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# Powerless when cuts come

**S**outh Africa is staggering through the first quarter of 2008 with a 'load-shedding' burden on its back and the prospect of sustained power cuts increasing as the country moves into its autumn and winter seasons.

President Thabo Mbeki has apologised to the nation for not heeding Eskom's warning some eight or ten years ago and has admitted that the "government was wrong" to stop Eskom from putting up new power stations.

Eskom has justified the power cuts by saying it must follow "planned maintenance programmes" to keep generating plants working and it points a finger at government for not allowing "planned expansion programmes".

And we know that these power cuts will last for at least the next five years while building contractors and engineers work feverishly to bring additional generating capacity on stream.

The picture is so bleak that Eskom itself has said that South Africa should be "closed for any big new industrial projects" until at least 2013. Bongani Nqwababa, Eskom's finance director has advised the government only to start marketing South Africa as industrial investment area after that date.

To hinder matters, Eskom had planned to use debt financing to raise money to erect the new power stations. However, its expenditure estimates have now risen to more than R300-billion and rating agency, Standard & Poor, has given the parastatal a negative rating, further complicating its funding drive.

As we know South Africa is expected to host the 2010 World Cup and the 2009 African Cup of Nations and these two events alone will see hundreds of thousands of tourists gracing our shores and placing an even greater burden on electricity supplies.

The picture is bleak because:

- Eskom wants to halt all major industrial development for at least five years and this will have a serious impact on foreign and local investment.
- Eskom cannot provide enough electricity to South Africans.
- We are all facing at least five years of sustained power shortages with serious implications for businesses and individuals throughout the land.
- Major commercial, housing and property developments are being completed and each one will guzzle even more of South Africa's scarce electricity supplies.

It seems that we are also 'powerless' to do anything about it.

Eskom cannot provide a solution to this electricity crisis and it's as simple as that. Conserving power by switching off a geyser may help in a limited way for a limited time. Switching off lights, plugs, fridges and appliances may also reduce consumption. But these are not solutions: they are simply coping mechanisms.

So what can we do?

My own view is simply to resolve the problems yourself: buy a standby generator, convert parts of your home to gas, buy paraffin or gas lamps and get on with it. Sure this might be an expensive solution but the alternative is having no power at all. And that's even more inconvenient and frustrating.

Cynical as this might sound, welcome to Africa, for power cuts are an endemic part of just about every country on this continent. They are not unusual, unexpected or surprising. For instance, power failures in Lagos are so commonplace that even fleamarket stalls use their own standby generators light the shops and keep their tills tinkling.

The African reality of intermittent power supplies is with us now – and will remain with us for the foreseeable future. So let's stop whinging and get on with it – at least until Eskom can turn the lights back on.

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## Samsung launches a camera with a media player

Samsung has launched its i85 combination of camera and media player. Its specifications are reasonably solid: it has an 8.3-megapixel resolution, a five times optical zoom and a three-inch LCD touch screen. Its menus are apparently quite complicated to navigate but once they've been mastered you'll be able to listen to music, watch a video or even use the World Tour Guide, which is included on the device and provides pictures and information on the most famous attractions in 30 different countries. The unit comes with headphones so you can listen to music or hear the video you're watching. But, it is simply a camera and media player and whether millions of people around the world want this combination is difficult to gauge. Judging by other devices on the market it seems unlikely. Cellular phones combining cameras, media players and even radios are freely available so why anyone would want to listen to a camera is beyond me. The Samsung i85 is about the size of a man's wallet and sells for \$275.



## Collect your e-mail messages in the air



Instant messaging and a limited e-mail service are being offered on flights with JetBlue Airways in the United States of America. Because of bandwidth constraints, general web surfing and download of e-mail attachments will not be permitted, though personal computers and two BlackBerry models can be used on the flights.

JetBlue's Airbus A320 is simultaneously testing new entertainment services with LiveTV, using a wireless spectrum rather than cellular phone signals so that it does not violate any of the federal regulations.

Use of laptops and BlackBerry devices will be barred during take-off and landing and on BlackBerry models the phones must remain turned off during the flight. Various other airlines in the USA are planning to test in-flight Internet services this year.

Boeing hopes to offer an Internet connection service via satellite on its new planes. The JetBlue system operates via 100 ground towers, which does limit its bandwidth. At the moment the JetBlue service is also restricted to Yahoo e-mail services.

