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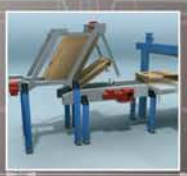


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FESTO

Toll roads coming at 50c per kilo?

It is indeed encouraging to realise that the Department of Transport and the South African National Roads Agency Limited (Sanral) is investing R55-billion in upgrading six freeways around Johannesburg, Ekurhleni and Tshwane. It's equally worrying that all these roads will carry a toll of 50 cents a kilometre.

Tolling roads is, of course, an ingenious way of making a jolly lot of money from the hundreds of thousands of motorists who use the highway network every day.

The initial estimate means that a return trip from central Pretoria to central Johannesburg using the freeway will cost at least R70,00, which might be enough of a deterrent to get motorists to share vehicles or even switch to public transport.

At this stage using public transport or sharing a vehicle is not really an option.

As a commuter who lives in Pretoria and drives to Bedfordview every day I am well aware of the difficulties and frustrations that confront motorists on a daily basis. Fortunately I don't have to use the N1 and N3 combination at peak time. These roads are just a slow-moving parking lot resembling a queue coming out of a drive-in (for those of you who can remember drive-ins).

I have attempted to find two or three people in Pretoria who would be willing to travel with me – and perhaps even share the costs of commuting – and so far have not found a solitary soul. Of course, it's hardly surprising because none of us likes to be locked into a fixed arrangement that stops us from leaving work early or prevents us from meeting friends after work and travelling home a little later.

Without a reliable public transport or taxi service, motorists sharing vehicles are stranded until their lift arrives. So the likelihood of mass sharing of vehicles is, in my opinion, wishful thinking.

On the other hand, I can't wait for the Gautrain to start running. Theoretically, I could catch it in the morning and 20 minutes later be in Bedfordview having read my newspaper as I sipped some coffee. Then, in the evening, I could hop onto the train and get back to Pretoria at my own convenience and in my own time.

That's the benefit of public transport and it's exactly that infrastructure that is sadly lacking in South Africa. Until public transport services run efficiently and safely there is almost no chance of changing motorists' habits.

This leads me to the fact that while the amount of money generated from the tolls will be hugely significant for the municipal, provincial and national authorities it will really hurt the individual motorist.

Consider an average round trip of just 100 kilometres on toll roads around Johannesburg, Soweto, Sandton, Tshwane, Ekurhleni – not a major distance by any means – and then consider that this adds more than R1 000 a month to commuting costs.

When this is combined with the already outrageous price of fuel – with its taxes, levies – and the high costs of vehicles, maintenance and insurance the overall picture is gloomy, one that will certainly exert further inflationary pressures on the economy.

It's not that the principle of the 'user pays' is at fault, but rather the fact that there are almost no practical alternative routes that motorists could use to avoid the tolls. Getting from Tshwane to Johannesburg on 'back-roads' is decidedly difficult.

What's more, enforcing the tolling system – and ensuring that motorists don't thwart the authorities – poses a particularly tough challenge. Just look at the lack of law enforcement on our roads and watch as the taxi devise their own rules of the road.

What needs to happen is that the tolls – preferably at a lower cost-per-kilometre – need to be rigorously enforced and those motorists who try to cheat the system should be harshly punished. Most motorists would, I believe, not object to paying a toll if they were guaranteed that law-abiding drivers were sharing these supposedly smoothly flowing highways.

Given the current situation the very thought of law abiding motorists is probably nothing more than wishful thinking judging by our taxi drivers, our speedsters, our drunk drivers, many truck drivers and our road rage culprits.

I do think that if the authorities were to implement tough measures to deal with toll road offenders then our highways might become a lot more pleasant to use and much safer for all of us too.

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WATTnow

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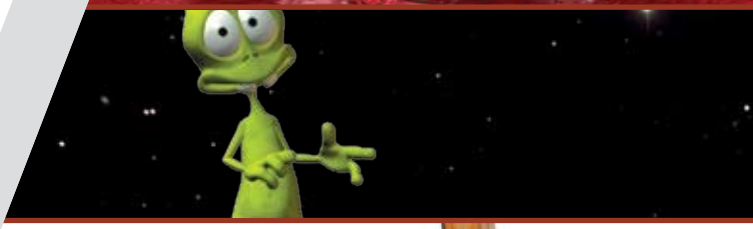

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High aspirations for Gemstone Blue range

Acer has overhauled its Aspire range of notebook computers and introduced its new media console known as CineDash which uses touch-sensitive controls to navigate without the trackpad. Known as the Gemstone Blue range, each computer has a 'weave' finish and includes an advance speaker system that generates virtual Dolby 5.1 channel surround sound.

The notebooks have a true 16:9 ratio display providing 1920 x 1080 resolution that can display Blue-ray or high definition images. The displays refresh at 8 millisecond rates to avoid ghosting and Acer claims the colour gamut is about 30 percent richer that conventional notebook displays.

Two models, the 16 inch Aspire 6920 and the 18,4-inch Aspire 8920G have been released with the simpler 6920 equipped with a 320 GB hard disk and Nvidia's GeForce 9500GS video card. The bigger 8920G has a 640 GB hard disk and uses the GeForce 9650GS display card. Both models offer HDMI video output.

Lenovo's lightweight ThinkPad X300

Lenovo has produced a computer that is almost as small and light as the MacBook Air but is fitted with three USB ports, along with an Ethernet port and an external monitor port. It comes standard with a DVD rewritable drive wireless connectivity, Bluetooth, 3G and even WiMax.

The Lenovo ThinkPad X300 weighs just 3,4 pounds and has a 13,3 inch screen (about the same saize as a MacBook Air). It is available with a 1,2 GHz Core 2 Duo chip, has 2 GB or random access memory and a 64 GB solid state hard drive.

The ThinkPad X300 also has built-in speakers and an illuminating light for the keyboard built into the LCD panel. It's an expensive machine though, with a list price of $2 935 which is about $1000 more than the MacBook Air.

High definition monitors from Samsung

Samsung has released its new 53-series liquid crystal display monitors for desktop computers. The new range has an 8000:1 contrast ratio and is fast enough for gaming enthusiasts as they have a two millisecond gray-to-gray pixel response time.

The monitors, available in 19-inch, 20-inch and 22-inch sizes can display Blu-ray and high definition content through the digital video input. The adaptive image size algorithm used in the displays allows for a 4:3 input that is prevented from stretching.

Samsung claim that the new range is as good as the high definition television monitors that are made by the company.

Palm's Centro replaces Treo

Palm has released the Centro smartphone as a replacement for the Treo range and the new model is less clunky than other Palm phones. It runs the Palm 5.4.9 operating system via a 312 MHz XScale processor with quad-band GSM, GPRS and Edge cellular connectivity. The Centro has 64 MB of flash storage, Bluetooth and a 320 x 320 colour display.

The Centro's display is touch-sensitive and the comprehensive array of applications bundled with the unit provides useful tools ranging from Google Maps to Documents To Go, which is pre-installed and capable of reading and editing Microsoft Office documents and text files. It has Adobe Acrobat PDF reader installed as well.

Palm bundles its own Blazer Internet browser with the phone and provides an application called Pictures & Video to handle image files and podcasts. It has a 1,3 megapixel camera and uses Pocket Tunes to play MP3 files.

Relatively few Palm Treo's have been sold in South Africa and it's probable that the new Centro will not have the mass appeal of other models such as Nokia or BlackBerry. However, there are bound to be some Palm enthusiasts who will be eager to get there hands on the new model.

BlackBerry 9000 with touch-screen

Research in Motion is expected to release full details of its new BlackBerry 9000 Smartphone which has a radically redesigned look and includes a new touch screen strip interface representing a break from the vertical Windows-like interface seen on current models.

The 9000 has rounded corners and an all-round chrome trim similar to Apple's iPhone. It has 3G, HSDPA and Wi-Fi capabilities. In keeping with other BlackBerry phones it will offer a full suite of applications tailored for business users who want access to information wherever they are.

The BlackBerry 9000 is expected to hit the American market by July this year. There is no clarity yet on when the new model will be available in South Africa.

LG's 'Vu' for the future

LG has launched its new Vu touch-screen phone with mobile television capability allowing subscribers to watch live television anywhere coverage is available and at any time. The new phone has 3G Internet access with up to 1,4 Megabits per second download speeds.

It supports music and Napster downloads, streaming Internet music and videos and can accommodate a range of games that can be downloaded from LG's website. The Vu has a 2-megapixel camera which relies on a MicroSD chip for storage.

LG has not yet announced pricing but has said that he new phone will be available in May.

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Nokia's four new African phones

Nokia has released details of four new handsets for the sub-Saharan African market. Priced at between €50 and €90 each. The new phones comprise the Nokia 5000, the 2680 Slide phone the 7070 Prism and the 1680 Classic.

In addition, Nokia Siemens Networks has released details about its Village Connection with Internet Kiosk that will enable people in remote villages to access the Internet via cellular phones. Loren Shuster, vice president of sales for sub-Saharan Africa says a great many African mobile phone users rely almost entirely on these phones for Internet connections and e-mail.

The Village Connection with Internet Kiosk brings voice, SMS and Internet access to rural environments at an affordable cost for those consumers who can afford to spend very little money on communication.

Shuster says that Africa represents one of the great success stories for mobile telecommunications, with cell phones outnumbering landline connections by nearly six to one. Already more than 35-million phones have been sold in the region and growth of the cellular phone market is expected to continue at a rapid rate as more African countries adopt the technology.

Nokia has already sold more than a billion mobile phones world wide in a global market that will rise to four-billion users within the next two years.

The top of the line Nokia 5000 is priced at just €90 before subsidies and taxes and comes with a 1,3 megapixel camera, a high resolution QVGA display, FM radio with recording functionality, MP3 ringtones and Nokia Xpress Audio Messaging. It is equipped with Bluetooth and GPRS connectivity.

Nokia's new 2680 Slide is the first sliding device offered by Nokia for the entry market. It is a slim camera-phone which has the same features as the Nokia 5000 but also offers an expanded phone book. The 2680 is priced at €75 and is expected to start shipping in the third quarter of this year.

The 7070 Prism phone has a distinctive folding design and a casing that uses geometric patterns and external light effects. It offers personalized content through themes and wallpapers, uses MP3-grade ringtones, has a voice recorder and hands-free speakers. It is priced at just €50.

The Nokia 1680 classic is the most affordable camera-phone made by the company and provides full mobile phone functionality as well as a 1,3-megapixel camera which can double as a video camera allowing users to record and save videos. This phone is expected to start shipping in the second quarter and costs €50.

Nokia, in conjunction with Webmail International is offering a locally-hosted, mobile e-mail solution exclusively for South African users. The e-mail service will be available in the second quarter of this year.

Nokia also has unveiled details of its *M4Girls* pilot project that uses Nokia 6300 mobile phones loaded with educational materials to help learners improve mathematics at a Grade 10 level. Nokia, the Department of Education and Mindset Network are involved in this programme.

The pilot project is underway at the President Mangope Technical High School and the Thlabane Technical College both in the North West province. Nokia is providing additional funding to the two schools to train teachers and school managers in information technology and to repair classrooms and provide books for the learners. Nokia staff have volunteered to act as part-time helpers at the schools.

R55-billion and new toll roads for Gauteng

In a major boost to the Gauteng road infrastructure, the Department of Transport (DoT) plans to spend R55-billion over the next ten years in a three-phase Gauteng Freeway Improvement Scheme to ease congestion on the highways around the metropolitan area. In addition six new toll roads – including the N1 between Pretoria and Johannesburg, the N3 and the N12 – will be introduced to ensure users pay the construction and maintenance costs.

The controversial toll roads will be controlled electronically through 47 gantries that will be erected roughly 11 kilometres apart and the motorists will have to pay an estimated 50 cents per kilometre to use the toll roads. According to the DoT electronic tolling technologies, which allow the free flow of traffic at all tolling points, will be introduced on the freeway network. It has not said how the system will be enforced.

The Gauteng Highway Improvement Scheme will comprise:

- Phase One will see the introduction of tolling technologies that will allow the free flow of traffic on all six freeways but tolls will only be introduced once a public consultation process has been completed. The electronic toll collection is expected to increase gross domestic product by R14,2 billion. The freeway network will be upgraded and expanded with special lanes for buses and cars with more than two passengers.
- Phase Two will see the DoT building new roads and investing R20-billion. Some of the planned new roads include a new freeway running from north to south through Kyalami from the Krugersdorp highway. The existing road will be upgraded to have several lanes. Aslo planned is a project to upgrade and improve the Olifantsfontein link between the R21 and the N1.
- Phase Three of the project will see the DoT spening R23-billion and will be completed in 2018. By the time to project is completed the DoT claims that an inter-connected network of inner and outer ring roads will circle the metropolitan areas ranging from Soweto in the south to Pretoria in the north

DoT spokesman Collen Msibi says that the first phase will see the existing freeway network of 180 km being expanded and upgraded with new lanes and major interchange improvements. Msibi says that the project itself will create 30 000 new jobs and a further 139 000 indirect opportunities. He says the total value of infrastructure work will provide R39,7-billion in capital formation and over R60-billion in the next 20 years.

The DoT claims that it will support the Gauteng Freeway Improvement Scheme with other major initiatives such as the Gautrain, the National Rail Plan and a Bus Rapid Transport System. Details of these projects – other than the Gautrain - have not yet been released.

According to the DoT the Ben Schoeman highway between Pretoria and Johannesburg currently carries more than 180 000 vehicles an day which is more than 100 percent of its design capacity.

The South African National Roads Agency Limited (Sanral) says that the new toll roads are urgently needed in South Africa to ensure that adequate maintenance and infrastructural development can continue, allowing commuters to get to a from work easily, comfortably and with minimal disruption or stress.

At present about 2 800 km or 17 percent of South Africa's road network comprises toll roads. According to Sanral the toll road infrastructure around Gauteng will soon consist of:

- The N17 – from Springs to Ermelo. This will be a toll road up to the Mpumalanga border and will be completed by 2011. Work has already started on the first two sections of this road running from Springs to Leandra and from Leandra to Lefink Station. The second section, from Lefink to Trichardt and from Trichardt to Bethal has gone out on tender. The final section from Bethal to Davel and from Davel to Ermelo will go out on tender towards the end of this year.
- Exact detail on improvements to the freeway system around Gauteng have not been released but work has started on upgrading the N1 from its link at the Flying Saucer on the R21 to Atterbury Road. Major new interchanges and additional lanes are being built there. Upgrading of the entire Ben Schoeman highway is in the planning stages but Sanral has not yet released details of this project. Other initiatives including the High Occupancy Vehicle lanes and Bus Rapid Transit systems will be included in the project.
- Freeways planned as part of the Gauteng Freeway Improvement Scheme will eventually include an upgrade road, the PWV9, between the N14 and the N1 and may link with the existing Mabopane freeway. This will create a new north-south link to relieve congestion on the N1. The PWV6 will run between the R21 and the PWV9 creating an additional east-west link. The PWV14 will be built to link the R21 and the M2 while the N17 will be extended to the West Rand.
- Sanral plans to implement the new Intelligent Transportation System with closed circuit television cameras to detect incidents or accidents on freeways. Effective routine maintenance programmes to repair potholes and guard rails will be introduced.

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- Other improvements include upgrading Gillooly's interchange on the N3, and improving the Rivonia Road and William Nichol interchanges on the N1 bypass as well as upgrading the Allandale interchange on the N1. Work is already underway on the Rigel Avenue and Atterbury Road exits on the N1 and construction of a new interchange at Garsfontein Road. Most of these changes to the road infrastructure will be completed by 2010 according to Mpumi Mpofu, director general of the Do|T.

The project is likely to face a number of hurdles including:

- The shortage of skilled electrical, civil and structural engineers and engineering technicians and the lack of capacity in the engineering sector as a whole. Sanral and the DoT has not said how it plans to overcome these problems but it does say that job creation will be boosted during the construction phases.
- The lengthy process fthat follows the release of a tender to the final awarding of a contract. Engineers in all sectors stress that there are often excessive delays in adjudicating tenders or awarding contracts.
- Under-spending by national, provincial and municipal authorities is rife throughout the country and blamed mainly on the lack of financial and planning skills in each of these divisions. Thus while the money may be earmarked for expansion of the roads infrastructure, there is often a deficiency in actually turning that money into completed projects.

