

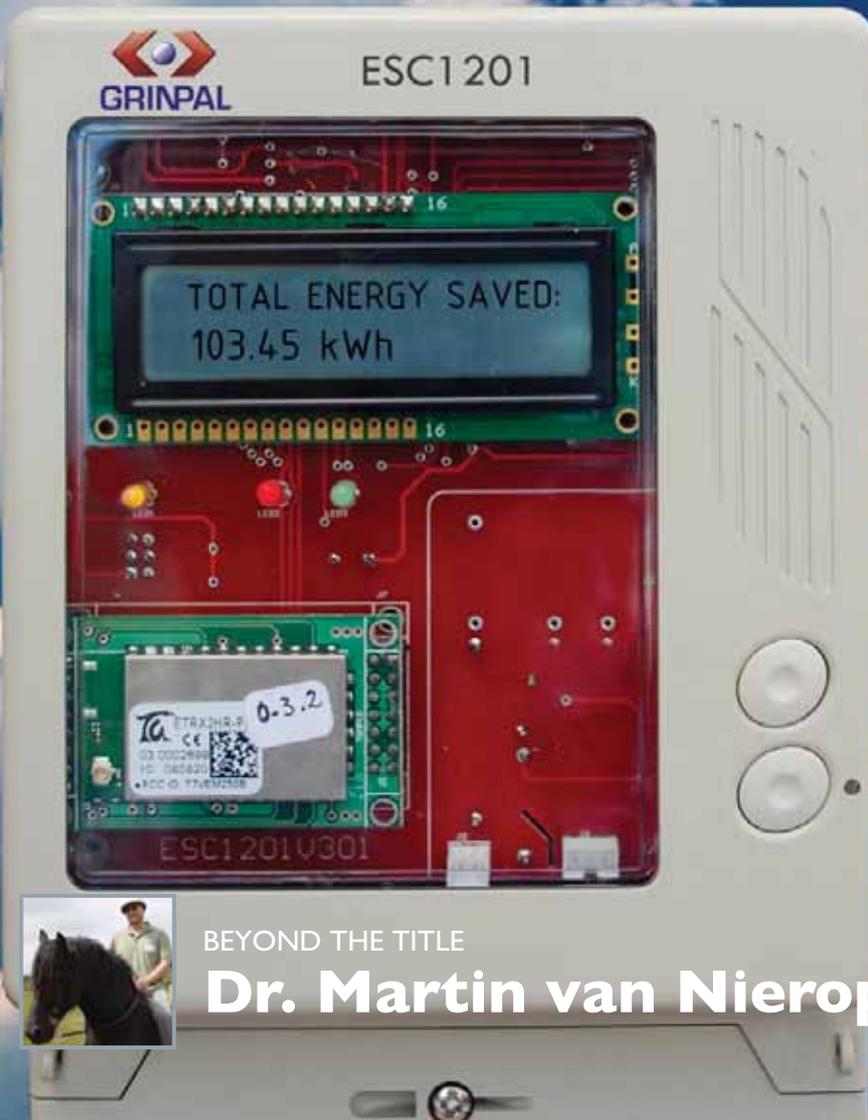


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HERALD

Vision 49

A VISION OF THE FUTURE



Source Emissions Monitoring Technology

A POSITIVE IMPACT
ON AIR QUALITY

BEYOND THE TITLE

Dr. Martin van Nierop



PALACE GROUP

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EDITORIAL

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executive chair

I am writing this piece with news of the recent disasters across the world, from an earthquake in Japan to the on-going political conflict in Libya, flashing on my television screen on almost every news channel. It is quite astonishing that it is only the fourth month of the year 2011 and in a space of a month, we have witnessed a tsunami, several political uprisings and yes, we ask ourselves, what is yet to come?

The Nuclear Energy Debate

The discussion around nuclear energy has been widely covered over the past few weeks since the March 11 Japan earthquake and tsunami that affected Japan's Fukushima Daiichi nuclear plant. News from the web have been focusing on the debate of whether nuclear is safe as a source of energy. One report says that the disaster in Japan's plant has had a radical effect on reactor development plans around the world. Yet, a study by the International Energy Agency (IEA) indicates that nuclear energy is the least deadly of all the energy sources. Whilst the area received an earthquake of historic magnitude, followed by a tidal wave of horrendous force, with entire villages completely destroyed, the reports says that the Daiichi reactors have not melted down and spewed large quantities of dangerous radioactivity.