## Flip camera – point, shoot and share

With the proliferation of video and photographic images around the world it's hardly surprising that some clever dude has come up with a video camera that makes sharing pictures a snap. The Flip video camera, launched by San Francisco-based Pure Digital Technologies, even passes the 'my mother can do it' test.

The one-touch recorder allows for instant playback of video on television or computer with no additional software or customisation. The video frames can individually be picked and transformed into stills shots. In fact, most people won't even need to call their kids for technical support.

The camcorder is available in two versions: one that shoots for up to 30 minutes and has one gigabyte of storage and another that gives 60 minutes of video footage compressed onto two gigabytes of storage.

The Flip camcorders have a constant frame rate of 30 frames per second and use advanced profile MPEG 4 compression technology. Footage can immediately be uploaded to YouTube, AOL Video or any other Internet sites that accept video footage. The stills images are just as easy to upload or share.



## Motorola now making mini TV sets

Motorola – the world's 3rd largest mobile phone manufacturer – has released its newest DH01 devices, which can play on-demand video clips or programmes that have been saved on a digital video recorder such as Multichoice's PVR.

It is Motorola's first venture into devices that are devoted to mobile television, a service that many wireless carriers hope will boost declining revenues as mobile phone call rates drop sharply everywhere in the world, except South Africa.

Motorola, Nokia, Samsung and LG Electronics offer phones with live TV capabilities. But, according to industry analyst Carolina Milanesi of Gartner, it is still not clear if users want an advanced device that provides a combination of phone and live TV services or cheaper, less complicated stand-alone devices.

Motorola's DH01 has a 4.3 inch screen and a feature that allows users to pause live television services for up to five minutes without losing information. The battery will support four hours of playback and an optional memory card will provide 90 minutes of video.



## Hitachi's monster 500 GB laptop drive

Hitachi has launched a 500 gigabyte drive that is able to hold 500 hours of digital video, 178 feature length, standard definition movies, 250 computer games or 125 000 four minute songs. Until now, the largest hard disk available for a laptop was Western Digital's 320 GB model.

Asustek of Taiwan has already said that it will shortly release a laptop with two Hitachi 520 GB drives that will provide a monster capacity of just over 1 terabyte. Its Asus M50 and M70 will be available worldwide by March.

## 128-gigabyte flash drive available in May

Toshiba has made solid-state flash drives with a capacity of between 32 and 128 gigabytes for notebook computers; the 1.8 and 2.5 inch drives will be available by May this year.

The solid-state drives have an ultra-fast boot time – compared with conventional hard disks – and are aimed at a wide range of portable devices like tablet computers and laptops.

The high prices of solid-state drives have until now prevented their widespread use in computers but this might change with Toshiba's drive to significantly reduce the price and increase the capacity of its flash drives.



## MojoPac a personal 'virtual PC' that leaves no trail

Computer users who are concerned that private information might be stolen if they are working on a public network can now use MojoPac software to start-up and run a computer off a flash disk.

Users download the free MojoPac software onto a flash drive, iPod or media player to create the MojoPac shell. Then they install their own software such as Microsoft Office or Adobe's Photoshop.

MojoPac leaves no trace of the user's movements on the public network, making it safe for users to move from one machine to another without being traced. Of course, with the high degree of computer fraud around the world it may be questionable whether this is a good or bad thing although from the view of personal security it is obviously much safer.

The MojoPac software can be downloaded for Windows XP from [www.MojoPac.com](http://www.MojoPac.com).



## Barclays chairman conned out of £10 000



The chairman of British-based Barclays bank was conned out of £10 000 after an unnamed crook phoned the bank's call centre and convinced the staff that he was the chairman Marcus Agius. The crook ordered a new credit card in Agius' name, convinced the staff to send it to his branch and, having collected it, withdrew the loot.

Agius was naturally furious when he discovered the security breach and ordered an immediate shake-up of all security procedures used by the bank. Barclaycard has repaid its chairman the £10 000 and accepted full liability for the theft.

Sources within the bank believe that the fraudster used the Internet to establish Agius' date of birth, background and address. Using this information the crook phoned the call centre and ordered Agius' new card.

Barclays has blamed the fiasco on "human error by a member of the call centre staff who was trying to be helpful". Barclays has admitted that security measures were not followed.



# Advertising on cell phones – does anyone want it?



Cape Town-based Mobilitrix is using mobile phones for interactive advertising which it claims is 'more personalised and measurable'. According to Andrew Cardoza, founder of the company, the service will "shift the landscape for marketers". Exactly what that means is, at this stage, unclear.