In terms of the DoT's National Transport Master Plan released in April 2006, rail transport also needs urgent attention because there has been a steep decline in the rolling stock fleet and no new commuter rail lines have been built for what it calls "a very long time". South Africa's rolling stock is estimated to be about 35 years behind rail services in other parts of the world.

The Master Plan sets out to upgrade the entire railway network in the country and to migrate, where possible the road transportation of freight to the railways. The DoT says this will be an extremely costly process as the costs of expanding or maintaining the railways infrastructure are rising at an unprecedented level. Worse still, the cost of purchasing new rolling stock or locomotives is excessive.

The DoT says that it plans to "gradually and incrementally" shift from the 1067mm Cape Gauge railway lines to the 1435 mm Standard (Stevenson) Gauge which will allow the development of high-speed railway infrastructure facilities, equipment and rolling stock.

The DoT has not yet released any details of its planned expenditure for the rail network in South Africa or the new links that may be added to the existing railways network. The R33-billion high speed Gautrain is the only new commuter project underway in South Africa.

Meanwhile In a separate development the Democratic Alliance has called on residents of Cape Town to object to the planned Winelands toll roads scheme which will see two new toll roads being built – one on the N1 between Bellville and the Hex River and the other on the N2 from Cape Town International Airport to the Bot River.

Notices proclaiming the six highways in Johannesburg and the parts of the on the N1 and N2 outside Cape Town as toll roads were published in the Government Gazette at the end of March. The DA's Western Cape transport spokesman Robin Carlisle said that there had been insufficient public consultationregarding the Winelands toll roads which cover 175 km in the Western Cape.

Carlisle claims that the Winelands toll roads will hit the "poorest of the poor" who use public transport to commute from Blue Downs, Delft, Mitchell's Plain and Khayelitsha twice a day. He said Sanral had failed to consult Western Cape Premier, Ebrahim Rasool or any representatives from the six local authorities affected by the new toll roads. He says the DA is considering legal action to prevent the new toll roads.

Taxis for commuters, bicycles for learners

The huge investment in roads infrastructure is clearly aimed a relieving traffic congestion in the Western Cape and Gauteng. Improvements to the road network will be augmented by improving the public transport infrastructure, introducing High Occupancy Vehicle lanes and providing a reliable rapid transport bus service. Other development undertaken by the DoT include:

- R9-billion for the formalisation and recapitalisation plan of South Africa's taxi industry which currently carries about 65 percent of all commuters. More than 80 000 old taxis will eventually be replaced and the DoT has received more than 98 000 applications to participate in the project..
- Labour-intensive road construction and maintenance projects have been introduced and more than R3-billion has been allocated to improving road maintenance and creating jobs.
- The DoT concedes that the unreliable railway netw has forced a large number of importers and exporters to rely on road transportation to move materials and goods. A Freight Logistics Stragety is underway to expand and upgrade the rail network, improve freight logistics and increase the railways share of freight transportation.
- The massive R33-billion Gautrain project is already underway and the DoT is now looking at ways of extending a rapid rail system to other parts of the country. It is also looking at ways to maximise the use of the Gautrain infrastructure. Details of these plans have not yet been released.
- To encourage a swing away from motorised transport the DoT is providing more than 200 000 bicycles to learners at South African schools between now and 2010. Partnerships with private sector organisations for the provision of bicycles are being developed but the DoT has yet to explain what these partnerships comprise.

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Enormous engineering challenges ahead

South Africa's engineering community will face enormous challenges in implementing the planned Gauteng Freeway Improvement Scheme. Electrical, civil and structural engineers may have to deal with complicated engineering challenges when building new projects but when it comes to upgrading work these challenges escalate exponentially. Some of the issues that engineers will have to contend with include:

- Upgrading the Ben Schoeman N1 highway without causing major disruptions to peak hour traffic that sees more than 180 000 vehicles using that stretch of road every day.
- Widening existing bridges without halting traffic or closing off the roads.
- Building 47 electronically controlled automatic gantries for the electronic tolling system that is planned on the six major new toll roads around Gauteng. Each gantry will be roughly 11 kilometres apart.
- Widening, improving and building new east-west and north-south links through suburban, commercial and industrial areas for the R21 and its link to the PWV9 in the west and the R21 to the M2 in the south.
- Building and extending existing roads for the PWV9 which runs through agricultural, commercial and industrial properties without disrupting the lives of people living and working there while still maintaining the peak hour traffic flow along the existing roads.
- Building, extending or improving new interchanges at places like Rivonia Road and William Nichol Drive while keeping the traffic flowing in both directions.

According to figures released by the Department of Transport about 30 000 direct jobs and 139 000 indirect jobs will be created. Management of the 30 000 direct jobs will fall squarely on the shoulders of those engineering professionals working on these projects.

The provincial, municipal or national transport departments have not given any indication of how many engineers and engineering technicians will be needed to start or complete the respective contracts.

R6,6-billion to improve Eastern Cape roads

While major changes are planned for roads and the entire transport infrastructure in Gauteng and the Western Cape, few details for upgrading of roads in the other provinces have been released. Admittedly it is in the major metropolitan areas of Johannesburg, Tshwane, Ekurhleni and Cape Town that most of the road transportation bottlenecks occur. However, the other metropolitan areas such as Etekweni and Nelson Mandela Metropole have significant problems as well.

For instance, the Eastern Cape – which has budgeted to spend R2,5-billion on upgrading its roads – is still managing to spend only 49 percent of its budget and is consistently rolling-over its planned infrastructural expenditure because it has insufficient skills and capacity to allocate and complete the work. Over the next three years R6,6-billion has been set aside for upgrading the roads in the province.

The MEC for Finance, W H Nel, in his 2008 budget presentation strongly urged all departments, including roads and transporation, to step up the recruitment of skilled and competent staff to assist in financial planning and management of the available funds.

He says money is allocated to the different departments and then taken away a few months later because it hasn't been, or cannot be, spent.

The Eastern Cape is undertaking what it calls a "serious analysis" of the budget – in conjuction with the Treasury – to increase the expenditure on roads and transportation infrastructure significantly over the next few years.

Many of the rural roads in the Eastern Cape region are in a state of disrepair and some roads are completely impassable. Nel says that the national and provincial roads are peripheral to the rural areas and many people in the province do not have access to any roads at all. Moreover, the use of road transport has resulted in the road infrastructure steadily deteriorating with many of the gravel roads in a deplorable state.


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Coloured Lenses and Road Signs

by Antonio Ruffini

When Sallyan Simonds, an outgoing woman in her early 40s, needed to drive to an unfamiliar destination she studied the route in detail, in very great detail. In effect, she had to memorise the route beforehand. That is because she has dyslexia, which made it impossible to read road names and other informative signage clearly while driving.

For decades it was her lot to work harder to do what most of us take for granted. Then in December last year, a pair of glasses, prescribed with blue-grey-yellow filter lenses specifically tailored to her vision, changed her life.

The evolution of the human brain wired it for speech. However, it is not specifically wired to read and understand lines of text. Hence humans have to be taught how to read. For the majority this education process takes place fairly smoothly. Some are less fortunate; the neurological structure of their brains makes it harder.

Simonds describes it as words and letters jumping around continuously, and that makes learning correct spelling and context difficult. "You learn coping mechanisms, ways to read the words," she says. In spite of coping mechanisms, reading is much more difficult. She battled at school and knows that without dyslexia she would have made a different life for herself. The first eight years of her working life featured 17 different jobs including switchboard operator, and it was not a lack of intelligence or ability that saw her being retrenched.

She first encountered a possible solution some 12 years ago, when she helped out a dyslexic schoolgirl relative living in Zimbabwe by taking her for visual tests. After coloured filter lenses attuned to mitigate the girl's condition were prescribed, the former F student started getting As and Bs for her schoolwork. However, Simons, sequestered by the knowledge that there is no cure for dyslexia and that many remedies have been proposed with little officially recognised track record, assumed it was too late to do anything about her own condition.

As a coping method for dyslexia, the use of coloured overlays or tinted lens has not been without controversy. When it was suggested in 1983 that coloured lenses may make a difference to reading the response was scepticism, in part because Helen Irlen, the person who made that suggestion, then set up the Irlen Institute to promote and sell coloured glasses.

The Irlen method, the use of tinted filters, where the exact colouring is attuned to the individual, worn as glasses or coloured overlays, alleviates any combination of six symptoms that describe the Irlen syndrome. These symptoms include undue sensitivity to light, problems with contrast, and problems with print, i.e. print that shifts, shakes, blurs, moves, doubles, or becomes difficult to perceive. The other three symptoms are attention deficit, poor depth perception, and restricted reading span. The last means an inability to read letters and other symbols in groups, which results in an inability to track or correctly identify words or the inability to skim or speed read.

However, questions were raised whether there was sufficient solid research evidence that using coloured lenses improved reading for dyslexics.

Dr Eugene McGillis Helveston, an ophthalmologist and founder of the paediatric ophthalmology and strabismus service at the Indiana University School of Medicine, said in a paper he wrote in 1990 that traditional diagnostic and treatment methods had not yet offered sufficient answers for the alleviation of reading problems ordyslexia. He went on to say that an inability to find an answer to reading difficulties did not justify a scientifically unproven activity as represented by the use of tinted lenses to treat an unproven syndrome, the Irlen syndrome.

The USA's Medical Board has subsequently reviewed the process and said that treatment with Irlen filters did not fall under the practice of medicine. Similarly, various boards of optometry in the US reviewed the process and concluded it was not part of the practice of optometry.

No surprise, then, that when Simonds first encountered the use of coloured lenses as a means to deal with dyslexia she paid little heed. She was also aware that because of the ambiguity surrounding the nature and causes of dyslexia, many cures have been prescribed, some of them without any merit.

The causes of dyslexia are poorly understood, beyond that it has neurological origins and some genetic links. Until quite recently anyone who had difficulty with reading, which could be attributed to anything ranging from low intelligence to poor eyesight, from poor hearing to inadequate educational opportunities, was described as dyslexic. Dyslexia has since become somewhat more precisely defined as a learning disability that manifests as a difficulty with written language, particularly with reading and spelling. It excludes reading difficulties based on non-neurological vision and hearing deficiencies, or due to inadequate reading education. Even so, because of the vagueness surrounding the definition of dyslexia, many medical doctors and psychologists don't like the term.

Among those is Jo'burg based professor of neuro-developmental paediatrics Lorna Jacklin, who says that she has not dealt with a child where the use of coloured lenses has made any significant difference. She suggests that the Irlen syndrome is not particularly well known. She has no problem though about people using coloured lenses to reduce visual strain, and says that any child experiencing attention deficit hyperactivity disorders (recent research indicates that about 30 percent of individuals with dyslexia also have an attention deficit disorder (ADHD) should be tested for their visual and auditory processing. Jacklin notes that those cases of dyslexia where the key syndromes are auditory will not be ameliorated by coloured lenses.

Learning to read requires making the association between printed symbols and spoken words and sounds. For reading to be fluent, these associations must become fixed in memory. One of the key causes of dyslexia is a lack of phonemic awareness, the inability to distinguish or manipulate sounds within spoken words or syllables. Someone who lacks phonemic awareness will find it difficult to learn the relationship between letters and the sounds they represent. That person will find it difficult to apply those letter sound combinations to help them figure out unknown words.

Martelean Venter, an educational psychologist based in Pretoria, who is one of only two people in South Africa accredited to prescribe Irlen filters, says that people know of Irlen syndrome, but do not necessary acknowledge it. "It is tainted with the image of alternative medicine."

Like Jacklin, Venter is leery of the term dyslexia and prefers to describe Irlen syndrome on its own terms, as a perceptual problem that prevents an estimated 12 to 14 percent of the population from being able to learn, read, or study efficiently. Individuals diagnosed


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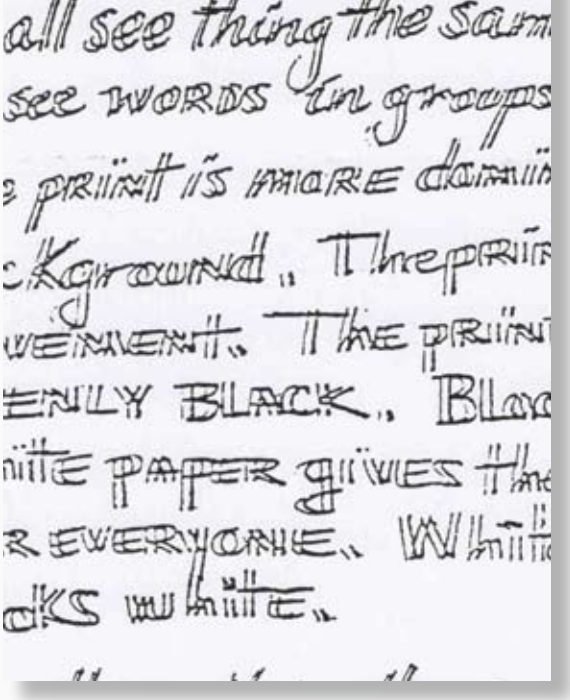

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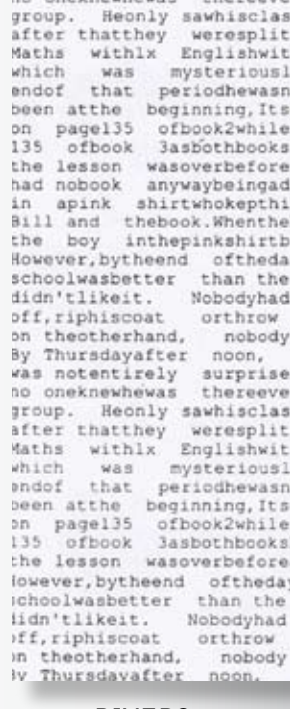

RIVERS

with dyslexia, learning difficulties, or ADHD may in addition suffer from Irlen syndrome. "People who have Irlen syndrome are affected to varying degrees." And Venter notes that 50 percent of people who have suffered traumatic brain injuries, such as those caused by strokes, benefit from the Irlen filters and that they have been useful for some people affected by autism.

Some 40 people in South Africa, ranging from occupational therapists to teachers and speech therapists, are screeners for Irlen syndrome. After screening, people are referred to Venter who holds the license for the process in South Africa. She says that at one point there was a less controlled approach to screening, and the necessary quality control was lacking.

Venter says she has never come across a child she has not been able to help through the process, though the patients she sees have been screened and their problem diagnosed. The filters designed with the aid of measurements using a spectrophotometer can range over the full visual spectrum. The distinct set of wavelengths filtered varies from client to client.

Years after Simonds first encountered the process she got herself tested.

The test resembles other forms of eye testing where vision is tested by grading the effects of different lenses, on the basis of 'is this one better or worse', until optimum vision is obtained. You start with primary colours; blue, green, yellow, red, look at a page of text and see which makes it slightly easier to read. As the testing progresses it is refined to different tones of colour. It is a systematic process which takes two hours at most, and it includes lenses that are described as neutral and provide grey overlays.

In Simonds's case, when the right combination of lens colouring was found, it was suddenly much easier to focus on the words on the page. The jumping of the words and letters back and forth diminished dramatically. "It was different; I could absorb information from reading in a more relaxed way. It was as if the lenses are filtering out the distortion, as if the light is calmer."

