially, the DID's approach to sustainable infrastructure is holistic, recognising the interconnectedness of various sectors such as air quality, climate change, economic development and water management. By investing in these cross-cutting areas, the DID sought to lay the foundation for a truly

sustainable economy, where green jobs and environmentally friendly practices are the norm".

By 2014, the DID had already delivered three solar powered schools in Gauteng including Soshanguve Primary, Northriding Secondary and Noordwyk Secondary School. These educational facilities incorporated a wide variety of environmental sustainable solutions including solar forests, roof insulation, laminated glazing, energy saving lighting, motion sensitive lighting, solar water heating, rainwater harvesting and the planting

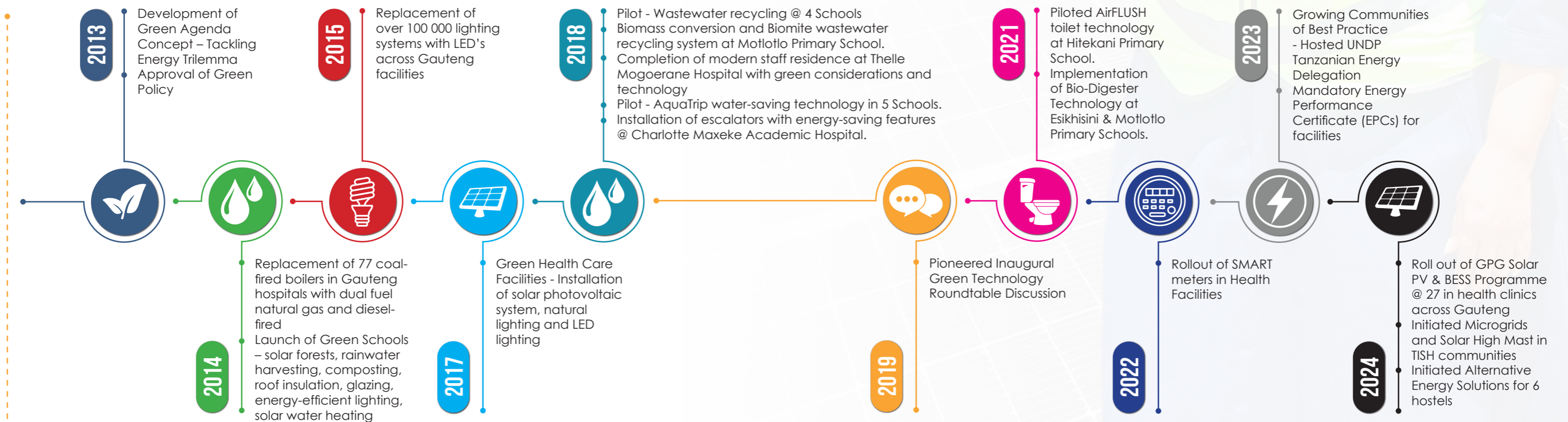
of indigenous trees and lawn. All schools were designed to maximise natural lighting. Sporting facilities and lawns were maintained using storm and recycled water.

The DID, has implemented several sustainable projects including rooftop solar PV installations, the green tower, waste separation at source, wastewater recycling, waste to energy, energy performance certification, lighting retrofitting, leak detection, the correction of billing, smart meters and Green Star Auditing projects.



HoD: Masabata Mutlaneng

DID SUSTAINABILITY TIMELINE



JUST ENERGY

TRANSITION IN ACTION

Written by
Tiisetso Ngoedi & Zubenathi Ngqikiza



THE DECISION TO UNDERTAKE THIS PROJECT FOR THE DID WAS DRIVEN BY OUR DESIRE TO WANT TO BRING SOLUTIONS TO THE LOADSHEDDING CHALLENGE. MBALISTO IS COMMITTED TO PROVIDE RELIABLE, SUSTAINABLE ENERGY AND COMPREHENSIVE SOLUTIONS IN A COST-EFFECTIVE AND INNOVATIVE MANNER

The Department of Infrastructure Development (DID) is committed to the just energy transition to strengthen economic growth, create jobs and promote environmentally sustainable energy. In accordance with this commitment the DID appointed 13 black owned and women-owned Small Medium and Micro Enterprises (SMMEs) to implement the GPG Solar PV & BESS Programme at 27 healthcare facilities in Gauteng in less than eight weeks. This important collaboration between the DID and SMMEs to install solar energy systems holds great potential for extending the value chain of SMMEs, driving socio-economic development, promoting environmental sustainability and fostering innovation in the renewable energy sector.