Cardoza says that he wants to offer more than "... a simple solution to marketers, by bridging the gap between consumers and brands and by allowing for more interpersonal communication campaigns ..." using mobile phones.

For me the key question is "Do mobile phone users want such a service?" Already, a plethora of e-mail appeals have been converted to cellular phone 'spam' and are being sent to phones in the form of a text message. Now, it seems, advertising will start popping up – whether you want it or not.

There is no indication what the market's reaction will be to mobile phone advertising. Cardoza claims that the company's product suite "... empowers consumers to request additional information from advertisers in the same way that Internet users can navigate, request and interact with a dazzling range of brand-related content.

"Mobilitrix enables brand owners to deliver multimedia content, via mobile phone, to consumers using all forms of advertising – from print, to radio, billboard or television. The world of advertising just received a new dimension and the Mobilitrix solution is going to personalise the brand-consumer relationship forever" Cardoza claimed rather loftily.

Cardoza says the interactive marketing tools, from campaign building to report retrieval, are free and can be accessed via the Internet. As the company earns its revenue from a 'cost per activity' (CPA) pricing model it is giving away its software.

"Advertisers create tags, denoting interactive options, that then can be added to the advertising campaign. For the consumer, accessing

additional brand information is as easy as sending a simple SMS - and receiving an array of options from mobile-vouchers to video and audio clips, full-colour photos and text-to-email offers.

"Consumers seeking additional information merely type the keyword that appears in an advert into their phone and send it as a text message to a five-digit short code number. A selection page is then sent to the phone with brand offerings, communication options and/or a video interface.

The price of each SMS message is not indicated in the Mobilitrix statement, but it is clear that users will now pay something to receive an advertisement that they might not want.

Cardoza claims that the product is designed with interactivity as a core focus, allowing what he calls "a dynamic two-way conversation that encourages feedback from consumers on products, ad campaigns, new product launches or old-product revivals." It also reinforces the 'cost per activity' pricing model that makes users pay for the information they receive by responding via SMS to each question asked.

That's a good pricing model – keep asking questions as each answer is worth a little bit more. The acid test is not what marketers want but rather whether users will respond. After all they decide and presumably have the option to 'opt-out' of any marketing campaign at no charge.

Time, as always, will tell.

## Instant prints for phones, cameras



Polaroid has just launched a pocket-sized printer that prints images from cellular phones and digital cameras. The printer connects to these devices using Bluetooth or a USB cable. The surprising thing about these printers is that they require no ink and use a thermal printing technology invented by Zink Imaging.

The printers are retailing for about \$150 and once connected to a phone or camera can print a six by nine centimetre print in less than a minute. The backing can be removed so that the prints can be used as stickers. Each sheet of paper costs about 40 US cents.

The Zink technology uses heat to activate tiny dye crystals embedded in the paper in much the same way as older Polaroid technology used chemicals in paper to produce the 'instant' prints that it's famous for.

The printer itself is about the size of a deck of playing cards.

## Nintendo out-sells its rivals

Families, kids and gamers bought more than six-million Nintendo Wii gaming consoles in Japan and North America last year, more than three times that of the Sony PlayStation 3, which sold just over two million units.

Microsoft's Xbox 360 has continued to struggle in the Japanese market with just 260 000 units being sold last year. Japan's total gaming market in 2007 was worth a record ¥687,7-billion (\$6,37-billion), an increase of almost 10 percent on the previous year.

Nintendo's DS and Lite versions of hand-held consoles have sold just over 21-million units since they were launched three years ago.

Software sales were also buoyant with Nintendo's consoles accounting for four of the five top-selling games last year. Analysts believe that Sony PlayStation 3 and Microsoft's Xbox 360 will probably slash prices to gain market share.

Already fewer software developers are producing new games for these consoles primarily because they fear that the market is not sufficiently strong to warrant the high development costs of new games.



## Lenovo to start shipping new range



Chinese computer manufacturer Lenovo has launched its new IdeaPad and IdeaCentre computers that are aimed at complementing the company's ThinkPad and ThinkCentre lines.

The new IdeaPad U110 laptop has a textured red lid; a sleek 'frameless' screen that's ergonomically situated a bit farther away from the keyboard than most laptops. It also has touch-sensitive media controls above the keyboard and a bright orange button, called the Shuttle Key, which can be used on its own to control volume or in combination with the touch controls for additional functionality.

The IdeaPad is comes with a built-in 1.3-megapixel Webcam, VeriFace software for biometric security via face recognition and a ThinkVantage-like Novo key that provides quick system recovery to counteract data-destroying viruses.