It will be a while before the situation in Japan returns to normal. Some estimate it will take no less than five years and hundreds of billions of dollars before the situation is restored to some degree of normality. The lives of the people affected by the disaster have forever been changed.

The South African Situation

Records show that Koeberg nuclear power station is the only nuclear power station in South Africa and the entire African continent. It is located 30 km north of Cape Town, near Melkbosstrand on the west coast of South Africa. Koeberg is owned and operated by Eskom. The two reactors at the station form the cornerstone of the South African nuclear program. The South African government has decided not to put a stop to its nuclear expansion plan as part of the 20 year energy plan.

This decision has been met with mixed reactions. Some experts in nuclear energy and environmental activists are condemning this stance and another group of experts is adopting a rather cautious attitude as opposed to totally opposing the move by government.

As providers of services in the technology, engineering and energy management field, we as Palace Group, are adopting a wait and see attitude because our belief is that grand standing or participating in public debate is not always beneficial to anyone. Strategic dialogue with decision makers in government agencies and departments is important for our contributing any probable opinion on the nuclear energy subject.

Hope

We wish the people of Japan well in the recovery process and hold thumbs that the radiation at the plant will be contained soon. It is Theodore Roosevelt who once said *"Believe you can and you are halfway there."*

Until next time



Mbusa Dlamini

Executive Chairman

Gondwana Environmental Solutions at the cutting edge of Source Emissions Monitoring



By Bradley Keiser

Air quality is a growing concern in South Africa, with increasingly more emphasis being placed on clean air and environmentally friendly methods of business. With the declaration of the first two priority areas regarding air quality, these concerns have increased with a focus towards the sources of emissions.

As part of this focus, the Department of Environmental Affairs (DEA) released new legislation for Listed Activities and Associated Emissions

Standards (31 March 2010) as part of Section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004). This legislation divides industries into categories, by type of industry, fuel and methods used to produce the final product, as well as indicating what monitoring should be conducted for each category and what emissions are permissible in each category.

As part of this legislation, industries are required to apply for emission licenses. License applications are submitted to the DEA which includes important information such as the type of industry, fuels and methods used, final products and emissions information. Based on these applications, the DEA will provide the industry with an emissions license.

This license will detail standards that the industry is required to meet, such as, the regularity of stack monitoring campaigns, pollutants to be measured and the emission rates of certain pollutants. This information will be re-submitted to the DEA on a continual basis so that the DEA can ensure the standards stipulated in the emission license are being met.





Gondwana is in the fortunate position to own a TUV and EPA approved monitor for stack monitoring, which is unique in the field of stack monitoring. This monitor is the Horiba PG250 portable gas analyzer. This analyzer is capable of measuring carbon dioxide (CO₂), carbon monoxide (CO), sulphur dioxide (SO₂), oxides of nitrogen (NO_x) and oxygen (O₂) using methodologies commonly found in the tried and tested ambient continuous monitors, while the CO₂ concentration is measured and not calculated as with other equipment.



The PG250 provides the user with an interface which indicates actual, live conditions within the stack, i.e. gaseous concentrations, so the industry is able to make informed adjustments to their systems to improve their processes, and so reduce their emissions and their impact on the environment.



Left Page: Emissions sources
 Above: Stack monitoring equipment
 Top Right: The PG250 stack monitoring system
 Bottom Right: Live data views

Through the new legislation regarding emission standards and licensing, industries are required to conduct independent monitoring of all their stacks listed on the emissions license. Gondwana Environmental Solutions (Pty) Ltd has been providing stack monitoring solutions for the past four years, working with numerous, large industries. Gondwana has the capabilities of monitoring for various gases and volatile organic compounds (VOC's), as well as particulate monitoring using isokinetic sampling.

Gondwana is a company that strives to make a positive impact on air quality and the environment by using state of the art equipment to assist industries in reducing their emissions. Air quality is a major concern in South Africa, the only way to improve air quality is to understand the sources of emissions. The emissions licenses provide industry with rules pertaining to their processes, while Gondwana assists industries to understand their levels of emissions and so improve these emissions and thereby the quality of air in South Africa.