Infrastructure News interviewed three SMMEs involved in the roll out of this prolific programme, Mbalisto Energy Solutions, Blue Pointer Energy and Vengarex. These SMMEs ensured the installation was completed on time, within budget and delivered in accordance with the quality demanded.

Mbalisto Energy Solutions, is a woman owned SMME with 14 years of experience. Mbalisto implemented the GPG Solar PV & BESS Programme at Nokuthela Ngwenya, Kgabo, Themba and Empilisweni clinics. According to Electrical Engineer, Derrick Mothapo, the company installed 749 Solar panels across the four healthcare facilities, "We designed solar systems with battery storage for each facility to alleviate strain on the grid and potentially reduce the need for loadshedding. The design of each system was tailored to the specific size and capacity requirements of the health facilities energy needs. By incorporating battery storage, excess electricity generated by the solar systems can be stored and sold back to the grid, offering the potential for further reductions in energy costs. This approach not only benefits the individual facilities but also contributes to overall grid stability and energy resilience."

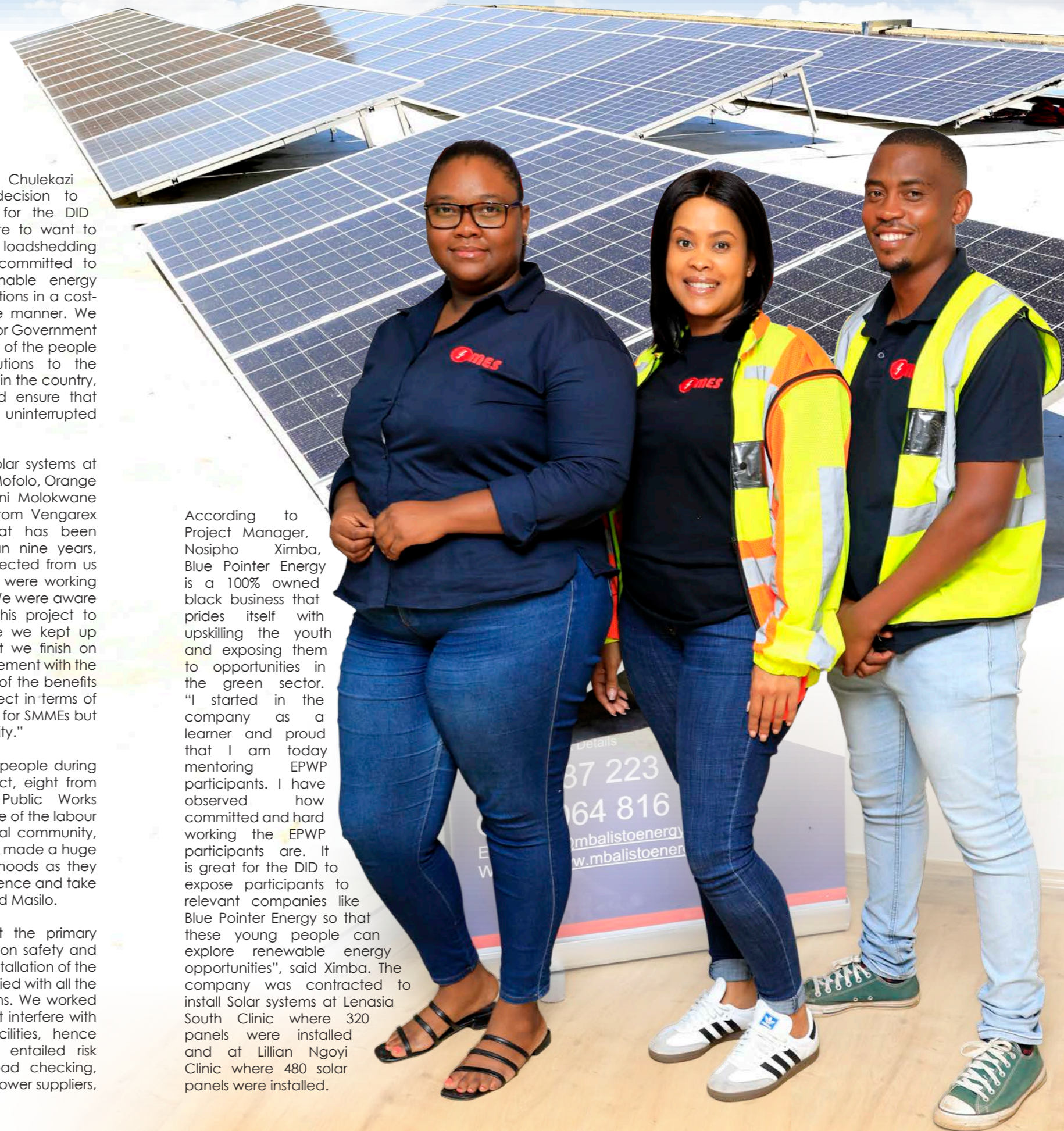
Project Manager, Chulekazi Ngambu said, "The decision to undertake this project for the DID was driven by our desire to want to bring solutions to the loadshedding challenge. Mbalisto is committed to provide reliable, sustainable energy and comprehensive solutions in a cost-effective and innovative manner. We chose to do this project for Government as we wanted to be part of the people who are bringing solutions to the loadshedding challenge in the country, to put patients first and ensure that they have access to uninterrupted healthcare services".