Venter, who is working towards a PhD on the Irlen syndrome, says that as research worldwide increasingly corroborates effects of the

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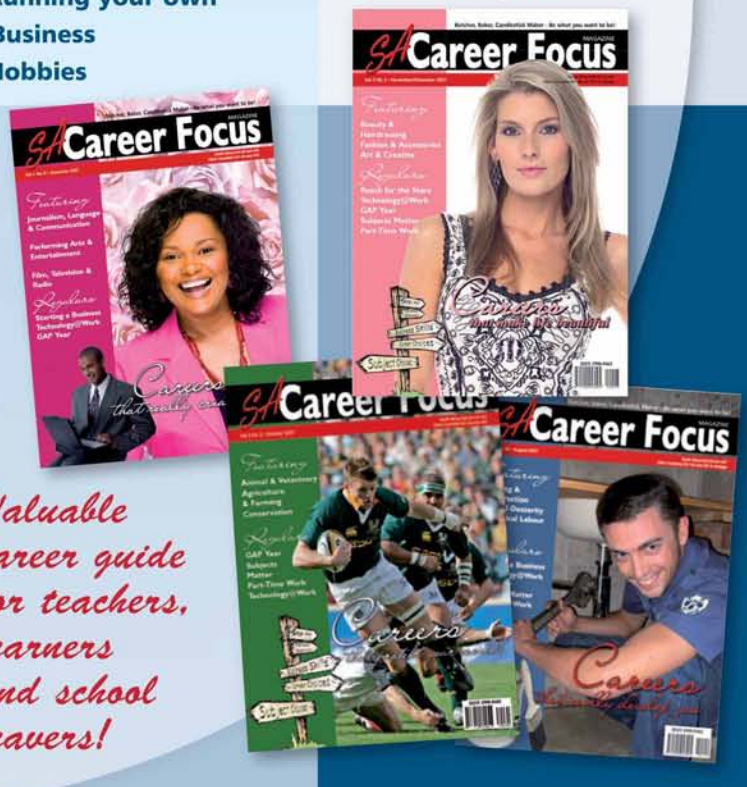

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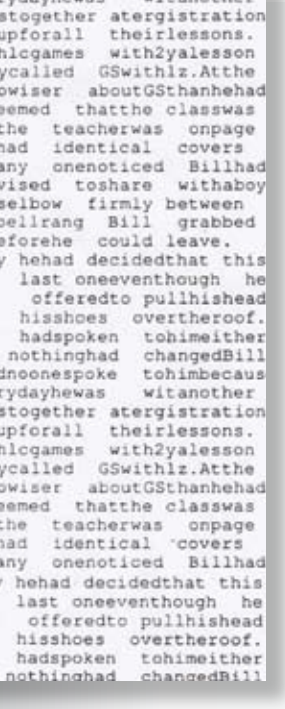

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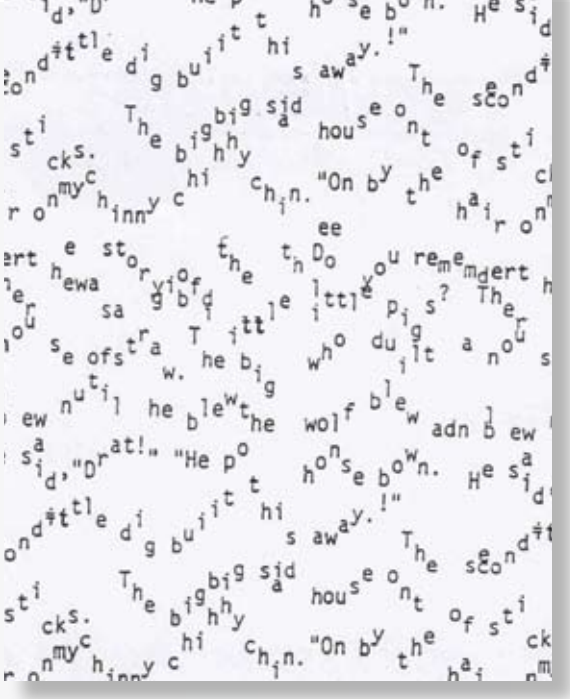

SEESAWS

SWIRL

Irlen syndrome and its antidote, acceptance of the use of coloured filters has increased. She finds there is still resistance in the field of optometry, though younger members of the profession are more open minded.

Brain imaging research by those such as Dr Jeff Lewine, associate professor of radiology at the University of Utah, using MRI scans, and work by ADHD specialist Dr Daniel Amen, using spectscans, have produced some interesting results. Scans show that larger and more numerous parts of the brains of patients who suffer from Irlen syndrome light up when they read without overlays compared with those who do not suffer from Irlen syndrome. It means the Irlen syndrome sufferers are working harder to read. When they use the overlays their brain images closely mirror the lower activity of the control group. Interestingly when people who do not suffer from Irlen syndrome are given coloured lenses to wear their brain patterns shows greater levels of activity suggesting they now have to work harder to read text. It implies that random use of sunglasses may not be as benign as most people believe and there can be side effects of increased visual stress.

Research done by the University of Essex, UK, found that between a fifth and a third of unselected school-children show a significant improvement in their rate of reading with their chosen coloured overlay. Other studies have come up with similar results, whereby giving some people coloured lens overlays significantly improves their reading rate. Work done at the University of Newcastle in New South Wales, Australia looked at the long-term effects of coloured filters and the results showed that reading accuracy and comprehension in the groups using the coloured filters increased at a significantly greater rate than the control group.

More than 4 000 schools in the USA have implemented the Irlen method and more than 100 000 people have been provided with Irlen filters.

In response to the scepticism the Irlen process has had to shoulder, Venter uses the following analogy: If one develops a cold, one knows what it is and what its symptoms are, but if one has also recently been in a malaria area there is no harm and perhaps great benefit in going for a malaria test.

Simonds is not a particularly emotional person, but it was a life changing moment when she got her overlay filters. When she experienced the effect she burst into tears. For two days she was an emotional wreck. The horizons of her world had expanded. With increased confidence in navigating a world where deciphering the written word is so very important. She says she can now consider career options that had always seemed closed to her.

The change in her life is dramatic, the stress of refocusing all the time is gone, a major source of tension removed. As a result of her experience she would strongly recommend that anyone who suffers from dyslexia is tested to see if they can benefit from the same solution. Her only regret is that she did not get the filters. Wn

Watt's Says

Responses to electricity article

What an excellent and accurate article. Unfortunately, it will be not be read by anybody responsible for the mess, or who really cares about the consequences of their actions (or the lack of it). No wonder the Australian embassies are flooded with visa applications.

Dr Riaan Wolhuter
Stellenbosch

Just a word of appreciation for your excellently written article on the electricity crisis and the water situation, the rivers, not to mention the rapid decay of the nation at the tip of Africa. We must ask ourselves who is responsible for a scenario not unlike Zimbabwe. How are we the few tax payers going to cope with the future?

Mrs. Lorna Beekhuizen

Ten out of ten for your excellent article. "Our government is failing to deliver". The following can make a very big difference to the country as a whole. Why do we not get answers to these questions?

Chris Watermeyer

We surely have, or had, a culture of taking our basic support systems (inter alia,electricity, water, road and rail) for granted - in fact, it seems as if our leaders naively consider that those are 'givens' and will keep on supporting us, probably because someone has always kept things going, and that we always will (as you so neatly put it) 'maak 'n plan'.

It is long past due that the decision-makers realise that a country is an integrated and complex entity and that managing it is no job for amateurs. Tinkering, planning wonderful new gadgets like the Gautrain - which may well turn out to be just a very expensive piece of 2010 showcasing forced through against the odds - is all very well, but reality had to bite us sometime.

I am proud of the Institute for calling it as it is.

Francois Duminy, SAIEE

Hi Paddy
Hoe sê jy hulle darem nou! And I cannot agree with you more. (March editor's comment). Nice to have a platform from where to shout. I envy you. Could you please supply me with a PDF file of the article by Antonio Ruffini on Page 20 of the March issue in its lay out format or as a word document. I want to use this on my powersave@altron intranet webpage which forms part of our power saving awareness campaign among staff and our businesses.

Will that be possible?

Salome Brown

"Welcome to Africa" not the right approach

I refer to your editorial comment in the February 2008 edition of the SAIEE magazine WATTnow. Your comment in the second last paragraph is both regrettable and disappointing.

One of the main reasons that South Africa has always been the leading state in Africa in terms of industrial, economical and technological fields, has been the fact that we have had better engineers than the rest. If we are to stay ahead, this means that we have to maintain our superiority in these fields.

To make a statement "welcome to Africa", and accept "Power cuts as an endemic part of every country on the continent", is to accept defeat, and accept that our future is to be shared with the likes of the problems of Zimbabwe, Kenya, DRC Ivory coast, Sudan and all the other disaster areas.

The fact is, Eskom has failed to provide adequate power to SA after more than 100 years of being in this business. In the electrical engineering fraternity, the impending power-cut situation has been discussed, and debated in my experience, for the past 10 years. I am aware of at least two occasions when electrical engineers have been ridiculed, and even formally reprimanded for publicly projecting a poor image of Eskom at a public forum, by predicting that there were problems lying ahead. The only difference is that it was not anticipated that it would come upon us so suddenly in January; rather than in June on a very cold night.

The obvious reason for this in my opinion, that the strategic planning of Eskom management failed in at least three crucial aspects:

1. Failure to plan and construct sufficient generating capacity.
2. Failure to implement adequate planned maintenance.
3. Failure to manage coal supplies to power stations.

To these may be added the possibility that inadequate training, and retention of skills have also contributed to the present situation.

I am sure that in years to come, business schools in South Africa and abroad, will use this as a case study providing clear factual information to students, of the consequences of no proper strategic planning.

It is unsettling that nobody, as far as the general public's concerned, either in government or top management has been called to account for the situation.

We have to understand that the same people who placed us into this disastrous economic situation, now have to be relied upon to deliver us from the power constraints. To date nobody has been asked to leave, and no individual has considered it appropriate to "fall on his/her sword". To believe that the electrical and other engineers will accept that no one was to blame, is beyond comprehension.

The fact is, all the measures proposed so far will have little effect on the demand for power. The public, the government, even engineers from other disciplines, have very little understanding of electrical power. Kilowatt-hours, kVA, time-of use tariffs, power factor, and maximum demand are concepts not easily explained to them and then understood. We face years of severe restraints in the supply of electrical energy, and the approach is not to be "welcome to Africa', but a huge effort to ensure that when the crisis is over, we revert to, and maintain the situation prevailed until now.

Pierre Ballot Pr Eng.
Past President, SAIEE

Switching off geysers doesn't save money

Watt's Says

Dear Sir

It is high time to categorically deny the Eskom dogma about geysers. Don't you think that the Engineering Society should do this?

Geysers are automatically regulated. They are set to a certain nominal water temperature, the so-called set point. The system automatically compares the present water temperature with the external air temperature and uses electric power to drive the water temperature back to the set point.

Furthermore, if the geyser is left on all the time, but no hot water is used from it the temperature changes from the set-point are relatively small, thus little electric power is used to drive it back to the set-point. So during the day when no one is using hot water, it would not bring any power savings to disconnect the geyser.

If, on the other hand, the geyser is disconnected and is connected only when one wishes to warm up the water for a shower or bath the water will have to heat up. For instance, if the geyser had been disconnected for a long time, the water temperature drops to about the same as the external air temperature. In this case, It takes a considerable amount of electric power to heat up the water to the desired nominal temperature of the set point.

Thus if you turn off your geyser at 08h00 and turn it on again in the evening, it will cost you more than if you had left it on the whole day.

In this case the electric power consumption would be high until the set-point is reached. From there on, the geyser would compensate automatically for small temperature fluctuations and this would not cost much.

Let's assume that the geyser is left on all the time, but at a given time hot water is used from it for, say, a bath. The hot water from the geyser is then replaced by cold water, which will be heated up by the automatic control system to the set-point by electric power.

If a lot of hot water is being replaced by cold water, like with a bath, it may be quite costly to heat it up. In the case of a shower, however, much less hot water is replaced by cold water that needs to be heated up.

In summary, it does not make any sense to disconnect the geyser during long periods when no one is using hot water from it.

The geyser's contribution to the electricity bill depends on how often and how much hot water is taken out of it.

Prof Dr. Ian Shaw (retired) Pr.Eng.
Randpark Ridge

Structural engineer angered by electrical engineers

Sir

I have just bought *WATTnow* at CNA as it seemed pertinent to read more on the electrical engineering profession. I am a registered professional structural engineer. I am completely aghast at the seemingly incompetent approach the electrical engineering profession has had to securing adequate power in South Africa. I have written (and received no reply) to the President of SAIEE requesting an enquiry into how so many professional engineers employed at Eskom, and in power-related industries, can have kept so quiet on this catastrophe for ten years!

For reference I attach the South African Institute of Consulting Engineers (SAICE) code of ethics. In support of SAICE's mission, SAICE strives:

- To be a learned society for all those associated with Civil Engineering and to enable our members, through consultation and accountability, to provide the community with environmentally and economically sustainable infrastructure;
- To cater for the interests and needs of our members by creating an effective communication channel in a strong, dynamic and stable organisation and to provide members with continuing education in technical, managerial and communication skills;
- To advance and uphold the professional ethics of the civil engineering profession and enhance the recognition of civil engineering as a highly respected profession and a desirable career; and above all, to encourage our members to strive for excellence in civil engineering.

It is apparent to me and I am sure many other engineers that their silence is inexcusable. I can assure you that it gives me no pleasure pointing a finger at my fellow engineers.

Yours sincerely,
John Fourie, MSc Eng Pr Eng

The Editor Replies

Dear Sir,

First of all your statement that the electrical engineers have remained silent is untrue. There have been numerous interviews on national and regional radio and televisions stations with Ian MacKechnie (the immediate past president of the Institute) and many articles published in newspapers around the country.

Be that as it may, my personal opinion is that I'm an unconvinced as to what the electrical engineers could have done to prevent the crisis. Essentially government refused to allow Eskom to invest even though warnings about the shortage of electricity were published way back in 1998. In 2004 Eskom made animated pleas to Parliament and Cabinet to no avail. Moreover, President Thabo Mbeki apologised to the nation for misjudging the electricity crisis and preventing expenditure on power stations and generating capacity. If Eskom – which is owned by the government – couldn't get its own shareholder to see sense, how were the engineers going to do so?

In writing about civil engineering and consulting engineering over the years, I have found that civil and consulting engineers have also made blunders in the past and doubtless will continue to do so in future. Just look at the appalling state of our roads infrastructure and our railway infrastructure and one might ask why the civil engineers have done nothing to resolve the problems. My view is they can't resolve it either. Government must do so.

And, just as there are none so blind as those that will not see, there are none so deaf as those that will not hear.

Yours sincerely
Paddy Hartdegen

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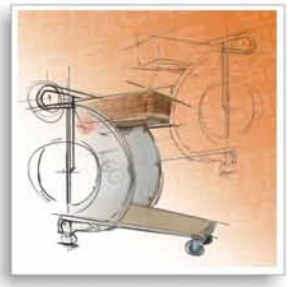

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Roadshow for the PneuDrive Competition

More than 400 students from seven universities around South Africa will take part in the *PneuDrive Challenge* being run by SEW Eurodrive and Festo. The competition is focused on students providing innovative new engineering applications using products supplied by the two companies. It carries a prize worth R100 000.

According to Ute Bornmann, general manager of sales and marketing at SEW Eurodrive this is the first competition of its kind in South Africa and encompasses elements of the engineering curriculum so as not to impede the students. Products that can be used in this competition have already been supplied to the universities.

"The judges are looking for solutions that demonstrate a combination of creativity and innovation, technical accuracy and the level of difficulty and practicality using products manufactured by Festo and SEW," says Bormann.

The competition is open to students studying electrical, mechanical and electronic engineering as well as those involved in mechatronics. Groups of four students in the 3rd and 4th year of study are eligible for the competition, which closes in June.

"The competition takes into account the syllabus at each of the universities so that the projects can form part of the academic courses being studied. Moreover, we have set up a specific website for students who can e-mail our experienced product specialists for technical assistance with their projects," says Bormann.

While the winning university will receive equipment from Festo and SEW Eurodrive worth R100 000, the winning students will be given an all-expenses-paid trip to Germany to visit the head offices of each of the sponsoring companies.

In terms of the development and international infrastructure of SEW Eurodrive Bormann points out that it is a family-owned business that has been operating since 1931 and now employs 11 000 people in 46 different countries around the world. It is one of the leading companies in the field of drive electronics and engineering.

Festo is also a family-owned business that has been operating in the pneumatics, servo-pneumatic and electric drive fields since 1925 and currently employs 12 000 people serving more than 300 000 customers in 176 countries.