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Vegetation MANAGEMENT

a grassroots approach to continuous power supply

By Max Chauke

Introduction

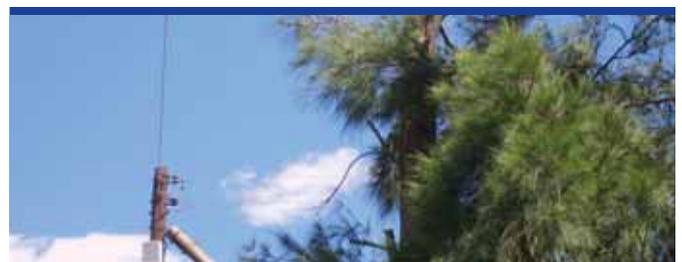
Vegetation management in power lines refers to the management and control of trees so as to provide clearance or right of way for power lines. This is done by the use of mechanical, chemical (herbicide) and other techniques to ensure the safe and reliable operation of transmission lines.

Trees improve the environment and add beauty to our communities, however when taller trees are allowed to grow close to power lines, they can cause outages and create potential safety hazards. Tree pruning is a necessary part of a maintenance program. It helps keep the lights on during stormy weather and helps to ensure reliable electric service. Done properly, it can even protect the health and strength of trees.

Project background and key services

Palace Technologies, a subsidiary of Palace Group, has been appointed by Eskom Southern Region in East London to provide supervision and project management on the vegetation management projects. The appointment covers transmission networks (>66 kV) as well as MV (11kV and above) and LV (less than 1000V) distribution networks in the Port Elizabeth, Mthata, East London and Queenstown areas.

Above: Workers removing specified trees around power lines
Below: Example of tree interference with power lines
Opp Top Left: Remaining tree stump after clearance
Opp Bottom Left: Image of power line with no interference
Opp Top Right: Clearing of dangerous vegetation



Palace Technologies' role in the project is to provide project management services. It also has a responsibility to ensure that the work is performed in a safe manner and that it is of high quality. The client also relies on Palace to liaise with land owners on their behalf, should the need arise. The unique aspect of this project is that one needs to balance the protection of the environment and the reliability of the power line. Cutting trees may be regarded as a violation against the environment whereas if left to grow they may cause a power line to collapse posing danger to animals and humankind alike. The consequences of poor vegetation management are outages that may result in a blackout (total failure of



the power system) which may result in huge losses for Eskom, the businesses community and for the country as a whole.

Execution of Project

The Client, Eskom, identifies the lines where vegetation management should be performed. Palace Technologies then allocates these lines equally (or depending on capacity) to the contractors. An outage is requested from Eskom, then the contractor goes to the allocated line and clear any bushes/trees that grow towards and closer to the power line. Once the whole line is completed, the contractor informs Palace Technologies and a Clerk of Works (CoW) is sent to conduct an assessment of the line. The CoW checks whether the clearing is done according to specifications, whether the right type of chemical is used where necessary to destroy the plants. If the inspection is successful, then the works will be approved and Palace will approve the contractor's invoice and a new line will be allocated.