Vengarex installed six Solar systems at Diepkloof, Thembelihle, Mofolo, Orange Farm, Kliptown and Barni Molokwane clinics. Masilo Sebone from Vengarex said, "As a SMME that has been operating for more than nine years, we knew what was expected from us particularly because we were working at healthcare facilities. We were aware of the importance of this project to our communities, hence we kept up to speed to ensure that we finish on schedule as per our agreement with the DID. We are also aware of the benefits that come with the project in terms of job creation, not only on for SMMEs but for the broader community."

Vengarex employed 36 people during the course of this project, eight from the DID's Expanded Public Works Programme (EPWP). Some of the labour was sourced from the local community, "I believe this project has made a huge impact in people's livelihoods as they were able to gain experience and take care of their families," said Masilo.

Masilo emphasised that the primary focus for Vengarex was on safety and quality throughout the installation of the solar systems, "We complied with all the standards and regulations. We worked to ensure that we do not interfere with the systems of the facilities, hence our installation process entailed risk assessments such as load checking, connections with other power suppliers, routes and structures."

According to Project Manager, Nosipho Ximba, Blue Pointer Energy is a 100% owned black business that prides itself with upskilling the youth and exposing them to opportunities in the green sector. "I started in the company as a learner and proud that I am today mentoring EPWP participants. I have observed how committed and hard working the EPWP participants are. It is great for the DID to expose participants to relevant companies like Blue Pointer Energy so that these young people can explore renewable energy opportunities", said Ximba. The company was contracted to install Solar systems at Lenasia South Clinic where 320 panels were installed and at Lillian Ngoyi Clinic where 480 solar panels were installed.



EPWP

GOES GREEN - PIONEERING 4IR SKILLS ACQUISITION

Written by
Tiisetso Ngoedi, Hajira Ally & Nthabiseng Malatji

Through the implementation of the GPG Solar PV & BESS Programme the Department of Infrastructure Development (DID) provided work opportunities to 50 Expanded Public Works Programme (EPWP) participants which were trained in Basic Photovoltaic Rooftop Installation at an accredited training provider and worked alongside experienced technicians to gain practical on the job experience.