Both companies have strong research and development teams based at their head offices in Germany and as Bormann points out SEW Eurodrive and Festo are looking to attract some of the top South African talent to joint the companies and possibly enter the research and development fields.

The winning entries will be displayed at the *Electra Mining Exhibition* which is to be held in Johannesburg later this year. Moreover, if any of the competition entries have a commercial application then Festo and SEW Eurodrive will consider manufacturing a working prototype in conjunction with the students and the academic institution.

"This is a really exciting project for us because it means that the students can be exposed to the practical and functional aspects of resolving engineering and mechatronics problems that occur in the business world," says Bormann.

"Both Festo and SEW are leaders in their respective fields and have achieved this status primarily because the products, the technical know-how and the concentration on customer service worldwide is one core values for both companies," Bormann says.

"This competition exposes young engineers real issues that face companies and engineers in the business world. It's imperative that these youngsters are face the realities of product design, development and application to provide solutions to problems," she says.

In-flight broadband – but will anyone actually use it?

In-flight broadband will soon be available on American Airlines and Virgin America flights and will cost $12,95 for cross-country flights and $9,95 for flights lasting three hours or less. American Airlines says it will adapt 15 of its Boeing 767s with broadband capabilities but will eventually install connectivity on 500 planes.

In-flight broadband services have been available in the US since 2004 when Boeing introduced its Connexion service for international carriers. The service was cancelled in 2006 when Boeing failed to get domestic airlines in the US to use it. Moreover the hardware for the service was bulky and unreliable.

Other companies, such as Aircell, which uses 92 antenna towers across the country to transmit wireless signals to planes and Row44 which offers connectivity via satellite have been pushing the service but it has still not been widely used.

The question now is whether people on board the flights are prepared to use the services being offered by Aircell, Row44, American Airlines and Virgin America. If the services are reliable, fast and cheap they're likely to attract users but if priced at costs similar to telephone services it will fail.

Verizon, which had been in the in-flight phone business got out of it after 20 years when customers refused to pay the $3,99 connection fee for domestic in-flight calls and $4,99 for each additional minute. International calls cost $5,99 to connect and $5,99 per minute. At that level customer resistance was sufficiently high to force Verizon out of the business. The same thing could happen with broadband connectivity.

"Never mind the keys, where are my glasses?"

Japanese scientists have invented a pair of glasses that record what you are looking at and play back the footage to you. More intriguigingly if the users tells the glasses what he or she is looking at the glasses will remember and the next time he or she looksat the object or scene the glasses will identify it.

One immediate application that springs to mind is finding exactly where you left your car keys when you got home from that late-night office party. If you're wearing the glasses they will remember your movements and playback footage of the silly things you did before tumbling into bed. And, in the morning fog, you'll easily see how you hid your keys behind the beer in the refrigerator.

Of course there are other more practical applications: if you are looking at a field of flowers and identify them then the next time you look at the same plant, the glasses will tell you what it is.

This seems a bit daft to me because if you know what they are in the first place then why would you not recognise them when you looked at them for a second time.

However, Japanese scientist and inventor, Professor Yasuo Kuniyoshi says that the glasses will eventually be "more intelligent than the wearer" as they will be able to identify objects that the wearer doesn't immediately recognise.

He says the experimental model is still too large for everyday use but the team of researchers at the University School of Information Science and Technology is confident that they will be able to miniaturise it.

He says, for instance, that you can tell your glasses what it is you're looking for and the glasses will show you when and where you last saw the item. Of course it doesn't help much if you lose the glasses and then have to hunt around the house looking for the glasses so they can tell you where your keys are.

Professor Kuniyoshi has spent years developing the computer program that can recognise what it is recording and working with artificial intelligence expert, Tatsya Harada, claims to have created what is believed to be the world's most advanced object recognition software.

Cellular broadband may surpass fixed line activity

Cellular broadband is growing so rapidly in Europe that it has surpassed anything achieved in the mobile or fixed line networks according to Ericsson's Johan Bergendahl. He expects that mobile broadband will overtake fixed line broadband this year.

He claims that in Sweden the most popular phone is a USB modem. The cost of a cellular broadband subscription is just $31 a month and no extra equipment is needed as 3G HSDPA receivers are being built into notebook computers.

Bergendahl argues that the growth in cellular broadband networks is likely to see Wi-Fi hotspots being redundant within the next year or so as HSDPA connections replace these hot spots. However, he points out that several problems are inhibiting the growth of cellular broadband particularly since these services are still not readily available in parts of Europe or Canada which has a strong telecommunications infrastructure.

Moreover, data roaming is still expensive by comparison with landline data charges, which is deterring major companies from deploying cellular broadband as a network of choice. Bergendahl claims that some hotels are actively trying to halt cellular signals being received in their buildings because data access is seen as a 'business opportunity' for many of these hotels.

Bebo sold to AOL for $850-million

America On Line (AOL) has bought the world's ninth most popular social networking site, Bebo for $850-million. Bebo is believed to have about 40-million members who view an average of 78 pages per day.

Internet analysts say the price paid for Bebo by AOL is 'tiny' compared with some of the other social networking transactions. For instance, Microsoft paid $240-million for a 1,6 percent stake in FaceBook and News Corp bought MySpace for just $580-million in 2005. MySpace currently has an estimated value of about $15-billion.

Analysts say that these social networking sites represent a valuable location for online advertising because members of the site post information about themselves can then be targeted with specific products and services that are likely to appeal to them. There has been much hype over advertising on the social networking sites but so far none ofthe companies that have invested in advertising have shown any real financial rewards.

I suppose time will tell.

WATTnow

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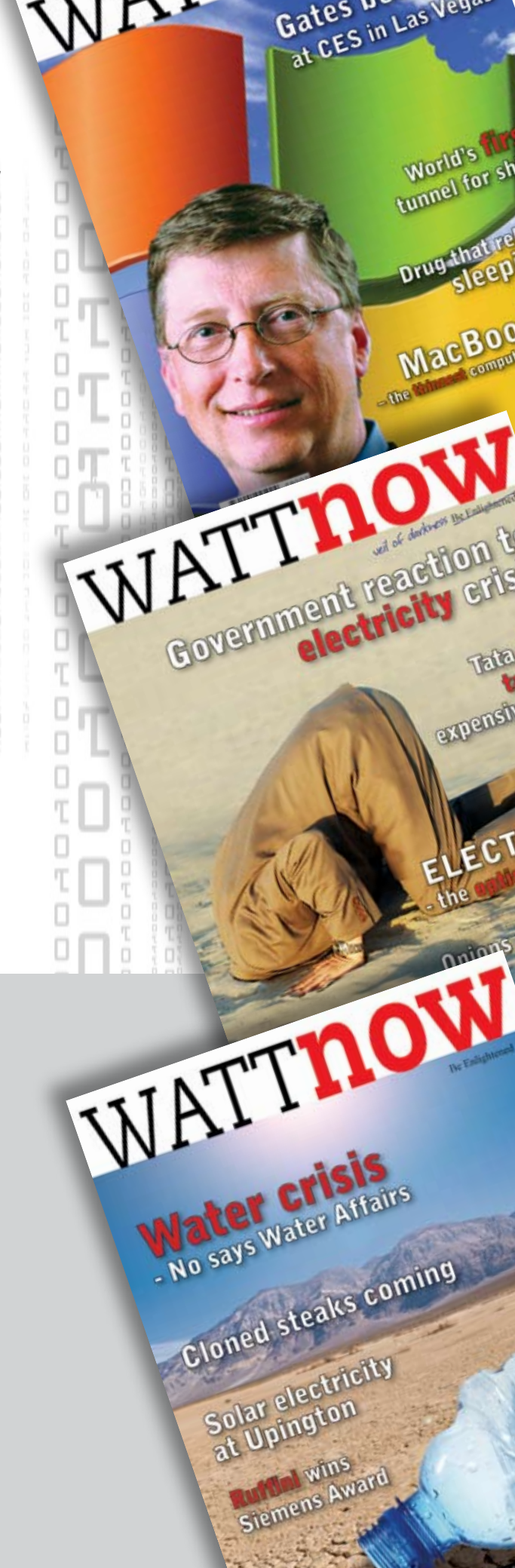
WATTnow is published monthly by Crown Publications and the South African Institute of Electrical Engineers and it provides a fascinating insight into:

- Technology
- Energy and Electronics
- Science and Research and Development
- New products and interesting gadgets

In addition, WATTnow gives its readers extensive and in-depth coverage on a number of topical issues such as the energy crisis facing South Africa or government's plans to extend the roads network around Gauteng and toll motorists using it.

WATTnow also offers its readers a monthly in-depth article on one of the many fascinating aspects of engineering, ranging from the development of South Africa's nuclear energy capacity to the use of coloured lenses to correct dyslexia.

It is the official magazine of the South African Institute of Electrical Engineers and is distributed to members of the Institute. It is also sold by retail outlets in all nine provinces.



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Intel is seeking an 'atomic' rise in its chip sales

Intel will introduce new 1,8-inch and 2,5-inch solid state drives with capacities of between 80 GB and 160 GB later this year. These drives will apparently out-perform the one-megabyte-per-second readings speeds of the Samsung flash drives according to Troy Winslow, head of Intel's marketing operations.

He says the increase in performance stems from an improved memory controller which is fundamental to the performance of solid state drives. He claims that the Intel controller is "more optimised" and this allows for much more effective inter-connection with processors and chipsets.

The solid-state drives will be quicker than serial ATA II formats allowing for a larger amount of storage in a drive and increasing the bandwidth available to transfer data which is more critical on solid-state drives than on conventional hard disks.

The new Intel Z-P140 drives will use Parallel ATA connections in computers but Winslow says the main market for the drives is in new Mobile Internet Devices which are driven by the Atom chips – each one less than 25 millimetres square and about a quarter of the size of Intel's Core 2 duo. The Atom chips were shipped to manufacturers in March.

MacBook Air confounds airport security officials

The MacBook Air – which is thin enough to fit inside a manilla envelope – confused security staff at an airport in the United States who forced passenger Michael Nygard to miss a flight because the security staff were unsure what the 'device' was.

Nygard assured them that it was a new portable computer but they refused to believe him because it had no hard disk, no ports at the back or sides and just a "couple of lines" where the hard drive should be. The lack of standard features was enough to cause the guards to raise the alarm.

Security staff refused to let the device through until a younger agent joined the puzzled officials and told them that it really was a computer and had just been unveiled by Apple.

Nygard says that by the time security officials let him into the passenger terminal, his flight had taken off and he had to hang around for an hour waiting for the next flight.

The MacBook Air was released in February this year and sales of the computer show that it is widely favoured by many Apple fans. There are critics of the new computer who say that it is more of a novelty than a real machine.

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Slump in computer sales

A decline in demand for new computers throughout the world, coupled with an over-supply of electronics chips for computers and hand-held devices has seen a rapid sales slump develop for electronic chips suppliers who are reducing prices of components in order to get rid of stocks. According to research group Gartner, the surplus inventory among manufacturers around the world grew to 12 percent at the end of last year. The situation has not improved in the first four months of this year.

Analysts are blaming the slump in the US economy for wide-spread job cuts there and this is believed to have had a ripple effect on the European and Far Eastern manufacturers who are cutting back stocks and manufacturing volumes in response to the US's economic woes. Gartner confirmed that sales of hand-held devices over the festive season tumbled – with the exception of the Apple's iPhone.

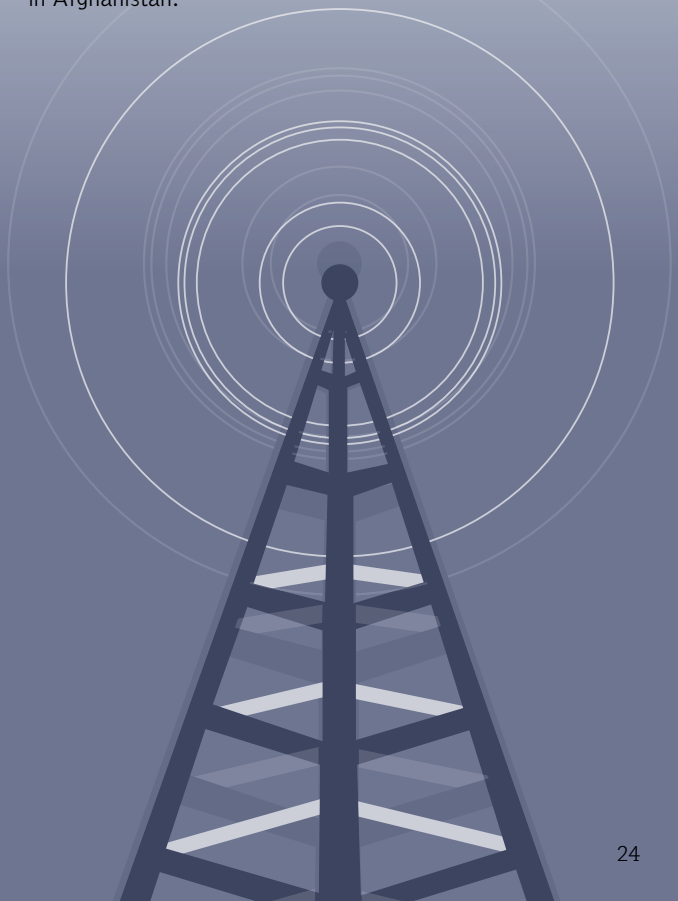
Prices of flash memory have also dropped fast as companies attempt to clear stocks because of evaporation in demand for these devices. In South Africa, for example, 4 GB flash drive is now selling for less than R200 equivalent to the price of a 512 MB device just over a year ago.

Taliban force night-time network shutdown

Cell phone companies in Afghanistan are shutting down their networks at night because Taliban militants destroy the radio masts believing that the military forces are using mobile technology to locate and destroy their bases in night-time attacks. In March the Taliban destroyed ten mobile phone masts belonging to different service providers.

The Taliban has warned that it will destroy the network infrastructure if the operators do not agree to switch off the network at night. The government has urged network operators not to agree to the Taliban's demands but network operators do not want to risk damaging the costly infrastructure that has already been installed.

Mobile telephone services have grown dramatically in Afghanistan since the first licence was awarded in 2002. The two largest operators, Roshan and the Afghan Wireless Communication Company have about 3-million subscribers. For most of the population there are no landline services available in Afghanistan.



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Venice gets a coral reef

A tidal barrier being built in the Adriatic Sea is blooming into a coral reef and already more than 150 species of rare corals, fish and crustaceans have flocked to the Mose project. The rare giant pen shell, an endangered bi-valve that can grow up to a metre long and is normally found in Sardinia. It is flourishing on the barrier.

The coral reef has taken hold on the 1,6 km rock and cement barrier in just two years and according to marine biologist, Andrea Rismondo of the University of Padua, the barrier was built purely to protect Venice and stop it sinking into the sea. He says that global warming may have helped the coral reef to flourish as the sea around Venice is warmer than usual.

The reef is to be used as a tourist attraction and will be turned into a marine park. Fulco Pratesi, founder of the World Wildlife Fund in Italy says he is not surprised that creatures have adopted the rock and cement barrier and claims that oil platforms are a paradise for anemones, oysters and a host of other creatures as well.

The barrier aims to halt the gradual sinking of Venice. The bell tower in St Mark's Square is now being fitted with titanium bands in a project that will hopefully save it from collapse. The 100 metre tower was built in the 16th Century on thousands of wooden posts that were driven deep into the mud in the Adriatic Sea.

The bell tower is now leaning by about 12 centimetres and the titanium bands are being used to try and stop it from falling over. In 1902 the bell tower did collapse, killing the caretaker's cat, but an exact copy of the tower was re-erected on the site in 1912.

Hybrid vehicle sales soar in US

Sales of hybrid motor cars have risen by a surprising 38 percent in the America according to statistics released by Hybridcars.com. The hybrid versions of current models can be considerably more expensive but most hybrids cost between $3 000 and $5 000 more. There is also a waiting list for hybrid cars.