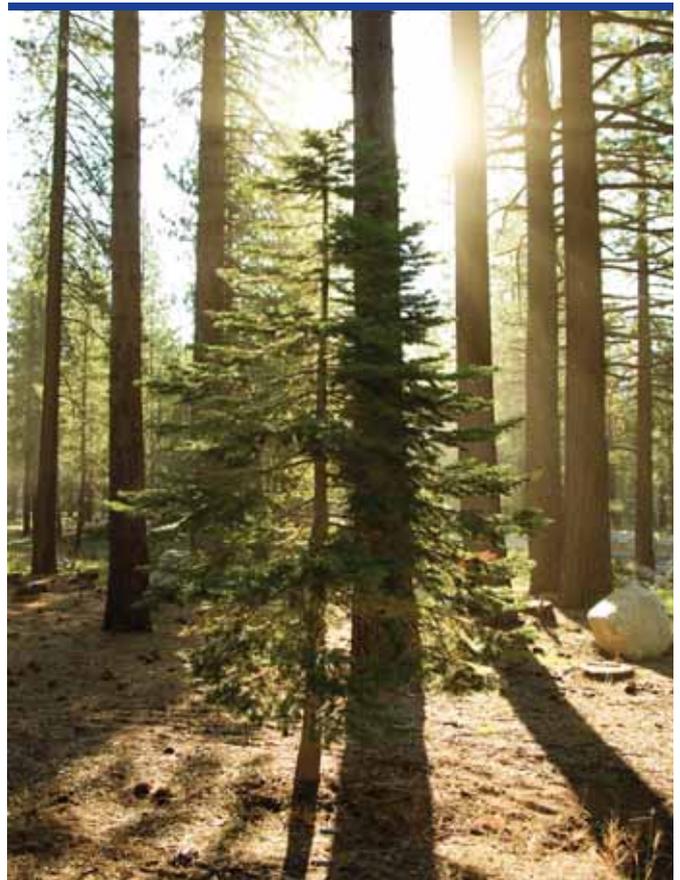
Challenges encountered

a) **Inaccessible Areas (Deep Valleys, Land Owners, Mountains)**
The biggest challenge is being unable to access some part of the powerline which may be in deep valleys or very thick bushes. Eastern Cape is very mountainous and as thus it sometimes becomes difficult to climb the mountains to follow the power line. Helicopters need to be arranged for our staff to go into these areas. Hence it's crucial to plan properly and make allowances for such circumstances in the budget. Another restriction encountered is the lack of cooperation from land

owners, when workers have to obtain access to owner's premises or have to cut down trees belonging to owners.

b) Safety

Safety is the number one priority and as project managers, it is important to ensure that the contractors comply with the necessary safety regulations especially when faced with such treacherous topography and in working with certain chemicals.



Food for Thought Individuals can also play an important role in vegetation management. If you are planning to plant or replace a tree in or outside your yard, it is important to consider the mature height and shape of the tree especially if the tree will be close to a power line. By planting trees that won't grow into power lines, you will make your property safer and more attractive while helping to prevent power outages.

solar water heating

a vision of the future



By Hennie Heyl

You might be thinking to yourself “not another article on solar water heating!” Or even “What else is there to be said on the subject?” And you would be right. The subject has been written about to such great lengths that everyone may have had their fill of it. That being the case, it is still necessary to backtrack to the beginning and provide an overview of solar water heating for anyone that may disagree with the sentiments above.

Solar water heating basically refers to the process whereby water is being heated up by the energy from the sun. Contrary to popular belief, the sun’s rays are not converted to electricity and then used to heat up a geyser which is in fact one of the most inefficient and wasteful uses of electricity. Solar water heating harnesses the free energy from the sun and converts it to hot water, thereby achieving huge amounts of electricity savings. These savings can in turn reduce the water heating load on the already stressed national electricity grid, reduce greenhouse gas emissions and achieve all other benefits associated with solar water heating.

In South Africa, water heating accounts for a third to half of the energy consumption in the average household. Reducing this expenditure through solar water heating could also lead to significant improvements in the disposable incomes of the lower-income sector.



Above: SWH energy measurement device (ESC 1201)

Left: Grinnal technician conducting the first installation in Winterveldt, Pretoria.

Right: Satisfied customer at his home in Winterveldt, after completion of the installation.

Grinpal’s Vision 49 Solar Energy Measurement system

Grinpal Energy Management Pty (Ltd), a subsidiary of Palace Group, has developed a system that will measure and report the amount of energy harvested from the sun, and used to heat the water in your solar water heater. This system will bring much required assistance to the already existing rebate process introduced by Eskom.

Eskom introduced a rebate program as a tool to facilitate and speed up the much needed roll-out of the solar water heaters in South Africa. The model used by Eskom is however, costly and cumbersome for the ordinary South African, with return on investment only achievable after five to ten years. Furthermore, the rebate program makes use of rebate values that are based on statistics such as hot water consumption of the average household and the amount of electricity used as a percentage of the total household consumption. Although this method of measurement has been thoroughly researched and widely used, it cannot be as accurate as using actual real-time data.

Unique features of the Vision 49

As opposed to using statistics, the Grinpal Vision 49 system uses real-time data which presents an accurate reflection of the amount of deferred energy savings achieved by the system. It also measures hot water consumption and electrical energy used by the geyser element, and allows for remote access to this information. The Vision 49 system will revolutionize the industry, as now the owner’s savings directly relates to his own consumption patterns, and therefore is not linked to a statistical calculation anymore.