According to the Chief Director, EPWP, Rae Davids, "The Fourth Industrial Revolution (4IR) is characterised by a fusion of technologies that have blurred the lines between the physical traditional construction sector jobs, digital and biological spheres. The solar training and work exposure initiative speaks to these blurred lines and embraces the opportunities of new

jobs created through these technological advancements like solar installations in our health care facilities. The EPWP further pivots on the creation of work at local community level within all EPWP projects and promotes the creation and enhancement of assets within our communities. The programme promotes stewardship and pride in our communities. Introducing EPWP participants to these 4IR technologies has increased the scope and scale of their potential to acquire jobs within the Green Technologies industry. The DID through the work of the EPWP is committed to ensuring our EPWP projects are responsive to the evolving work environment, climate change and sustainability".

Infrastructure News, spoke to EPWP participants to learn about their experience on the GPG Solar PV & BESS Programme:



Florah Makhudu

I am grateful to have been part of this Programme. I have an N2 qualification in Electrical Engineering, through the BESS Programme, I am now informed on Basic Photovoltaic Rooftop Installation. Installing solar panels is highly beneficial to the community as it is cheaper and sustainable. I have been exposed to the practical side of installing solar panels and learned about basic electrical construction which includes wiring, wire ways and hand skills. We were trained in general safety, working on heights and rooftop installations. I have learned about teamwork, leadership and diligence. I would like to start my own business in solar installations one day.



Olwethu Macena

I enjoyed being part of this Programme. The experience has been eye opening. I have learned how to install a solar panel from scratch, how to wire the panels and gained experience of working within a team. I hold a certificate in Boiler Making, a Safety Officer Diploma and am now trained on Basic Photovoltaic Rooftop Installation. I would like to make a career out of solar panel installations. I know of the importance and benefits of renewable energy through this project. I am privileged to have been part of this first team of EPWP participants who have installed solar at Far East Rand Hospital.



Nompumelelo Goliath

I would like to thank the Department of Infrastructure Development for this opportunity. On my own, it would not have been easy to get the theoretic and practical knowledge of installing solar systems. The Contractor has been good and assisted us very well. I appreciate that the solar industry is inclusive and diverse. I am proud to have been able to make difference in my community and look forward to exploring other opportunities within the solar industry.



Lusekho Khandiyeza

I am grateful for this opportunity. I believe there is still a lot of opportunities for us as young people to take advantage of within the green industry. I assisted with mounting, which requires precise measurements from point A to point B. I have also learned how to string in the wires. I can now use a multi-meter and identify positive and negative currents. I am proud to have been able to contribute to my community through this solar installation project.



Boyce Xola

I look forward to opening my own business in the solar energy sector and consider offering services in solar panel installation and maintenance. It is important for young people to promote renewable energy because we see how bad the situation is with loadshedding. I appreciate this industry because it also creates jobs and allows us to develop innovative solutions that can benefit our communities. This has been a great experience!



Ntshuxeko Shirindzi

I took the opportunity to be part of this Programme because this is an industry I am passionate about. I was placed under Electrical in the EPWP programme at Dr Yusuf Dadoo Hospital. I thank the DID for exposing us to opportunities within the Solar industry. I have an N4 certificate in Electrical Engineering and would like to one day obtain my Diploma.

HEALTH MANAGERS GREEN LIGHT

SOLAR PROGRAMME

Written by
Zubenathi Ngqikiza

As part of Gauteng's Energy Response Plan, the Department of Infrastructure Development (DID) has rolled out solar panels and batteries in 27 health facilities to ensure uninterrupted healthcare services. Infrastructure News spoke to Managers from these facilities:



Nokuthula Mokoena
Operations Manager: Diepkloof Clinic

There has been a huge difference since the installation of the solar panels in this clinic. We were really struggling with delivering services during power cuts. We could not access important documents such as the results of the patients.

The spoilage of medication was a bigger problem because it took longer for the generator diesel to be delivered. Everything is now running smoothly.



Nomthandazo Mthembu
Facility Manager: Lenasia Clinic

Firstly, this is a fixed clinic that also provides primary healthcare services including MOU. These are sensitive services that involve the lives both old women and the newly born babies, so they require permanent running of machines without interruption.

Our backup generator is old and requires daily fixing. Diesel costs and delivery delay was another problem. It's only been three weeks since the installation of the solar panels, but I can tell, there is a huge difference. We are happy to run uninterrupted services in this clinic.



