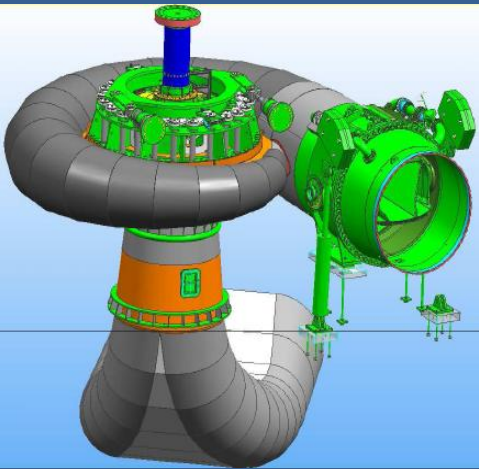


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2012

GAUTENG SOUTH
ISSUE 2: 24 May 2013

Celebrating 60 years of Engineering
Excellence



ENERGY & GREEN BUILDING - SUSTAINABILITY



Pictures of Ingula taken from Colin Logan's presentation

Water is predicted as a resource that will be the cause of the next World War. When the Minister of Water Affairs and Forestry, Edna Molewa, was interviewed during the week about what she intends to do about the ever declining water supply in the country her answer was geared more towards sustainability of water from an African context. While people worldwide are already on a quest to find a means to conserve the limited water that they have, South Africa is still grappling with getting clean running water to households around the country.



The South Gauteng (SG) region started the year off with a bang, having hosted a myriad of events, we hope to double our efforts as a region and come up with sustainable solutions to some of the problems we encounter as young professionals – which is in line with Cesa’s theme for 2013: **“Sustainability is everyone’s business.”** Sustainability from a YPF point of view starts with taking part in initiatives like Youth in Construction week where we get to interact with High School learners and open their minds up to the possibility of a career in engineering.

The regions events, this year, began with a Meet and greet at SSI (now trading as RHDHV) where we got to meet YP’s from engineering and technologically related professions. We then got to experience Green-Building-in-action through PDNA’s eyes in the construction of The Department of Environmental Affairs’ new Head quarters in Pretoria.

With more and more buildings vying for Green star accreditation, we ask the question if indeed Green construction should be our mission, right now – purely from a South African context - with many querying the extremity of the cost of green projects vs. their value or are we trying to keep up with Global trends? Africa is earmarked to be the fastest growing continent in forthcoming years, this is evidenced with more and more South African companies being taken over by bigger international companies and with this occurring it is inevitable to be influenced by global standards and trends. One has to ask though, whether Africa’s solution lies in these mergers and acquisitions or if the answer isn’t perhaps right here with Africa’s people.

Most recently we hosted a showcase at Gibb where Colin Logan gave a presentation on the Ingula Pumped storage scheme. This was quite fitting considering we are now going into winter and are therefore reminded of the strained electricity supply in the country, which has resulted in the rapid construction of such hydraulic schemes and power stations by ESKOM.

As we go into Job Shadow month we encourage companies to adopt learners for a day - or a week, if you wish - to give them an insight into a typical day in the life of an engineering consultant, and we challenge you to enter CESA’s Job shadow competition and give Gibb (our 3 year poster reigning champions) a run for their money , because ‘three times may be a charm’, but four times is just excessive. So let’s get them!

And finally, we would like to thank you for your ongoing support at YPF events and we hope that you realise that we are all ‘Change Agents’ in our own right, and only through your continued interactive contributions at these events, on social networking sites and via email are we able to create a better region and yield sustainable solutions so that when the CEO of Gibb again poses the question: “What will your legacy be as Engineering Professionals?” we are able to answer that we would like to be a generation that was responsible for bringing about change , change that saved the planet.

MEET THE South Gauteng COMMITTEE:



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-EM
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Banele Mvunge
-BM
PDNA



Ajeshni Singh
-AS
Gibb



Steward Twala
-ST
RHDHV

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JOIN YPF: <http://www.cesa.co.za/node/105>



UWP/YPF STATIONERY DELIVERY TO WITKOPPEN PRIMARY:



Earlier this year the South Gauteng region joined forces with UWP Consulting to donate stationery, printers, a fax machine, computer screens and other equipment to Witkoppen Primary, a farm school located in Fourways. Along with this donation UWP also set up their computer network to make sure that the computers, printer / fax, etc were connected to each other and worked.



It is through relationships like these between schools and companies that schools are exposed to the industry. And who knows what will become of this newly formed partnership, today stationery, tomorrow, maybe a library and ultimately an engineering graduate.

The learners were very excited and the teachers equally grateful for the donation. We wish Witkoppen Primary luck with the use of this equipment and bravo to UWP on their generosity. We hope to see a lot more companies following in their footsteps.

-KM



MEET AND GREET AT RHDHV:

On the 7th March 2013 ROYAL HASKONING DHV (RHDHV) Woodmead offices played host to a rainbow of YP's located in the South Gauteng Region for the first CESA YPF "meet and greet" for the year 2013.