By having measured energy savings, the owner will qualify for a soon to be introduced Renewable Energy Feed-In Tariff. This will in turn improve the off-take of solar water heaters. By having an initial investment and a future revenue stream, projects of significant sizes can be financed and implemented at a zero cost to the home-owner.

With the right financial model, the investor will obtain a return on investment, the home-owner a fully installed, guaranteed and maintained solar water heater system for free. Eskom will achieve a reduction in load and deferred costs of not having to build more coal-hungry power stations, South Africa’s air will be cleaner, and the pressure on the country’s electricity grid will be reduced. A win-win situation for everybody involved.

Another positive spin-off will be the creation of jobs that will be achieved as well as an economic boost through increased local manufacturing.

This is the introduction of innovation and cutting edge technology, a vision of the future... The Vision49 by Grinpal.

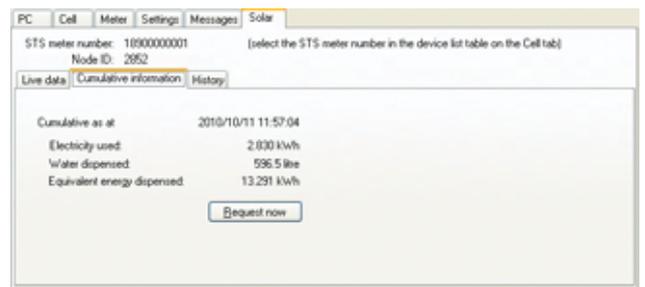
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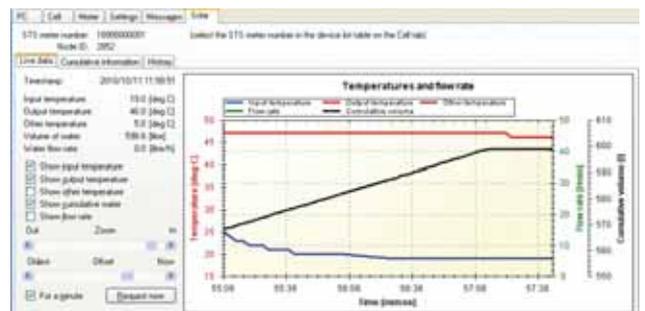
Pilot project in Winterveld

Grinpal is also working with the Department of Energy in the installation of solar water heaters in Winterveld, Pretoria. Winterveld is an informal urban settlement and smallholding area of approximately 9 500 hectares. It is situated approximately 40 km north west of Pretoria, adjacent to Mabopane. The project was established on the backdrop of the official launch by the President of South Africa in April 2010. The project is part of the government’s target of installing at least one million solar water heaters by 2014.

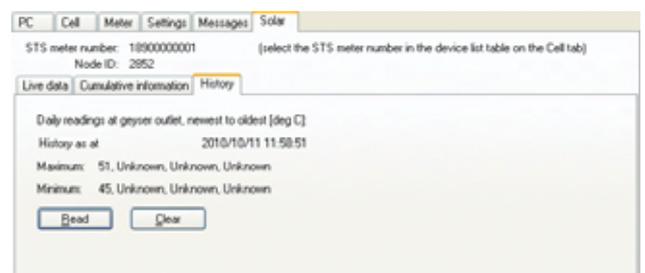
The pilot started with the installation of the Vision49 solar water heater at the residence of Mr. George Maziya of Winterveld Ext 3. Installation of the system was completed in only one day and tests were conducted to ensure proper circulation of hot water from the panel to the geyser and also for the hot water pressure from the tap. Further communication was maintained with the owner who was enthusiastic about the installation and the product.



System software image indicating the totals of energy dispensed and consumed as well as water dispensed



A graphic depiction of the amount of water and water temperatures as it is being used



System software image indicating the max/min water output temperatures for the day

Palace Group in the community

Grinpal Funded Bakery Community Enterprise



Project History

In September 2009, Palace Group held a corporate fundraising golf day event with the aim of raising funds towards an income-generating project to benefit guardians and parents of the Alexandra Child Care and Support Centre (ACCSC). This event raised forty thousand (40,000.00) rands. In addition, the Chairman of the Group, had pledged an amount equivalent

to what was raised at the event. This brought the total amount raised to eighty thousand (80,000.00) rands. However, during the course of the year in 2009, it was soon clear that there was a need to conduct in-depth research on the exact business for the purpose, considering the demographics within Alexandra and the intended participants (parents and guardians of the children at the centre).