Nomaswazi Magalema
Operations Manager: Thembelihle Clinic

Our frustrations have been taken away. We have not experienced the challenges we encountered before the solar panel installations - we were experiencing a lot of difficulties during the load shedding, because our generators sometimes do not kick in. We have medication that needs to be refrigerated, so it usually gets spoilt in times of load shedding.

This solar solution has made our lives easier and will play a major role in reducing wasteful expenditure.



Nomakhosazana Kekane
Facilities Manager: Kliptown Clinic

I'm really excited about the installation of the solar panels. They are working just fine, we no longer complain about the power cuts because we now have an incredible power supply that works perfectly. This is a high crime area, so we couldn't be comfortable at times of the power cuts. This clinic serves a lot of communities including Eldorado Park, Pimville and Freedom Park so you can imagine the frustration that comes with the power cuts. We are the only clinic that provides dental services around this community, so there are a lot of people that come from surrounding communities looking for this type of service, it becomes such a huge problem when we can't give people these services because of loadshedding.



Q & A

WITH SOLAR GURU – MLU

Written by
Ramona Baijnath

Infrastructure News, interviewed Chief Engineer, Mluleki Hlatshwayo who was the Department of Infrastructure Development's (DID) boots on the ground managing the rapid roll out of the Gauteng Provincial Government's Solar PV & BESS Programme.

IN: Talk us through some of the benefits of this programme.

MH: The motivation for prioritising healthcare facilities is to effectively mitigate the consequences of electricity supply interruptions on human life. The unavailability of lighting, heating, cooling, sanitation and communication systems can curtail the ability of the health facility to provide life-saving care. Additionally, this programme is set to realise a significant reduction of electricity utility bills and enable cost savings -Solar Power is primarily generated from renewable energy.

In addition, the solar installations at health care facilities contributes to environmental sustainability and conservation. By harnessing renewable energy sources like solar power, we can reduce the carbon footprint of the Gauteng Provincial Government and reduce the precarious demand for electricity drawn from the grid.



IN: The DID rolled out this programme at 27 health facilities across Gauteng. Give us a snapshot of the energy utility demand and the anticipated cost savings.

MH: Two examples best illustrate the utility demand; the installations at Thelle Mogoerane Regional and Sebokeng hospitals will result in the combined estimated energy cost saving of R11,7 million annually. The solar system at Thelle Mogoerane Regional Hospital will harness 1,3 MW peak Solar PV supplemented by a 3.6MWh battery storage capacity. This installation is capable of carrying the peak energy demand of this hospital. This includes ensuring there is no outage or service delivery interruptions during loadshedding and will ensure electrical supply during unplanned outages. Sebokeng Hospital is another example that clearly demonstrates value for money. A 812 kW peak installation PV with 2.4MWh battery storage system has been rolled out at this hospital. This will provide a staggering 57% of the hospitals electricity demand annually. The two facilities alone are enough to supply 3500 households in the township.

IN: How will these solar systems be maintained to optimise continuity and maximise generation and storage capabilities?

MH: All the major components of these solar systems are under warrantee to ensure they have longevity. Our inverters and Lithium-Ion batteries have a 10 year warranty. Additionally, the solar PVs are Tier-1 panels with a minimum of 25 year warrantee. The DID has built in contract conditionalities which include the operations and maintenance of the system for a period of 36 months. This maintenance regime will ensure that the system is well maintained and operates at the highest efficiency. After 36 months, the DID maintenance arm will fully takeover the maintenance of these systems.



ALL THE MAJOR COMPONENTS OF THESE SOLAR SYSTEMS ARE UNDER WARRANTEE TO ENSURE THEY HAVE LONGEVITY. OUR INVERTERS AND LITHIUM-ION BATTERIES HAVE A 10 YEAR WARRANTY. ADDITIONALLY, THE SOLAR PVS ARE TIER-1 PANELS WITH A MINIMUM OF 25 YEAR WARRANTEE.

IN: What measures has the DID put in place to ensure safety and security?

MH: Safety and security is of paramount importance to the DID. All project sites have been equipped with fire protection systems which included fire detection system with a sounder and a fire suppression system, which uses gas to extinguish, control and prevent the spreading of fire and it is activated upon detection of heat, smoke or combination of both. The DID has also installed High Definition CCTV cameras overlooking the panels on the roof, cameras in and around the inverter and battery room to safeguard against theft and vandalism.