Currently there are 350 000 hybrid vehicles on the roads in the US and Toyota dominates the market – as it does in most other countries around the world where hybrid cars are available. Analysts say that it's unlikely that motorists will recoup the additional cost of the hybrid vehicle in fuel savings. The vehicles are in short supply in most markets around the world.

Other vehicle manufacturers, such as Chevrolet, who market a Tahoe hybrid say that the petrol powered vehicle costs $38 000. The while hybrid version comes in a $52 000, which is a significant premium that many owners are prepared to pay.

Ford says that it has increased production of its Escape and plans to introduce another two hybrids next year hoping to sell about 24 000 units annually. Ford admits that there is a shortage of available hybrid vehicles at the moment but hopes to reduce the shortage by boosting production levels.

The demand for hybrid vehicle in the US has been stimulated by the soaring petrol prices.

Alternative concepts from Nissan

Nissan has unveiled its new electric concept version of it's popular Cube vehicle and plans to introduce these vehciles in 2010 to fleet operators who will test them for a further two years before the electric Cube is available to retail customers. The Cube uses a lithium-ion electric power train and has a range of about 160 kilometres with a top speed for 120 kilometres an hour.

Meanwhile, Nissan has also unveiled its Pivo 2 urban commuter concept car with a revolving three-person cabin and by-wire technologies that substitute electric signals for conventioanl mechanical linkages such as shafts and hydraulic cylinders in the steering, braking and drive-train systems.

Nissan is just one of a host of vehicle manufacturers around the world investigating alternative fuels, battery cars and even solar powered vehicles. So far Toyota has successfully marketed it's Prius range which is sold throughout the world. However, given the extraordinarily high prices of petrol and diesel, alternative options are being more actively investigated by all manufacturers.

'Supervision' TV

Super Hi-vision television – which is said to be about 33 times more detailed than the best high definition television pictures – is likely to be used to broadcast the 2012 Olympics on huge screen around Britain according to the British Broadcasting Corporation (BBC). The organisation is working with Japanese broadcasters to perfect the new high definition television screens.

The BBC has already launched a high definition channel for its cable and satellite viewers. South Africa is set to begin broadcasting high definition channels later this year via Multichoice and on a limited basis from the SABC.

People in Japan who have invested in high definition televisions sets can breathe a little easier though as Japan is likely to only begin broadcasting its Super Hi-Vision system within the next seven years. It will take until 2025 for public broadcasts to be made using the system.

At the NHK's Broadcasting Centre in Tokyo a Super Hi-vision system is being used to project pictures onto a 10 metre by 5,5 metre screen. It is accompanied by 22 multi-layered speakers which replicate the sound of a concert hall.

Currently there are many complications though. Just 20 minutes of footage can be recorded at a time and it has to be edited on a frame-by-frame basis. Editors working with the raw footage say that an hour's broadcast of Super Hi-Vision TV can take a week to complete making it unsuitable for ordinary commercial news broadcasts.

There is some doubt as to whether the enhancements offered through the Super Hi-Vision system can even be discerned by the human eye. This is discounted by Nobuyuki Hiruma, an associate director at NHK's laboratories who claims that the new sets will "cover the ability of human vision as it is based on the research done into all aspects of human vision".

NHK is currently using the Dirac video compression technology invented by the BBC to compress the enormous quantity of data needed to provide Super Hi-Vision footage capable of being broadcast.

BRAIN BUSTERS

Here are some more brain busters to exercise your grey cells. To gain the maximum effect you should attempt to answer them before looking at the answers, which will be available on our website, **www.crown.co.za/wattnow**

Some misconceptions about electricity

Do you agree with the following statements?

Statement 1

Ben Franklin should have said electrons are positive.

(Many authors of textbooks on electricity bemoan the fact that Ben Franklin labeled 'resinous electricity' as negative and 'vitreous electricity' as positive. As a result of Franklin's choices, we are forced to state that electrons carry a charge of negative electricity and must therefore name the electric currents in metals as flows of negative charge rather than positive charge. Did Franklin make a mistake? Do you think he should have defined the electron to be positive?)

Statement 2

The electric energy in a circuit flows in a circle.

Statement 3

'Static electricity' (contact electrification) is caused by friction.

Statement 4

Light and radio waves travel at 186 000 miles per second (+/- 300 000 km/sec).

Statement 5

Electromagnetic coils use up energy to make magnetism.

Source: William J Beaty at http://amasci.com/miscon/eleca.html

ON THE LIGHTER SIDE

Weaving with light

In the rugged Sierra Madre mountain range of west central Mexico, the native Huichol people still live without electricity because it is too expensive to run power lines to their remote mountain villages. Not having electricity has a direct effect on the Huichol economy which, because farming is difficult and crops often fail, is sustained mainly by the sale of local artwork. Without electricity, the villagers can only work during daylight hours.

Now, a team of scientists, designers and architects from Kennedy & Violich Architecture in Boston in the USA has introduced new technologies to provide the Huichol with light after the sun sets – no plugs needed. Small electronic crystals in the form of high-brightness LEDs (light emitting diodes) are woven into fabrics that can be made into clothes, bags or other items.

By collecting the sun's energy during the day, these lightweight textiles provide bright white light at night. The inventors named the textiles 'Portable Lights'. Two LEDs are woven into a plastic-coated textile. When turned on, these make the entire piece of fabric glow.

To power the LEDs without electricity, flat and flexible solar panels measuring about 25,5 cm by 12,7 cm are sewn onto a piece of fabric.

Circuits connect the panel to a lithium ion battery which is in turn connected to the LEDs in the fabric. A tough layer of plastic protects the circuitry. After only three hours of exposure to sunlight, the battery accumulates enough charge to power a portable light for ten hours.

The Huichol women have been quick to incorporate the portable light technology into their culture. Having long woven colourful bags on a loom they are now weaving portable lights into new patterns in their bags.

Computer Cat(astrophy)

A report on ZDNet Australia last year described how an Apple iBook owner suspected his cat had hacked into his password-protected notebook. It turned out he was right – his cat, which liked sleeping on the warm keyboard, managed to automatically bypass the computer's security!

When cats walk or climb on your keyboard, they can enter random commands and data, damage your files, and even crash your computer.

PawSense is a software utility that helps protect your computer from cats. It quickly detects and blocks 'cat typing' and also helps train your cat, or cats, to stay off the computer keyboard by making sounds that annoy cats and teaching them that getting on the keyboard is BAD, even if humans aren't watching.

Every time your computer boots up, PawSense will start up in the background. The software then analyses keypress timings and combinations to distinguish cat typing from human typing.

At present this utility is only available for Windows 95/98/ME, NT, 2000 and XP, but a Mac version is in the pipeline.

Heart transplants – yesterday and today

by Glynnis Koch

On December 3 last year, Groote Schuur Hospital and the University of Cape Town celebrated the 40th anniversary of the first successful human heart transplant by Professor Christiaan Neethling Barnard and his team of medical professionals.

To mark the anniversary a heart transplant museum (the Heart of Cape Town Museum) was unveiled at the facility in the Western Cape.

SA Health Minister, Manto Tshabalala-Msimang, commemorated the historical event by also opening the first Paediatric Rheumatic Heart Disease Prevention Clinic, equipped with two new heart scan machines at a cost of R500,000 each. Assisted by the Life Health Care Group, the new paediatric clinic will service youth from the townships of Langa and Bonteheuwel.

A gala dinner was held for dignitaries, medical specialists, families of the first heart donor and the first recipient as well. In addition, an exposition on heart transplantation and an academic seminar on healthcare challenges in Africa, was held.

Dr Tshabalala-Msimang said Dr Barnard's brilliance as a cardiothoracic surgeon was critical in ensuring the success of the operation. However, she added, this success would not have been possible without the skilled and committed team of surgeons, cardiologists, nurses and technicians who assisted the pioneering heart surgeon "on that very important day in the history of medicine. They demonstrated that a developing country on the southern tip of the African continent could beat the rest of the world with this remarkable surgical feat," the Minister said.

She made special mention of Hamilton Naki, a black South African who later received the Order of Mapungubwe in Bronze in a post-apartheid South Africa. Naki, born in 1926 in the district of Centani in the Transkei, became a laboratory assistant and learnt surgical techniques in Dr Barnard's laboratory. He was later responsible for training scores of surgeons from all over the world who worked in the hospital's world-famous heart transplant unit.

By 28 November 2007, the Heart Transplant Unit at Groote Schuur had recorded 516 transplants for 488 patients, including 17 heart-lung transplants. More than one hundred Groote Schuur Hospital heart transplant patients are alive and well, with the longest-surviving recipient having received his first new heart nearly 28 years ago.

Source: story by Shaun Benton on Bizcommunity.com, originally published courtesy of BuaNews: http://www.buanews.gov.za/. Also capegateway.gov.za.

Disadvantages of conventional conservation methods

The current standard of preserving a transplanted organ is cold preservation. In this approach the organ is initially perfused with a cold solution and then packed in sterile ice. Ischemic injury occurs during the period between the donor and the recipient surgeries. During this time the organ is without blood or oxygen, which may cause injury to the transplanted organ, which may lead to rejection.

Therefore, the faster the organ reaches the patient, the better the chance for a successful transplantation. International data shows that the one year survival of heart transplant is directly and significantly related to the length of time an organ is without blood between the donor and the recipient surgeries. If the time window between removal and implantation is too long, the organ will become unusable. The maximum storage time for a heart is four to six hours.

Devices to keep the heart beating

Since the groundbreaking heart transplant in 1967, when a heart-lung bypass machine was used to keep oxygenated blood flowing through the patient's body while the diseased heart was removed and the donor heart sewn into place, many scientific and technological breakthroughs have been made in the form of devices that can extend and improve the lives of millions of people with heart conditions and those waiting for a heart transplant.

In December last year, a three-month-old girl became the youngest ever person to benefit from an artificial heart pump, which kept her alive for five weeks while awaiting a heart transplant. The so-called 'Berlin Heart' sits outside the body, connected to the patient by four tubes.

The Food and Drug Administration (FDA) in the US has recently approved the first totally implanted permanent artificial heart for humanitarian uses. The device is for patients with advanced heart failure involving both of the organ's pumping chambers, who are not eligible for a heart transplant, and who are unlikely to live more than a month without intervention. The FDA also approved pacemakers that reduce severe heart failure symptoms by re-synchronising the pumping action of both heart chambers. In addition, it has given approval to new monitoring devices that allow implantable cardioverter defibrillators (ICDs) to transmit basic information about the patient and the device to physicians between office visits.

The range of heart devices available now includes:

- **Automated External Defibrillators (AEDs):** Portable and automatic, these devices help restore normal heart rhythm to patients in cardiac arrest. They analyse heart rhythms and can help rescuers determine if an electrical shock is needed to restore a normal heartbeat.
- **Cardiac pacemakers:** Small, battery-powered, pacemakers are implanted into the body. They are used when the heart beats too slowly or has other abnormal rhythms and monitor the organ's electrical impulses. When needed, the pacemaker delivers electrical stimuli forcing the heart to contract in a more normal tempo.
- **Implantable Cardioverter Defibrillators (ICDs):** These monitor

heart rhythms and deliver a shocks if dangerous rhythms are detected. They also record the heart's electrical patterns of abnormal heart beats, allowing doctors to review the patterns.

First beating heart transplant

In April 2007, protected by its own nutrients and blood supply, a beating heart supported by an investigational organ preservation device, was successfully transplanted into a 47-year-old man with congestive heart failure and pulmonary hypertension. The surgery was performed at the University of Pittsburgh Medical Center (UPMC) by Dr Kenneth McCurry, assistant professor of surgery, division of cardiothoracic surgery at the University's School of Medicine and director of cardiopulmonary transplantation at UPMC's Heart, Lung and Esophageal Surgery Institute.

The donated heart, from a 46-year-old Caucasian male, was maintained in a beating state on the investigational Organ Care System (OCS) for two hours and 45 minutes. The OCS is designed to maintain donor hearts in a beating, functioning state during transportation from the donor to the recipient's hospital. After removal from the donor, the heart is placed into the OCS, where it is immediately revived to a beating state, perfused with oxygen and nutrient-rich blood and maintained at the appropriate temperature. Using the OCS, organs are kept in their physiological, beating state for delivery to the recipient and until implantation.

By maintaining the organ in near perfect physiologic state, the OCS will reduce injury and help extend the life of these organs, which also will improve patient outcomes with less rejection and shorter length of ICU and hospital stay.

Artificial hearts – creating a simple, cheap, synthetic device

Donor organ heart transplants are the current 'last hope' for people with severe heart failure, but, with limited organ donors, this is regrettably only available to a small minority. Mechanical replacement hearts may prove to be a more sustainable option.

The heart is essentially a hard-wired electronic muscle pump and, theoretically, should easily lend itself to synthetic engineering. Unfortunately, there are a number of problems with artificial implants. First, the human immune system sees them as 'foreign' and rejects them. Secondly, they need to be powered, and external power sources and batteries can limit patient mobility. Thirdly, blood tends to clot when flowing through synthetic material, and developing new products to overcome this has been problematic.

The first total artificial hearts were created in the 1930s, by a Russian scientist, Demichov who implanted them in dogs with some short-term success. During the 1960s, a heart replacement system called the Jarvik device was used in patients in Texas, but only gave temporary relief, with no-one living longer than six months.

The last five years have seen significant advances. The latest devices boast successful transplant rates in excess of 8%, with 60-70% of patients surviving five years or more.

Replacing the heart's cells

According to a recent report on 'Science News Online' *(www.sciencenews.org/articles/20080119/fob2.asp)*, in a step toward growing complex organs for transplants, researchers have stripped all the cells from dead rats' hearts and injected the gelatinous empty structures with living heart cells from newborn rats. Eight days later, the repopulated hearts were beating, albeit feebly.

Eventually, doctors might be able to use this approach to make new hearts or other organs for transplantation by growing a patient's own cells inside a hollowed-out organ from a pig or cadaver. Because the cells are derived from the patient, his or her body would be less likely to reject the organ. Such reconstructed organs, however, are still years away, the researchers caution.

A team led by Doris Taylor of the University of Minnesota in Minneapolis, took hearts from rats that had been dead for less than 18 hours, and flushed them with a liquid detergent. The detergent gradually broke up the dead cells and rinsed them away, leaving behind translucent, heart-shaped masses of collagen and other proteins that normally surround heart cells and hold them together.

The resulting cell-free heart served as a 3-D scaffolding in which the new cells could grow. However, Taylor's team did not know whether the heart cells they took from newborn rats would take hold and behave normally. The injected cells did not fully populate the heart lattices, and the arrangement of cells was much simpler than in the original hearts. The reconstructed hearts could pump blood at about 2 percent of the rate of a normal adult rat's heartbeat.

The growing need for new transplant technologies

The number of people requiring a life-saving transplant continues to rise faster than the number of available donors. In the United States, of the 96 000 people currently waiting for a donor organ.

Sadly only about 30 percent of these patients will benefit from a transplant, to prolong their lives. Nearly 7 000 potential transplant patients die each year while waiting for an organ, equivalent to 19 transplant candidates dying each day because there simply aren't enough donor organs available.

On the plus side, the majority of people who receive a heart transplant enjoy a high quality of life. Recipient survival rates vary based on a number of factors, but overall the one-year survival rate is nearly 90 percent after one year and 72 percent after five years. Statistics for South Africa are not available. Wn

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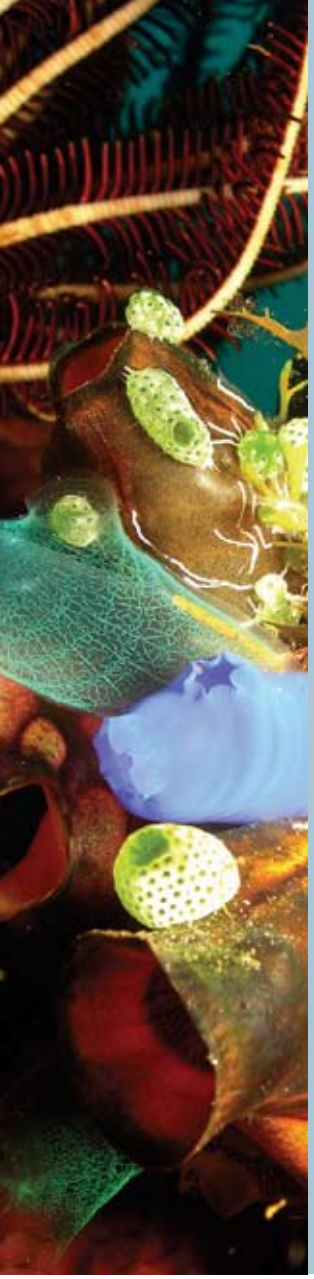


Sea cucumbers inspire new material

A new material comprising a combination of nanofibres carefully embedded in polymer can rapidly switch from being rigid to flexible and vice versa. The material, inspired by sea cucumbers was developed after scientists found that these creatures tensed or became rigid when threatened.