Grinpal had spent more than eighty thousand (80,000) rands for the stakeholder engagement process. In getting the project off the ground, more than an additional amount of one hundred thousand (100,000) rands was required for the equipment, accessories and training of the participants. Grinpal is committed to making this enterprise work more so because the company has a long established rapport within the Alexandra community, with its revolutionary smart metering technology firmly rooted in this community as part of the Alexandra Renewal Project. To this end, Grinpal has made available not just the financial resources but also, human resources at no cost to the centre, to guide the enterprise management especially within the first twelve months of business.

About the bakery

Location Alexandra

Participants Parents and Guardians

Management Alexandra Child Care and Support Centre (ACCSC a registered NPO)

Beneficiaries Orphans and Vulnerable Children (under the ACCSC)

"We are grateful to Palace Group for this wonderful opportunity they have presented to us...We plan to make this project a success, not only do we want to have a successful business we would also like to leave a legacy behind. This project will not only benefit the centre and its guardians, the benefits will be extended to our immediate families and the Alexandra community at large," Arnos Nemaitoni, Chairman of the Parents and Guardians Committee

"The bakery is a very good initiative which will sustain the centre financially. A lot of the children's basic needs such as food will be met. It will also encourage other guardians to participate in the centre. All of these things will be major achievements for us, and we are very grateful," says Mr. Gabriel Ngwenya, Chairman of the ACCSC Board



Opp: Preschool learners of the ACCSC
Right: (In order from top to bottom)
Combined ACCSC and Parents-Guardian Committee members
Preschool children supported by the ACCSC
Learners of Realogile supported by the ASSCS
Below: Beneficiaries of the ACCSC at meal time



New Regional Hospital

nearing completion in Vosloorus



Project Background

In April 2006, the Gauteng Department of Health commenced work on the first phase of construction of a 760-bed new Natalspruit Hospital. The R1,25 billion hospital located in Vosloorus in the East Rand is intended to replace the existing Natalspruit Hospital as it poses a great risk to staff and patients owing to the dolomitic soil conditions on which the current hospital is built. Dolomite is unstable and is prone to the development of sinkholes.

Furthermore, the existing hospital which is still operational is old and dilapidated having outlived its design lifespan of over 20 years.

The new Natalspruit hospital is being built on a 4,5-ha site, in Vosloorus Extension 14, where a sports field has had to be relocated in order to accommodate this structure. It will provide comprehensive primary healthcare services, seven days a week, to the communities in and around Vosloorus, Natalspruit and Katlehong.

The new hospital will continue to operate as a level 2 (regional) referral centre for level 1 (district) hospitals and clinics in the area. At present, the current Natalspruit hospital receives patient referrals from Germiston and Heidelberg level 1 hospitals.



Scope of the project

Palace Engineering Services Pty (Ltd), now trading as Palace Technologies, together with Aurecon (Africon), was appointed to render mechanical and associated electrical engineering services as well as Project Management services in November 2006.

The scope of work included:

The supply, installation and commissioning of

- medical gas
- industrial kitchen equipment
- kitchen cold and freezer rooms
- autoclaves and
- industrial laundry equipment

The scope of work also included the construction of a 120-body mortuary facility.

Progress to date

There has been good progress on the project with all aspects nearing completion. With the expected date of delivery set for the end of 2013, progress on the supply, installation and commissioning of the medical gas is currently at 70% completion whereas the cold and freezer rooms are at 50% completion. Construction of the mortuary is now at 65% completion. The team is confident that the project will be completed within the allocated timeframe as well as budget.

Social Benefit

Overall, the project was able to create two thousand, three hundred and forty one (2341) jobs for men, women and youth.



beyond the title

Dr. Martin van Nierop

Managing Director: Gondwana Environmental Solutions (GES)
(Palace Group has 50% ownership of GES)



1 Who is Martin van Nierop? Tell us briefly about yourself? Dr Martin van Nierop is a Chemical Engineer from Wits University. I worked as a Researcher at the same institution for many years. I am passionate about nature and also very passionate with helping people develop their potential.