IN: A critical aspect of sustainability often overlooked is end of life decommissioning and disposal. What is the DID's plan for disposal?

MH: Waste management and recycling of lithium batteries and aluminum and or copper cabling used in solar energy systems are crucial aspects of ensuring environmental sustainability and resource efficiency in the renewable energy sector. The effective management of these materials involves proper handling, recycling, and disposal methods to minimise environmental impact and maximise resource recovery. Recycling aluminum and copper cabling reduces the demand for virgin aluminum and copper ore extraction, conserves energy, and reduces greenhouse gas emissions associated with aluminum and copper production. To effectively manage waste from lithium batteries and aluminum and copper cabling used in solar energy systems, the DID will implement comprehensive recycling programs, including collection, transportation, and processing. Additionally, public awareness campaigns will also be done to encourage responsible disposal and recycling practices. This will mirror work already done at hospitals regarding the removal of hazardous materials.

PUSHING FRONTIERS & GREENING GAUTENG

— MEET THE TEAM



Written by
Tisetso Ngoedi & Sthabile Cele

The Department of Infrastructure Development's (DID) team of professionals delivered the design, supply, installation and commissioning of the GPG Solar PV & BESS Programme at the 27 health facilities in Gauteng. This stellar team led by the Chief Director for Infrastructure, Research and Planning Systems (IRPS), Luxolo Lengs includes Chief Engineer, Mluleki Hlatwayo and two Electrical Engineers, Rodgers Mabasa and Vhutshilo Mathevula. The team was bolstered by Environmental Control Officers, Ngcebo Msimbini, Livhulani Muluvhu and Thozama Ntsale. Victor Nchabeleng, Ravanne Issacs and Hope Monnakgotla provided critical administrative support.

Vhutshilo Mathevula, Electrical Engineer

I worked on ten healthcare facilities including Thembelihle, Diepkloof, Kliptown, Lilian Ngoyi, Kgabo, Soshanguve and Ga-Rankuwa clinics. This experience was humbling for me as a professional especially because we were working within a tight timeframe. There were several challenges in the health institutions that I managed especially the hospitals, getting larger

size inverters from Suppliers was one of the challenges because they did not have them readily available. This specialised equipment had to be an exported in accordance with special manufactured orders in alignment with our specifications. We ensured that we were able to source this on time and within the allocated budget.

Rodgers Mabasa, Electrical Engineer

Thelle Mogoerane Regional Hospital has three 12 meter containers housing the inverters and batteries. The hospital has 6 x 250 kW inverters and 3.2 MWh of battery storage.

The installed equipment can take the hospital off-grid during a sunny day. The main challenge during the installation was that this facility is a four-story building with a roof that is not flat, so the installers had to work carefully to lift panels. It was a mission, lifting those panels with 50 employees involved in the installation. It took the team under two weeks to install the panels. They were able to install over 200 panels a day.

Ngcebo Msimbini, Environmental Control Officer

We are thrilled that this programme is delivered and that the support team was able to assist behind the scenes. Our role was to ensure that we introduce the Contractors on site at the different health facilities.

We took them through the legislation, project plan as well as Safety and Compliance. We are happy about the move the DID has taken towards alternative energy especially at sensitive facilities like health institutions. Solar energy offers a clean, renewable, and sustainable alternative, helping to protect the environment and promote a greener future.



THELLE MOGOERANE REGIONAL HOSPITAL HAS THREE 12 METER CONTAINERS HOUSING THE INVERTERS AND BATTERIES. THE HOSPITAL HAS 6 X 250 KW INVERTERS AND 3.2 MWH OF BATTERY STORAGE. THE INSTALLED EQUIPMENT CAN TAKE THE HOSPITAL OFF-GRID DURING A SUNNY DAY.