The "meet and greet" is a platform that offers YP's who are directly involved or who interact with those in the engineering sector an opportunity to socialize, interact and make new contacts with other aspiring young professionals in a relaxed environment full of good food and company. It is also a platform for those interested in finding out more about CESA and the committee.

For the first event of the year, the RHDHV meet and greet was an overall success with good attendance by both engineers and non-engineers alike and we look forward to seeing more YP's and clients at future CESA YPF events. - YB



Welcome by the CESA YPF SG
Chairman, Qaqambile Ngumbela



CESA PRESIDENTIAL VISIT:



Consulting Engineers South Africa

Gauteng had its annual visit from the CESA President and every year we wait in anticipation to find out what the theme for CESA will be. So when we saw previews like 'Is President Jacob Zuma to blame for the country's corruption?' we knew that the evening was bound to get interesting. And interesting it was, from the ardent speech from Thabo Mokwena of PRASA Sip 7, (that the solution to project problems is best be sought from people dealing with these problems, and not top management, who tend not to be touch with the people at grassroots level) to Peter Mashata, the MC who kept the audience entertained with his humour, the event was worth attending. This year CESA President, Naren Bhojaram message is that: **"Sustainability is EVERYONE'S problem"**. - KM



Naren Bhojaram (CESA PRESIDENT)



BCE Graduates



Thabo Mokwena (PRASA)

YOUTH IN CONSTRUCTION WEEK (YIC) AT SCI BONO:



The name Sci-Bono comes from an abbreviation of 'Science' and 'Bono', the Tshivenda word for 'vision', a reflection of the Centre's mission to improve teaching and learning in science, mathematics, and technology; to provide career education to all learners in Gauteng; to promote and improve public awareness of the engagement with science and technology education. It offers innovative, dynamic learning experiences that contribute to building South Africa's science, engineering and technology capacity. Sci-Bono is indeed a world class science centre.

Youth in Construction is an initiative of the construction industry that began in 2008 to expose learners to the many career possibilities in the sector. At this exhibition, learners are able to see, touch, feel and appreciate the broad spectrum of exciting possibilities offered within the industry. The CESA stand was represented during the YIC week, which was held from 18 to 22 February, at the Sci-Bono Discovery Center. Some of the CESA YPF members took turns at representing CESA at the stand.

Engineering has been an aspect of life since the beginnings of human existence. Speaking about Civil engineering to the Students, illustrated the importance of integrating different parts of science because it deals with the design, construction, and maintenance of the physical and naturally built environment, including works like roads, bridges, canals, dams, and buildings.

There was a keen interest amongst the learners for a career in Engineering, but the question came about on whether the education system is producing a sufficient number of students in the hard sciences and mathematics. Within the system, the root causes of most problems can be attributed to poor teaching, weak management, lack of leadership and commitment.

Critical areas needing urgent attention are standards of literacy and numeracy, performance of learners in Physical Science, recruitment of qualified teachers and challenges of the distribution of teachers in their areas of expertise, adequate resources in schools such as classrooms, computers, text books and laboratories. Funds are required in addressing infrastructural supply in the long-term, access to basic services such as water, electricity and sanitation and adequate support systems and structures especially for learners from low socio-economic backgrounds, all of which are issues tackled by science and engineering professionals on a daily basis.

- EB



PDNA SITE VISIT:

GREEN BUILDING

Green building is often misunderstood as a concept related to the appearance and functionality of a building. A part of what constitutes green star accreditation for a building also relates to the engineering and construction of the building.

The Department of Environmental Affairs' new headquarters, recognised to be SA's greenest building currently under construction, has been the subject of 'green building' exploration by young professionals in Gauteng through a Showcase and a site visit that were organised by the YPF and PDNA.

The site visit took place on the 26th of April 2013 attended by YP's from Gauteng branches. A 20 minute induction was given by the Contractor, Aveng Grinaker LTA & Karen Kula JV who also form part of the Imvelo Consortium that developed the building in a BOT (Build-Operate-Transfer) scheme that is set to operate for 25years. The YP's were given an introduction into the building which helped give background to those who were not at the showcase in October 2012. Mike Aldous, the Project Engineer conducted the site walkabout and along the route, answering questions pertaining to the construction.

The implementation of 'green building' methods was crucial for this building as it needed to be a trend setter for other government departments to follow. The environmental plan was a well drafted one with various stake holders involved to ensure compliance with environmental requirements like noise, dust, waste management, protection of indigenous plants and tress (like the marula tree) etc. A lot of the indigenous tress were actually preserved and where removal was necessary, a replantation method was employed.

70% of the waste generated on site is re-used. There is a waste management system that ensures separation of waste products to immediately transport recyclable waste for processing. Local truck companies are used for the bulk of transportation required on site.

Concrete used is 45% fly ash. However, precaution is taken to ensure that strength and durability is not compromised. Standard concrete tests are carried out to ensure this. The reinforcement used is 95% recycled steel and scrap metal. Polystyrene has been used to reduce the volume of concrete poured by placing it as a base before reinforcement is erected, then concrete is poured in lesser volumes.

Architects model of complete building



YP's: Lethiwe Dlamini and Eliane Balegamire.