Scientists believe the materials could be used to make advanced brain electrodes which are stiff when implanted but quickly become supple once inside the body. Adding water to the material changes its state.

The naturally occuring nanofibres, each one just 25 nanometres in diameter, are gathered from a sessile sea creature known as the tunicate or sea squirt. According to Dr Christoph Weder, spokesman for the team that developed the material, there are many other sources of nanofibres including cotton and wood but these fibres don't change their state.

However the sea cucumbers and other oceanic creatures have collagen nanofibres embedded in a soft connective tissue allowing them to reversibly and quickly change the stiffness of their skin. The process is akin to a natural body armour that hardens the dermis when the creature is threatened.

If there is no water, the nanofibres are held together by hydrogen bonds, which gives it rigidity but the fibres become supple when exposed to water the water molecules competitively bond with the fibres.

Dr Weder explains that this has an effect of un-gluing the fibre-to-fibre bonds making the material about 1 000 times softer and giving it the consistency of rubber. As the water evaporates, cross-linked whiskers reform, stiffening the material.

Scientists hope that the new material, with its ability to switch between rigidity and flexibility, wll be used to help build new therapeutic devices that could be implanted into the brain of those people suffering from Parkinson's disease, or those who have suffered spinal cord injuries or had a stroke.

Such implants plug into cortical neurons or nerve cells within the brain and record electrical activity.

However, in animal studies scientists have found that the stiff electrodes damage the surrounding brain tissue and in a relatively short space of time the electrodes stop functioning.

However, the team believes that the new material would overcome this hurdle as the electrodes would be stiff during implantation but once inside the body, would soften to a point where they match the consistency of the brain itself and as a result don't cause any damage to the surrounding tissue.

Nanocomp makes nanotubes in sheets

Nanocomp Technologies has successfully manufactured single-walled commercial carbon-nanotube sheets one metre wide and almost two metres long. Until now carbon nanotubes have been just a few micrometres long because of the difficulty in mastering a cost-effective and commercially viable production process.

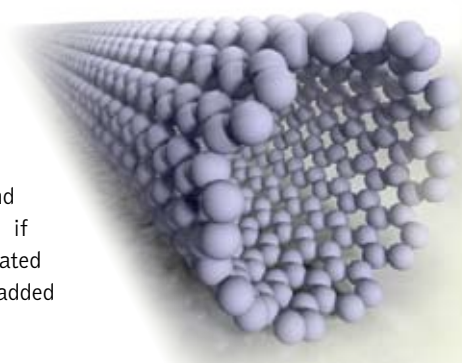
Carbon nanotubes are believed to be the key to future high performance materials as they offer a higher strength-to-weight, have better electrical and thermal conductivity, higher flame resistance and greater electromagnetic interference shielding that other materials.

Carbon nanotubes are about 100 times stronger than steel and weigh about 30 percent less than aluminium. They can conduct electricity as efficiently as copper does and can conduct heat better than almost all other materials including copper.

According to Peter Antoinette, president of Nanocomp the sheets are made by adding the catalyst in a very controlled manner and then add the gases quickly and in large, but very precise volumes. This produces what he calls an "ultra-pure material" in increasing quantities with consistency and reliability.

In other processes, impurities are generated during the manufacturing cycle and these impurities have to be removed during a post-processing cycle which makes the carbon nanotubes too expensive for most commercial applications.

Carbon nanotubes comprise of thousands of carbon atoms arranged either as a single-walled hexagonal combination or as a multi-walled configuration of concentrically nested tubes similar to the rings of a tree trunk. Multi-walled nanotubes are easier to make than single walled material but their properties are not as useful.



Nanocomp is now working on ways to transform the carbon nanotubes into yarns and conductive fibres which, if successful, will be incorporated into a multitude of value-added products.

In summer when the fields are white...

Chinese polysilicon manufacturer, Luoyang Zonggui High Technology – which supplies raw materials to Suntech Power – has allegedly been disposing toxic waste onto the green fields of Henan Province, killing wildlife and endangering human life. The fields have turned snow white because they are apparently blanketed in powdery silicon tetrachloride. Four tons of the substance is produced while manufacturing just one ton of polysilicon.

Polysilicon plants are booming in China as world demand for solar panels increases and within the next few years the number of factories producing polysilicon is expected to double. While silicon tetrachloride can be recycled many manufacturers do not do so because production of polysilicon is about 60 percent cheaper if environmental concerns are ignored and the silicon tetrachloride is dumped.

Suntech is believed to be actively seeking areas around the world where it can erect new plants to cope with the rapid increase in demand for panels. The company has been looking at various sites in Africa that might be suitable. Solar power in South Africa is bound to increase drastically particularly in view of the fact that all new homes built here will have to have solar heating panels installed.

World's LARGEST telescope probes space

The world's largest optical telescope, built at a cost of $120-million and comprising two mirrors each with a diameter of 27,6 feet (8,23 metres) is situated on the top of Mount Graham in Arizona and is capturing images with a resolution that is ten times better than pictures sent back to Earth by the Hubble Space Telescope.

The Large Binocular Telescope is operated by the University of Arizona's Mount Graham International Observatory and took more than 20 years to complete funding uncertainty and string of lawsuits from environmental groups and various Indian tribes hampered progress on the project.

German and Italian institutions each contributed 25 percent of the funding giving them a stake in the international observatory. Researchers from these institutions are allocated a certain amount of time – depending on their shareholding – to use the telescope for research purposes.

A galaxy 102 million light years away as captured using the telescope.

Located on Mount Graham in southeastern Arizona, the new Large Binocular Telescope uses two massive primary mirrors mounted side-by-side. It is twice as big as the next largest telescope on Earth and has 10 times the resolution of the Hubble Space Telescope. *Courtesy of the Large Binocular Telescope Observatory*

Each mirror has a diameter of nearly 28 feet. Together they produce the light-gathering power equivalent to a 39-foot circular aperture. *Courtesy of the Large Binocular Telescope Observatory*

Drug contamination in US water supplies

While south Africa's water supplies might be suspect – particularly in the light of findings from the Water Research Commission which showed high levels of Endocrine Disrupting Compounds – the United States water supplies apparently carry high levels of pharmaceutical compounds that can be damaging to humans.

An investigation into drinking water in the US found the there were traces of antibiotics, anti-convulsants, mood stabilisers and even sex hormones in drinking water supplied to 41-million Americans in 24 major metropolitan areas in Southern California, Northern New Jersey, Detroit and Louisville.

The investigation also showed that there were traces of other over-the-counter medications such as acetaminophen and ibuprofen in the water. The quantities are measured in parts per billion but the contamination is causing some concern among scientists who suspect that repeated exposure to these pharmaceutical preparations could eventually build up in humans.

Few of the water supply utilities in the US ever release information about the pharmaceutical screening tests that are done on water supplies. According to Benjamin Grumbles, assistant administrator at the US Environmental Protection Agency the findings of the *Associated Press* investigation are being "taken very seriously".

Some of the results of the investigation show:

- Officials in Philidelphia found traces of 56 different pharmaceutical products in treated drinking water. These included medicines for pain, injection, high cholesterol, asthma, epilepsy, mental illness and heart problems.
- Anti-epileptic and anti-anxiety medications were found in treated drinking water in California.
- Traces of metabolised angina medications and mood-stabilising carbamazepine were found in treated drinking water in northern New Jersey.
- Sex hormones were found in San Francisco's drinking water while six different pharmaceutical preparations were found in treated drinking water supplies in Washington.

The investigation did not provide any statistics on trace levels of other more addictive drugs such as heroin and cocaine.

America has a huge drug-taking population using narcotics ranging from marijuana to cocaine as 'recreational substances' on a regular basis.

Insects used to spy on people?

American scientists have succeed in fitting insects with special electrodes, batteries and tiny video cameras that allow them to be remote-controlled and used for specialised surveillance missions. The United States Defense Advance Research Projects Agency is now implanting brain probes into moths and beetles at a pupa stage.

As the creature develops the implants are incorporated into their body enabling them to send information directly to a central computer. The cyborg insects will eventually be used in hostage situations or sent to enemy barracks.

Scientists believe the insects will be able to be controlled from a distance of about 100 metres and will remain in a particular spot until they are commanded to leave. Similar spying devices have been installed in rats, pigeons and sharks with varying degrees of success.

For instance, rats have been implanted with electrodes that control their movement and have been trained to find particular types of scent including human bodies and explosives. Sharks have also had implants to control movement and have been used to detect very faint scents of certain chemicals because they have a remarkable sense of smell.

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Doritos seeks share of alien markets

British astronomers have invited members of the public to shoot a 30-second advertisement which it intends broadcasting into space as encoded ones and twos that they believe, clever aliens will be able to translate.

Doritos has already agreed to have its advertisement transmitted into space and has made a donation of an undisclosed amount of money to Leicester University and the European Incoherent Scatter Scientific Assciation (EISCAT). The advertisement will be broadcast using the 500 MHz Ultra High Frequency Radar at the EISCAT Space Centre in Svalbard, Norway.

British astronomers are urgently trying to find additional sources of revenue because hefty budget cuts from government have threatened the continued survival of many esteemed institutions including Jodrell Bank, the world famous observatory in Cheshire.

The funding shortfall is currently £80-million and the British Astronomical Society is said to be "deeply pessimistic and angry" about the cuts imposed by government.

Doritos has agreed to participate in the *You Make It, We Play It* advertising campaign. The winning advert will be transmitted to the Ursa Major Constelllation, also known as the Great Bear or Plough, which is 42 light-years away from earth. The advertisement will also be flighted on British TV and Doritos has agreed to award a prize of £20 000 to the person whose advertisement is chosen to be broadcast to the aliens.

Chemical brain controls nanobots

Scientists have shown that a tiny chemical brain, just two-billionths of a metre across, can control eight microscopic machines simultaneously. They now hope that soon these nano machines will be useful in treating diseases in the human body.

Dr Anirban Bandyopadhyay of the International Centre for Young Scientists in Japan believes that one day it will be possible to guide the nanobots through the body to a particular tumour or infection and then treat the condition using these nanobots.

The tiny brain is made from 17 molecules of the chemical duroquinone and each one of the molecules is a logic device. According to Dr Bandyopadhyay each logic device has four spokes and can independently be rotated to represent four different states.

One duroquinone molecule sits at the centre of a ring of 16 other duroquinone molecules and is connected to the others by hydrogen bonds. The state of the control molecule at the centre can be changed using a scanning, tunnelling microscope or STM.

Through the STM researchers showed they could change the central control molecule's state and simultaneously switch the states of the 16 surrounding molecules. He says that by instructing the one molecule to change it simultaneously and logically instructs the other 16 molecules surrounding it to change as well.

Apparently the configuration allows for four billion different possible combinations. The two nanometre diametre for the experiment was chosen because it represents the parallel communication of glial cells in the human brain.

Hydrogen cars – but where do you fill up?

While hydrogen-powered vehicles are a reality in the United States, with models such as the Honda FCX Clarity and the Chevrolet Equinox FCEV, there are just 36 hydrogren refuelling stations and two thirds of these are in California.

According to Paul Brubaker, head of the Research and Innovative Technology Administration within the federal Department of Transportation, it's now reached a point where the infrastructure to support these cars must be put in place rapidly.

The federal government has spent $1,2-billion on hydrogen in the five years since President George Bush announced a national initiative to create a hydrogen infrastructure but the reality is that there are still only 36 refuelling stations countrywide.

Hydrogen advocates believe that 70 percent of all American citizens need to live "within four kilometres" of a hydrogen station and they say it will cost between $10-billion and $15-billion to achieve this.

Paul Williamson of the University of Montana says that it's pointless trying to establish a national infrastructure immediately and he suggests instead that hydrogen refuelling stations are erected in all major metropolitan areas. Studies show that in Los Angeles, for instance, 40 filling stations would mean that most residents were within five minutes of a filling station.

California's governor, Arnold Schwarzenegger has promised to spend $11-million a year on hydrogen fuel stations so that the state will have 100 stations operating by 2010.

With regard to the manufacture of hydrogen, a new solar-powered facility that uses electrolysis to produce hydrogen opened in Sacramento in April and several other manufacturing plants using steam reformulation technologies to produce hydrogen from natural gas are due to open in other parts of the USA later this year.

Cuba joins the 20th century

Cuba has finally lifted a ban on consumer electrical appliances that has prohibited people from owning personal computers, DVD players, video machines, microwave ovens and even electrical pressure and rice cookers. Air conditioners will not be freely sold to consumers until sometime in 2009 while electric toasters and small kitchen appliances will be legalised in 2010.

The lifting of the ban is a result of improved electricity supplies in Cuba. The ban was imposed in the 1990s when the collapse of the Soviet Union led a a severe energy crisis in Cuba. The power problems were resolved after hundreds of electricity generators were imported and installed throughout the country running on fuel supplied by Venezuela.

So far there has been no official comment on when the government intends removing restrictions on Internet access but it has, at last, allowed people in Cuba to buy mobile phones.

Scientists seek new cement making methods

Cement manufacture is a major source of carbon dioxide emissions, contributing between five and ten percent of the carbon dioxide that leads to global warning according to civil engineering professor Franz-Josef Ulm at the Massachusetts Institute of Technology.

He says that roughly 2,4-billion tons of cement were produced in 2006 and while the manufacturing process is relatively efficient when compared with other building materials such as steel, cement manufacture nevertheless has a major impact on climate change.

He concedes that more and more manufacturers around the world are experimenting with organic waste materials as a substitute for cement. Coal-rich countries such as South Africa use fly ash to supplement cement in the final mix while other materials, such as rice husks is being used in Asia.

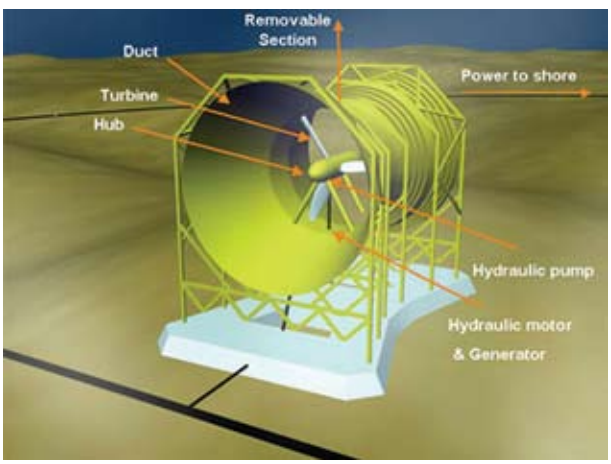
Italcemente, one of the largest European cement producers, has started adding titanium dioxide to its products and, in the presence of sunlight, titanium dioxide acts a photocatalzyer, speeding up the decomposition of nitrogen oxides, sulphur oxides and ozone.

This keeps the raw cement a shiny white colour and simultaneously prevents the build-up of pollutants on the cement surface. Researchers in Italy claim that if just 15 percent of the buildings in Milan were covered with cement containing titanium oxide there would be a 50 percent reduction in air pollutants in the city.

According to Rick Bohan of the Portland Cement Association based in Skokie, Illinois, the insulation provided by concrete walls actually combats greenhouse-gas emissions by reducing the energy needed for heating and cooling in a building by about 40 percent when compared with steel or wood.

Because limestone is so abundant throughout the world and is a key ingredient of cement, there is almost no research being done into finding a replacement material. However, scientists are studying the concrete molecules to find ways of making a material that is as strong as concrete but can be produced at much lower temperatures.