DID DELIVERS

THE SUSTAINABLE EDGE

Written by
Written by Zubenathi Ngqikiza, Nthabiseng Malatji & Hajira Ally

The United Nations, Sustainable Development Goals (SDGs), is a universal call to action aimed at addressing various global challenges by 2030. These 17 Goals are all interconnected and serve as a blueprint to achieve a better and more sustainable future for all. As the world population continues to grow, so too does the impetus for sustainability. The Department of Infrastructure Development (DID) has been pioneering sustainable infrastructure for over a decade. Infrastructure News looks at some of these important developments.

Biodigester

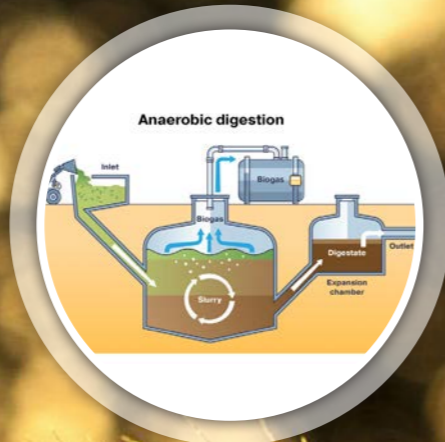
Biodigester technology repurposes organic waste by using this waste to produce methane gas for cooking to reduce the cost of procuring LPG gas. The DID has successfully implemented biodigester technology in education facilities such as Esikhisini and Motlotlo Primary School. This project continues to serve over 500 learners in each of these schools. Gas Conversion and Supply project entails the installation of a gas infrastructure and the conversion of coal fired boilers to dual fired gas boilers. A total of 23 out of 27 Health facilities have been completed. The natural gas has less than half the CO2 emissions of Coal.

Aqua Trip Technology

This technology recycles wastewater through a biomite process and uses it to flush the toilet. Aqua Trip reduces water consumption by more than 48%. This water conservation system has been installed in several Gauteng education facilities inclusive of Kamogehelo Primary, Olivenhoutbosch High, Madiba Comprehensive Secondary, Kgomoitso Primary and Emmanuel Primary schools.

AirFLUSH Toilets

This is a toilet technology system that uses a high-pressure valve located in the center of the vessels that holds air and water inside until the user flushes the toilet. The AirFLUSH system has significant environmental benefits including saving water. The DID has piloted the AirFLUSH toilets at Hitekani Primary School in Soweto. This system reduces the high-water demand in the schools. According to Control Environment Officer, Livhuwani Muluvhu, "AirFLUSH decreases municipal water bills by more than 60% monthly."



Waste-Water Recycling

This technology recycles the wastewater and uses it to flush the toilet through biomite process. The technology provides adequate sanitation to the school while reducing budgetary expenditure for water and sewerage. This system was installed at Motlotlo Primary School in Sebokeng. Due to the success of the technology, it was adopted and installed at two health facilities being Kekana Gardens and Dewargens.

Roof insulation

Roof insulation is the roof material used to reduce heat loss or heat gain by providing a barrier between the inside and outside temperature of a building. A single layer of 'Alucushion' is placed directly under the roof sheeting and a 100mm layer of insulation laid on top of the battens supporting the ceiling. Roof insulation can help keep the heat or cold in when need. The DID has installed roof insulation in all our projects.

Glazing

The usage of high-performance glazing, helps reduce energy consumption. Low quality glass would increase energy consumption for air conditioning unnecessarily, while a darker glass would increase artificial lighting load. The design of glazed areas in the building has great impact on energy consumption – daylight saving and maintenance costs. The DID, in line with our design prototype for sustainable infrastructure has implemented this energy saving initiative in various health and education facilities across Gauteng.

Motion Sensitive LED Fitting

Light Emitting Diode (LED) is a light bulb that produces up to 90% light more efficiently than other bulbs. LEDs do not burn out, but rather experience light depreciation of about 30% overtime. They have the longest lifespan than other light sources. The DID has replaced more than 200 000 fluorescent tubes with LED lights at health institutions and continues to install motion sensitive lightings in all new projects. These motion sensitive lights automatically switch off when the room is not occupied and only turn on when people enter the space, saving more energy. Some of the new projects that use this type of lighting include Boipatong Community Library, Abram Hlopho Primary School in Katlehong, Setlabetjha Primary School, Forchville Secondary School and Noordgesig Primary School.

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