GREEN BUILDING

Energy consumption of the building will be monitored and controlled through the use of a Building Management System (BMS), an automated control system. The lighting in the building will be controlled through occupancy sensing and the light will be able to dim to minimum light levels in relation to natural light. This too shall be controlled by the BMS. 1120 E20 solar panels that are to be installed on the roof of the building will supplement energy requirements of 150kW/m²/annum. An evaporative cooling system and insulation are to be made use of for temperature control with less energy requirements. Excluding equipment in the building, a 75% energy saving was calculated in comparison to a typical building in SA.

With 1120 solar panels on the roof, pigeons may pose a problem. The project team is actively looking for environmental friendly solutions that will also keep the architectural appeal intact. On the west side (back) of the building will be a wetland which will serve as an attenuation pond. Rain water from the roof and storm water from the paved area will be directed to this wetland, with the water quality on the exit improved.

This project has all the attributes of sustainable development with the bulk of employment created being local, skills developed with strategic plans to utilise those skills. The level of stakeholder involvement has been very high with the majority of major decisions going through them. A general assumption is that green building has a very high capital cost. This is may not be incorrect, however, according to the DEA Green Building team, major savings are achieved at building areas greater than 10 000m² and long term savings compensate fairly for the higher capital costs.

The success and practicality of green building may well be a good trend setter for other construction industries to try and provide practical, eco-friendly and economically viable solutions to sustainable development. With high interest from Young Engineering professionals in the technical details of this project, future of sustainable development is within reach. - BM

For more information on PDNA go to: www.pdna.co.za



Attentive YP's as Mike reels them in.



Staging and formwork.



Solar panels, keeping it green all the way.



YP's from different companies who attended the visit.



The Site

GIBB SHOWCASE:

Economists say resources are scarce and this could not be truer than our Electricity in South Africa. As a result of underinvestment in power infrastructure, South Africa has experienced and will continue to experience planned blackouts on rotational basis, colloquially known as ‘Load Shedding’ – which has unfortunately resulted in major economic losses. To correct this, Eskom rolled out major capital investments by bringing some of its mothballed power station back to service and by the construction of new power stations such as Medupi, Kusile and Ingula.

On the 2nd May 2013, GIBB hosted a showcase at their head office in Sunninghill. The event was opened by a welcome by Gibb CEO, Richard Vries who challenged YPs to think about social impact they need to make and tasked us to question what it means to be a Young Professional in this era when so much is happening in our country. “What will you be remembered for as young professionals? What will your legacy be?”

The main speaker of the evening was Colin Logan – the project manager for Eskom’s R 25 billion, 333 MW Ingula pumped storage scheme in the Drakensberg and how the project will assist in securing future electrical supply. This was also a fitting time considering that winter is just around the corner and the Demand curve will be higher than Supply.

Introduction to the Ingula Project:

The Ingula Pumped Storage (initially called the Braamhoek Pumped Storage) culminated from a study initiated by Eskom on appropriate sites for a pumped storage scheme in the 1980’s. Initially more than 90 appropriate sites were investigated, culminating in the short listing of 3 sites, which included Steelpoort and Monantsa). The final selection was a site north-east of Van Reenen’s Pass, spanning the escarpment of the Little Drakensberg straddling the provincial boundary of Free State and KwaZulu Natal. The feasibility report suggested an installed capacity of 1000MW. After subsequent optimization studies the installed capacity was increased to 1322MW.

The Scheme:

The Pumped Storage Scheme consists of an upper and a lower dam; both of approximately 22 million cubic metres water capacity. The dams, 4.6 km apart, are connected by underground waterways, through an underground powerhouse which house, 4 x 333MW pump turbines.



Gibb CEO, Richard Vries: “What will your legacy be?”



Presentation on Pumped Storage



Colin Logan gives an exhilarating presentation on the Ingula pumped Storage Scheme

GIBB SHOWCASE:



During times of peak energy consumption, water will be released from the upper dam through the pump turbines to the lower dam to generate electricity. During times of low energy demand the pump turbines are used to pump the water from the lower dam back up to the upper dam.

The Project:

The project is being overseen by the Braamhoek Consultants Joint Venture (BCJV) Braamhoek Consultants Joint Venture (BCJV) Braamhoek Consultants Joint Venture (BCJV) consortium which consists of: Gibb, Knight Piesold, Royal Haskoning DHV and Gibb.

The project consisted of three phases: Phase 1: Project Optimization, Phase 2: Final Design, Tender Design and Phase 3: Construction Stage Design, Monitoring, Supervision and Sign-Off.

The first of four 333 MW pumped turbine units at the project is expected to be commissioned in the second quarter of 2014 and the remaining units to start commercial operation in 2014 and 2015. Colin had all the YPs gripped on his every word with his presentation, after which the YPs were treated to snacks and offered the chance to network. – EM & AS



Colin’s presentation can be found on the link:

<https://www.dropbox.com/sh/cuwht8go9zci3b7/6z7fgJjjUX?n=124316917>

“You were born into Genius. So why accept mediocrity?” – Robin Sharma