Professor Ulm points out that at a molecular level, human bones are very similar to concrete, but while cement is produced at a temperature of about 1 200 degrees C, the human bone is created at just 37 degrees C. Ulm's question is if the properties of human bones can be mimicked to make cement at similarly low temperatures?



Tidal power plants coming?

A £500-million tidal power plant is to be built in the Wando Hoenggan waterway off the South Korean coast by Lunar Energy and the Korean Midland Power Company. Strong tidal streams, caused by the rising and falling tides will be used to power a field of 300 tidal turbines, each 20 metres high. The turbines will generate enough electricity for 200 000 homes.

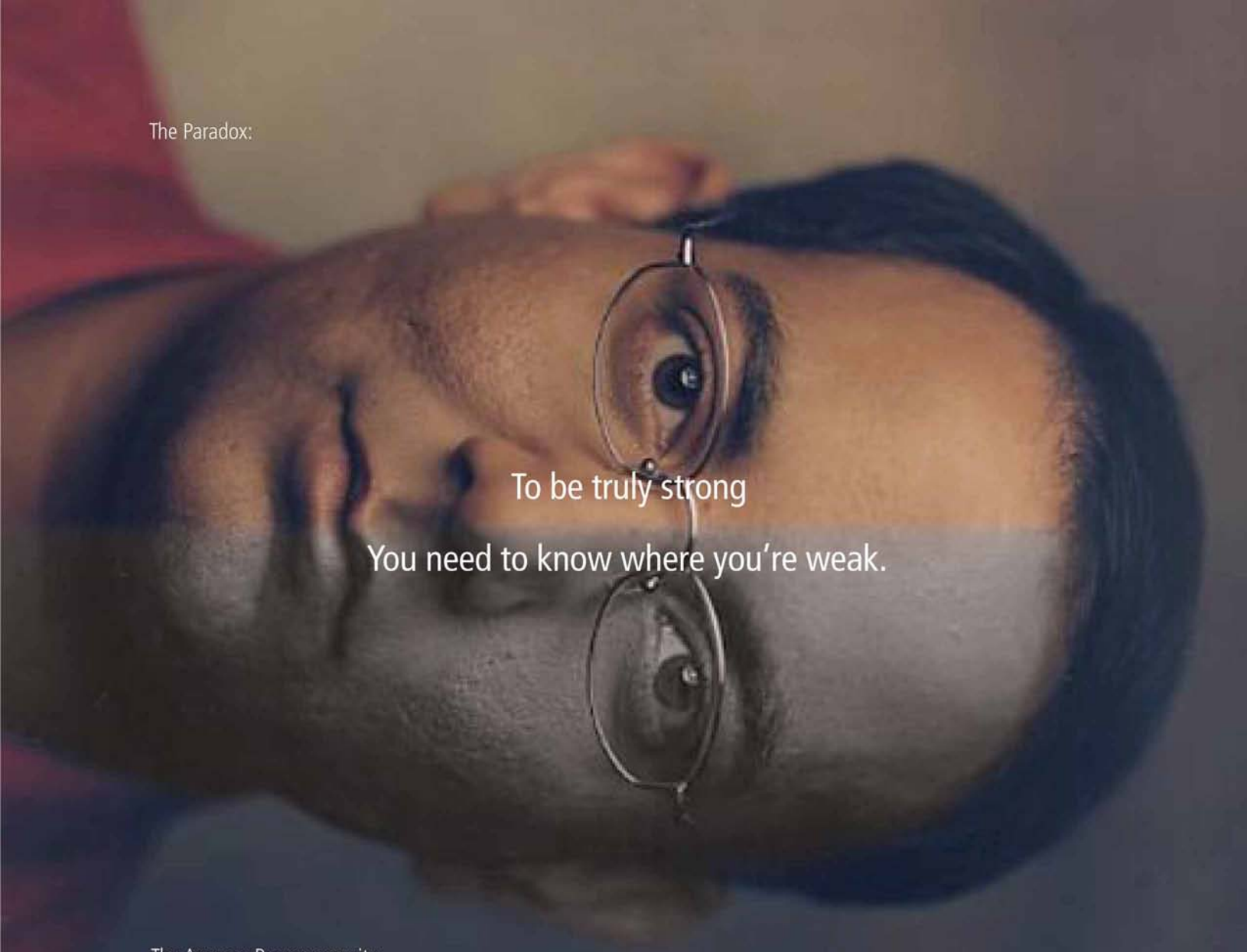
The turbines are dropped into deep water so that they do not endanger shipping or impede the migration of fish such as salmon, shad and eels. Tests on a one megawatt pilot turbine are expected to be carried out early next year as part of the environmental impact assessment before the project gets the final go-ahead from South Korean authorities.

The turbines, designed by Lunar Energy will be built by Hyundai Heavy Industries. The power plant is expected to be fully operational by 2015.

Lunar Energy is involved in a similar project off the Welsh coast in Britain where an eight-turbine tidal power scheme is being planned in conjunction with energy company E.ON.

Image: Gary Fletcher
Tidal energy generator at Race Rocks.

According to Lunar Energy's chairman, William Law the British coastline is particularly suitable for tidal power plants. He claims that researchers have shown that the Pentland Firth in Scotland could provide at least 10 000 MW of electricity – equivalent to the output of three large coal-fired power stations – from tidal streams in the deep waters of the Firth.



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Buy your lights by the metre?

Scientists working for General Electric have devised a way to make Organic Light Emitting Diodes (OLED) displays on a roll so that panels can be punched out and cut to size like cloth. The OLED technology is seen as a likely successor to liquid crystal displays (LCD) and plasma screens.

OLEDs produce extremely bright colours and use significantly less energy than other screens. However, the large OLED panels are extremely costly to make and don't last as long as the LCD or plasma screens. General Electric says that it has spent $13-million so far in perfecting the manufacturing process for OLEDs on a roll.

The company hopes that it will soon be able to replace conventional light bulbs and fluorescent tubes with these light-emitting sheets that will provide the same quantity of light at lower power than conventional or fluorescent bulbs.

OLED panels sandwich organic compounds between the electrodes and when a charge is placed across the electrode the organic compound emits light. Different compounds produce different colours.

Consumers object to price rises

Electricity consumers have until 8 May to object to the proposed Eskom price hike of 53 percent in its tariffs according to Minister of Minerals and Energy Buyelwa Sonjica. She assured poor people that the new tariffs would not hit them as hard as more affluent people or the business community causing an immediate outcry from a wide spectrum of South Africans.

Sonjica, along with Trade and Industry Minister Alec Irwin believe that all South Africans should accept the high price increase this year because if they do not do so, they will face increases of about 100 percent next year.

Sonjica says that in spite of the proposed 53 percent price hike, South Africans still have the cheapest electricity tariffs in the world and with its abundant coal resources, South Africa's electricity will remain cheap.

Residential users account for about 17 percent of the electricity used in South Africa and of this amount about 40 percent is used for preparing food. She urged South African's to consider switching to alternative energy sources such as natural and liquid petroleum gas in order to reduce electricity consumption.

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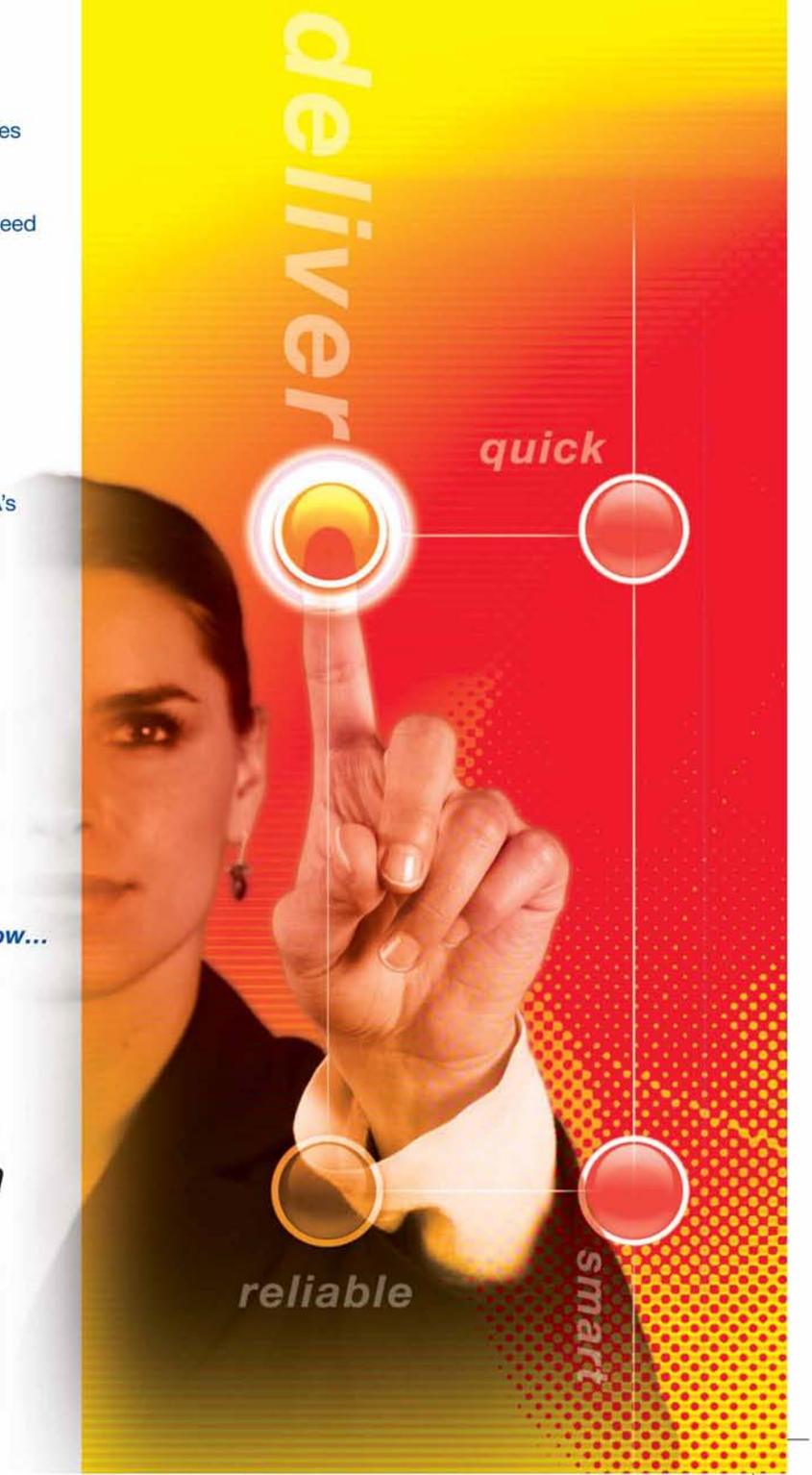

LASER DPD PROUDLY SOUTH AFRICAN

Geothermal plan sinks town

Residents of the German town of Staufen in the Black Forest came up with an innovative geothermal power plant that was intended to provide environmentally friendly heating and cut energy consumption.

However, just two weeks after contractors had drilled 140 metres into the ground to extract heat, large cracks started appearing in buildings and the town centre itself subsided by about 76 mm. At least 64 other historic buildings, including the baroque town hall and the main church have been affected.

According to engineer Robert Breder, the problems started when geothermal probes accidentally entered an underground reservoir, allowing water to seep out and causing the upper layers of earth to start sinking. He says that repair work cannot start until the town stabilises.

Safe flight for hydrogen plane

The world's first hydrogen plane has been successfully tested at an airfield south of Madrid, Spain by Boeing. It made three short flights and was powered by hydrogen fuel cells which produce heat and water as the only exhaust emissions.

Boeing's chief technology officer, John Tracy said that the flights were an "historical technological success".

The plane used fuel cells that combine oxygen and hydrogen to make electricity to power an electric motor coupled to a propeller. Hybrid batteries were used to provide additional boost during take-off but once airborne the plan relied on its fuel cells to keep it flying.

Tracy said that while the tests had been successful it was unlikely that this technology could ever be used to power large passenger jets. The fuel cells could be used as a secondary source of energy for these planes but this will take several years to develop.

This is the first manned flight of a hydrogen-powered aircraft. In 2005 US company AeroVironment successfully flew its *Global Observer* craft, which was powered by liquid hydrogen.

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30 MINUTES WITH...

David Gray

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Pr Eng, C Eng, BSc ElecEng (UCT), MIndAdmin (UCT), GCC (Mines & Works: Electrical; and Factories: Electrical), FSAIEE, FIESSA, FIET, Euring (FIANI)

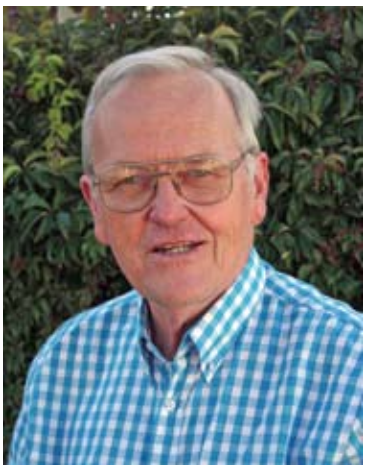


Photo by Catherine Bremer

What made you decide to become an Electrical Engineer and how did you enjoy your early years of employment in Zambia and Tanzania?

I grew up on the Rhokana copper mine in the then Northern Rhodesia and was exposed to heavy engineering for as long as I can remember. I was fascinated with physics and when I was ten years old I made a DC motor from bits of Meccano, cotton-covered wire, strips of jam tin and a large horseshoe magnet! The motor worked well for about 30 seconds and then the toothpaste tube commutator disintegrated. My Dad fed my interest by bringing home bits of electrical equipment that had failed and been replaced. I duly took these to pieces to find out how they worked. It was almost a foregone conclusion that I would become an Electrical Engineer.

After graduating at UCT I returned to the Copperbelt and joined Anglo American as a Graduate Apprentice. The training I received has proved invaluable and I am thankful for the opportunity that I had. I had no sooner completed this phase of my training than I was seconded to the Williamson's Diamond Mine in Tanzania for six months as their Electrical Engineer. This was a fascinating experience in which I had to make fast decisions when problems arose. Shortly after returning to Rhokana I was seconded for six months to Anglo head office in Salisbury (now Harare) where I worked under the guidance of Bruce Jackson (a Past President of the SAIEE).

What do you remember best about the years you spent as Chief Engineer for SA Nylon Spinners and as Joint Managing Director for Vilene Non-woven Products, including the two years you spent at ICI in the UK?

My most vivid memory of SA Nylon Spinners was the mad annual scramble to carry out essential maintenance during the ten-day Christmas shutdown. Being Chief Engineer meant having to have a working knowledge of all other engineering disciplines. It was my good luck to be seconded to ICI Wilton near Middlesbrough in England to learn about polyester polymer production ahead of the establishment of that technology in South Africa. My two-year spell in the UK was one of intense study and learning new computer control techniques.

On the strength of the Masters Degree in Industrial Administration I took at UCT, I later became Joint Managing Director of the Vilene Non-Woven Textile Company, a daughter company of Freudenberg International. My first task was to spend money on maintenance. With the plant working correctly the production was streamlined and we produced very sophisticated products to international standards.

My most pleasant memory was attending the joint engineering meeting in Tokyo at which all the small factories were represented. My brief spell of running a small factory was not a happy one – I rate this experience very low on my job satisfaction index. I needed to return to pure engineering and not be constantly concerned by staff problems.

Tell us briefly about the years between 1982 and 2004 when you worked on some interesting projects.