2 When was Gondwana established and how has being a member of Palace Group been? Gondwana is a joint venture that was formalized on the 1st September 2004 between myself, Mr. Dlamini and Prof. Stuart Piketh. As a member of Palace Group, we initially felt as though we were isolated from the overall Group. The establishment of the Group Communications Division changed all that as we are now involved in large Group projects as well as corporate events.

3 What is the core service offering of Gondwana We are able to provide environmental solutions including air, water and solid waste. We also undertake Environmental Impact Assessment studies.

4 What are your current responsibilities as MD? As MD of Gondwana, I need to ensure that the company maintains its liquidity, and that we sustain a healthy, long-term relationship with our clients. I also maintain control on projects to ensure that they are of the right standard.

5 What is your opinion of South Africa's status and progress on environmental issues compared to other countries? Some aspects of our environment are really first class whereas others such as water quality are a major concern. The acid mine drainage crisis is a case in point. On the other hand, Government has taken big steps in maintaining air quality and are implementing policies quite vigorously. In comparison to first world countries we still have some way to go in regulating our impact on the environment.

6 It is evident you have a hectic and demanding work schedule, how do you unwind? I like to spend time with my family on our farm in Van Reenen's Pass where we are breeding some thoroughbred race horses. I am an avid bank note and coin collector. I also love art.

7 What is your biggest professional achievement? Graduating with a Ph D was a great accomplishment for me.

8 Tell us about your family? I have been married to my wife, Ursula for 20 years now. We have five children, four girls and one boy. The eldest is 18 years old and the youngest is 2 years old.

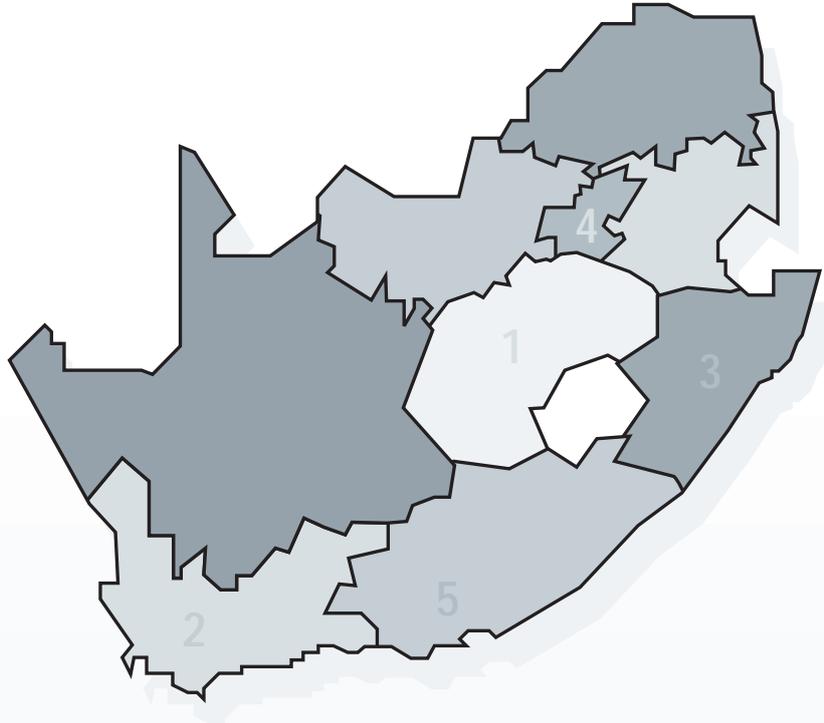
9 If you could meet anyone in the world dead or alive who would it be and what would you say to them? It will have to be Jesus Christ. My faith is important to me and I'd like to know if he was for real...

10 Where do you see Gondwana 10 years from now? The past eighteen months have been tough on us with the economy undergoing a recession; however, having been established for five years we are well positioned to take advantage of the economic upswing. South African environmental legislation is also changing, providing great opportunities for us. I believe that, in partnership with the Palace Group, Africa is our oyster....

11 If you had to live your life all over again, would you do anything differently? I don't think so, *I am who I am today because of the decisions I've made in the past.* I am happy to be an entrepreneur. Sometimes I wish I could have started my business earlier. But I realise that everything I have done up to this point has made me ready for what I am doing now.



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