I joined the consulting firm of VKE in 1982 to work on the electrical design and specification of the four kilometre-long Huguenot Traffic Toll Tunnel near Paarl in the Western Cape. This multifaceted electrical engineering design was executed in close co-operation with the Swiss consulting firm Electrowatt, and involved, among other things, 11 kV supplies from two sources, fresh air and exhaust fans, fire detection, CO and visibility monitoring, SOS communications, radio propagation within the tunnel for emergency services and car radios, CCTV and, most fascinating of all, tunnel lighting for both night and day time conditions. The tunnel is now 20 years old and during that period some 54,5 million vehicles have passed through its portals, almost 20 percent being heavy vehicles. The combined saving of avoiding a rise and fall of 800 m over the du Toitskloof pass and a shortening of the distance by 11 km, has more than paid for the cost of establishing the facility from the fuel-saving alone. This project rates as one of the most interesting that I have worked on. A close second is the Taipei Mass Transit system where, on secondment to Electrowatt, I spent two years heading a team of ten Taiwanese Engineers designing four kilometres of underground railway, two stations and a marshalling yard/workshop facility. Taiwan is a fascinating country culturally and geographically. Being on the Pacific Rim there was no shortage of earthquakes, luckily all minor while I was there.

Later in my career I joined the National Roads Agency to look after their Huguenot Tunnel interests and electrical engineering requirements nationwide. I designed the 13 kilometre-long N2 'Hell Run' street lighting in-house and developed what I believed was a world-first for economical lighting distribution. A 10 mm² 3.3 kV 4 core cable was used to feed 2.2 km of the system comprising double

outreach poles spaced 50 m apart, each carrying two 400 W HPS luminaires. Joint boxes at 250 m intervals allowed a single phase supply to a 5 kVA 1.82 kV to 230 V single phase transformer mounted 5 m high on every fifth pole, feeding that pole and two on either side via a two-core 4 mm² cable. Two hundred and fifty metres further along a different phase was used for the next supply point. In this way I was able to light 13 km of highway within my budget allowance of R2-million. The system is still working well. I subsequently wrote papers about the system and presented them locally and internationally. About six months after the international presentation, I received an email from a French firm congratulating me on my use of a medium voltage distribution system and advising me that they had first perfected this technique in 1947!

You retired in 2004 and set up a Consulting Electrical Engineering Practice. Tell us about your work.

Yes, the practice assists the SA National Roads Agency Ltd (SANRAL) with technical questions and works with other consulting practices on various assignments. So far, we have carried out five street lighting projects, the most interesting being the design of the 18,8 km N1 Highway lighting project between Koeberg and Old Oak Interchanges and the 17 km R300 lighting between Swartklip and Stellenberg.

Tell us a bit about your leisure interests.

I like to keep abreast of new Electrical Engineering developments and to be one jump ahead if possible! I am a Rotary member and had two terms as President of the Durbanville Rotary Club in 1984 and 2007. I am a member of the Cape Town Photographic Society, having a special interest in 16 mm ciné and digital video. I am also involved with researching genealogy and enjoy reading, collecting Meccano, Hornby trains (old tin-plate and 3-rail Dublo) and old photographic equipment – especially motion picture equipment. My earliest piece dates back to before 1900 and comprises a travelling showman's 35 mm hand turned cinema projector which doubled as a lantern slide projector and used lime-light as the light source. In short I have so many leisure interests that I no longer have any leisure time!

CALL FOR INDEPENDENT REVIEW

SAIEE reiterates call for formation of independent review team

The Institute has reiterated its call for the urgent formation of an independent review team to perform a holistic peer review of SA's power problems and associated remedial plans and actions.

We feel this would go a long way towards restoring local and international confidence in SA's ability to deal with the current crisis.

This constructive approach would produce a valuable independent peer review of the solutions, plans and capabilities of the various task teams and industry players across the full electricity supply chain. It will also assist in identifying and addressing problem areas.

The members of such a team cannot be directly involved in day-to-day operations or on any of the task and project teams implementing the current solutions. This would ensure that objectivity and a 'fresh focus' are applied to the process. International participation should also be encouraged.

It is vital for our country that the broader electricity crisis is successfully resolved. Failure is not an option. We feel that this approach will ensure that comprehensive, achievable and viable solutions are implemented at all levels in the electricity supply chain.

All current initiatives, including the various task and recovery teams plus emergency programmes established by government and Eskom, must be considered as part of this peer review procedure.

The process must ensure that proposed and planned solutions also incorporate the constraints and challenges caused by other factors. These include the protracted restructuring process in the distribution industry plus resultant effects, the multiple role players throughout the supply chain, equipment supplier and contractor industry constraints, and the availability of skills at all levels in the engineering team.

It is important to continually confirm through the review process whether the current planning for all initiatives and projects, is realistic and on track.

Currently there is a lack of substantive feedback on these activities with superficial information often being provided which in turn fuels uncertainty. The public must be accurately, reliably and timeously informed of the issues and implications in order to properly plan ahead.

The SAIEE's stance is to add value and work constructively with all the role players to creatively formulate solutions to our country's electricity crisis from an engineering and economic perspective.

We have made public our willingness to assist in the formation of this independent review team and to be part of it. As a professional body, devoid of vested interests, we are able to objectively facilitate these activities.

From the President's Pen


Victor Wilson
President SAIEE

We have accepted the resignation of Prof Theo Andrew as Vice President and a Council member, and congratulate him on his appointment as Executive Dean: Faculty of Engineering and the Built Environment at the Durban University of Technology. Theo resigned as he felt that in his new capacity and location he would be unable to devote the necessary time to SAIEE commitments. We thank him for his contributions to date on Council and as an Office Bearer.

Last month I wrote a bit about the composition of Council. This month we look at the structure of the Institute.

The headquarters of the Institute is at Innes House on the historic site of the Observatory in Johannesburg. Branches (called Centres) exist in Kwa-Zulu Natal (Durban), Western Cape (Cape Town), and Southern Cape (George). Interest groups or Centres in formation exist in Mpumulanga (Secunda), Vaal Triangle (Sasolburg), East London, Port Elizabeth, and Bloemfontein. A Centre can be formed wherever sufficient members wish to meet regularly and arrange local events. The Centre Chairs are ex-officio Council members.

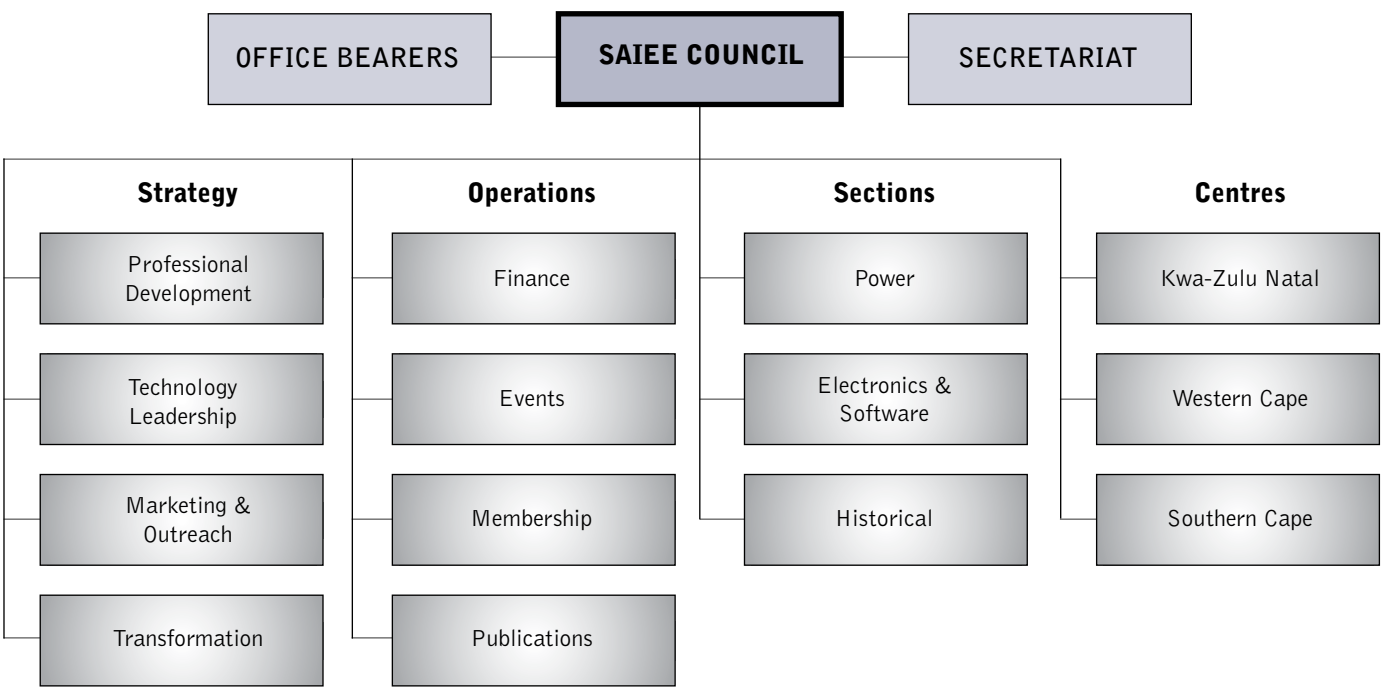
Events in Gauteng are arranged by the Head Office or by the Sections. There are three active Sections: Power, Electronics & Software, and Historical. Each has a committee which arranges talks and visits, and discusses matters in their field which concern the Institute or where the Institute can make a difference by participating.

The committee members (and other interested parties or subject matter experts) will contribute to responses to regulations or standards. The forums on our website (www.saiee.org.za) allow canvassing the opinion of a wider group of members. Please have your say when you see a discussion that interests you. Section Chairs are also ex-officio Council members.

The Strategy and Operations committees meet on the same day as Council (the first Friday of the month). Operations committees give direction to and oversee the operations of the Institute in the fields of Finance, Events, Membership, and Publications.

The strategy committees deal with Professional Development, Technology Leadership, Marketing & Outreach, and Transformation. Each committee reports to Council, where they raise any matters of policy requiring Council decision. There are also committees that meet as and when required, such as the Policy and Constitution committee, and the Bursary committee.

Members of the SAIEE are welcome to raise any matters with Council or a committee. This can be done through the forums on our website (available to registered members) or by contacting the secretariat.



Annual General Meeting

The AGM on 18 March 2008 was scheduled to start at 19h00 in the Military History Museum in Saxonwold, Johannesburg, but alas, at 18h15 Eskom load-shedding came into play and Saxonwold was plunged into darkness. It was decided to have the refreshments and snacks in the supper room where it was easier to control the candles than in the auditorium. Everybody entered into the spirit of the occasion and the initial disaster was turned into a successful, if different, function. The incoming President was equipped with an LED headlamp and he had brought a battery-operated fluorescent lamp which helped the various speakers.


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Photo 1 tells the "Blackout" story as President Ian McKechnie presented the highlights of his annual report watched by Victor Wilson with his headlamp! Three of the ten bursary students were present (Photo 2): From the left: Stephni Muller and Johan Venter of theUniversity of Pretoria and Sven Holte from the University of Johannesburg. The Marketing Director provided light for the speakers (Photo 3) who included Les James presenting the healthy financial report (Photo 4). Roland Hill, a member of Council, obviously enjoyed seeing to the candle arrangement! (Photo 5).


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The winners of the best paper award from the *SAIEE Africa Research Journal 2007* were, left to right, F V Nelwamondo and T Marwala from Wits University, seen here with Ian McKechnie (Photo 6). Their paper was entitled *Fuzzy ARTMAP and network approach to online processing of inputs with missing values*. One wonders whether this might be used to solve the problem of missing lights! This paper was from the series on Pattern Recognition.

The induction of the new president Victor Wilson (Photo 7) by Ian McKechnie was the highlight of the evening and Viv Crone (Immediate Past President) thanked Ian for an outstanding year of office (Photo 8). Melanie McKechnie was also thanked by Viv Crone for her wonderful support of Ian (Photo 9).


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The President congratulated duToit Grobler on his election to Deputy President and Angus Hay on his election to Vice President. The elections of Auditors and Legal advisors were proposed and seconded. Vaughn Stone from the KZN branch was elected as Hon. Vice-President for 2008.


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Victor Wilson congratulated Ian Gebbie for his election for a second year as Chairman of the Electronics and Software section. Athol Hankey received his badge as Past Chairman of the Power Section and Isaac Kruger received his badge as Chairman of the Power Section for 2008.

Du Toit Grobler took the chair while Victor Wilson gave his Presidential address on *Participatory Governance*. Dr Angus Hay proposed a vote of thanks to Victor for his address (Photo 10) and Mike Crouch added to this with a brief comment that Victor had been an unusually loyal member since his student days and it was gratifying that he had now achieved the highest position in the Institute. Victor then resumed the chair and declared the meeting closed. The lights then came on and many of the attendees stayed on to network. Among these was Senior member Dr Boris Jankovic from Belgrade in Yugoslavia (Photo 11) who settled in South Africa after some years in Silicon Valley USA and has recently joined the Electronics and Software section.

The AGM was unusual but was voted an excellent evening in spite of the lack of lights.


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WANTED

CREATIVE IDEAS FOR EFFICIENT LIGHTING!

Eskom's Energy Efficient Lighting Design Competition is challenging the finest design talent in the country to merge creative flair and trend-setting artistry with no-nonsense functionality – and come up with beautiful solutions in lighting design that will last a lifetime.

A thing of beauty is a joy forever, or so they say... yet, when it comes to lighting – a veritable magic wand in the hands of any designer, home owner or artistic soul – this might not always seem the case. Whilst the creative possibilities of this versatile medium are endless, the resources that power it are not– in fact, they're depleting quickly.

WHAT TO DO?

If the thought of doing your bit for sustainability conjures up images of deprivation and serious cut-backs on creature comforts, Eskom's Energy Efficient Lighting Design Competition invites you to think again. This exciting initiative is challenging the most daring minds out there to take energy efficient lighting design to a new level of creativity.

THE BRIEF:

Design a lamp shade that makes use of an energy efficient globe. Demonstrate your ability to achieve that magical mix of artistry and functionality. Let your imagination run wild – and transform this humble household appliance into an *object d'art*!

And whilst science and art may at first glance seem worlds apart, the link between what works and what defies the imagination in terms of aesthetics is more obvious than one would imagine. Creativity is, in fact, the very key to efficiency – unlocking new ways of overcoming challenges. The functional and the beautiful are simply two sides of the same coin. US architect and engineer, R Buckminster Fuller, expressed this truth so well when he said, "When I'm working on a problem, I never think about beauty. I think only how to solve the problem. But when I have finished, if the solution is not beautiful, I know it is wrong."

COMPETITION DETAILS

Designers are invited to design a lamp shade which makes use of, and complements, an energy efficient globe. The closing date for entries is 1 August 2008 and entrants may participate in any of two categories: a student category and a professional category. The total prize money of R250 000 definitely warrants participation, while the registration of a new patent, of course, also holds lucrative possibilities for the patent holder.

Full details are available on the following website: www.savingenergy.co.za or from the competition organisers on tel (012) 997-1334 or via e-mail at amroux@mweb.co.za.

LEDS OFFERED AT DISCOUNT

LEDs (light emitting diodes) are available in a variety of models and colours so that users can easily adapt the LED technology to suit their designs. They are small light sources ranging from 1.8 mm to 20 mm in diameter and are built into modules of any description from a linear array to square or round tiles.

The technology allows the LEDs to be mounted as single units or as an array on a board. VS Lighting will make LED lamp-holders and control gear available to entrants at a discount price. Contact Barry Hall, VS Lighting Controls Pty Ltd, tel: 027-11-314-4340, fax: 027-11-314-5287, cell: 027-82-576-6848, e-mail: barry@vslc.co.za, or visit www.vslc.net.

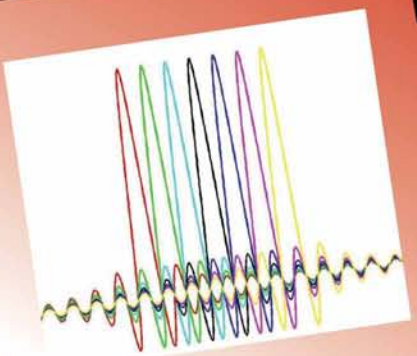
VS Lighting Controls

TELECOMMUNICATIONS RESEARCH GROUP

POWER LINE COMMUNICATIONS:
University of Johannesburg

Our Research Interests

Powerline Communications
Digital Communications
Coding Techniques
Information Theory
Video Communications
Networks



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North-West University
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