The first laptop models are the 17-inch Y710, the 15.4-inch Y510, and the 11.1-inch U110.

The IdeaPad Y710 is a 17-inch notebook that is, according to Lenovo, aimed at entertainment-focused users. It has a 256 MB ATI Mobility Radeon HD2600 graphics card, the Dolby Home Theatre system and a built-in sub-woofer. It is available with 500 GB of hard disk space and an optional Blu-Ray drive and is priced at \$1,199.

The IdeaPad Y510 has a 15.4-inch display with 1,280x800 native resolution and comes with a handful of processor choices topping out at the 1.83 GHz Core 2 Duo T5550, integrated Intel graphics, up to 4 GB of 667 MHz RAM and up to 250 GB of hard-drive space. It also has the Dolby sound system and retails for about \$799.

The IdeaPad U110 is a 2.3-pound ultra-portable with an 11.1-inch screen. It has a floral design on its textured, red aluminum-alloy lid and is less than an inch thick. It incorporates the Shuttle Key, touch-sensitive media controls and Dolby Home Theatre sound, though it does not have a sub-woofer. It will ship in April this year and will probably incorporate low-voltage Core 2 Duo processors on Intel's latest Centrino Duo platform, have 667 MHz RAM and up to 160 GB of hard drive space. It also has a solid state drive and will cost around \$1,800.

## Apple to introduce movie downloads?

North American company NetFlix is removing time limits for subscribers watching movies and television over high-speed Internet links in anticipation that Apple will launch an online DVD rental service allowing users to download and watch movies or even buy movies directly from the Apple store.

At the time of going to print, WattNow was unable to establish exactly what Apple's plans were. The company's chief executive, Steve Jobs, is expected to make an announcement at the MacWorld Conference and Expo traditionally held during the second and third week of January, after the international Consumer Electronics Show.

Netflix has seven million DVD rental customers and, in terms of the basic \$16,99 contract, Netflix customers could rent up to three DVDs at a time and use the streaming service for up to 17 hours.

Now with Apple's likely entry into this market, Netflix has lifted the restrictions and is offering unlimited streaming from the company's library of 6 000 titles.

Apple is expected to charge just \$3,99 for a movie that can be downloaded and played for up to 24 hours after the download completes.





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# Gates says goodbye at CES in Las Vegas

**M**icrosoft founder and chairman, Bill Gates – who has worked for the company since he was 17 – is leaving in July and he said his first farewell to the international community at the Consumer Electronics Show in Las Vegas in January.

Gates, who has provided the opening keynote address at this international event for the past eleven years and previously used it as a launching-pad to showcase Microsoft's newest products was downbeat when he suggested that the next 'digital decade' would see a "natural user interface with touch technology and speech recognition" introduced.

Microsoft, surprisingly perhaps, did not introduce any new products, software releases or major system upgrades at the event. In fact a typically geeky Gates said that the major developments for this year – and possibly beyond – would revolve around the use of high-definition technology, even more connected and integrated services and improved user interfaces.

Untypically, Gates paid tribute to Apple's iPhone as an example of the direction that the new user interfaces will take, but did not explain what Microsoft was doing to improve its user experience. Gates has been a believer in speech recognition technology for at least 20 years and said that he still believes that this technology will gradually replace keyboards and typed commands.

The products that he showcased at the Consumer Electronics Show were not new, such as the Synchron technology used in Ford cars, multiple calendars included in Microsoft Live and explanations and demonstrations of the Zune audio player.

In fact Gates' only interesting piece of news was that Microsoft had been chosen by NBC as its partner for the Internet video streaming of the 2008 Beijing Olympics. Uncharacteristically, the demonstrations of the existing products from Microsoft all worked and for the first time in years, Gates' keynote address went off without any real hitches. But then there was little new on show and even less being said.

Gates leaves Microsoft in July this year to focus on charitable work and run the Bill and Melinda Gates Foundation. I guess with the amount of money that he's made from computers and technology, some charity work is well founded and probably considerably less

stressful.

More than 2 700 of the world's top technology companies were at the Consumer Electronics Show this year and the major trends related to digital entertainment, High Definition television, greater levels of 'green' technology and free trade.

According to Gary Shapiro, chief executive of the Consumer Electronics Association which organises the event, the show in Las

## Poor infrastructure keeps damaging Africa

Rwandan President Paul Kagame told delegates at the international Consumer Electronics Show in Las Vegas that Africa's development was being hampered because of a lack of computer and telecommunications infrastructure which was limiting job creation, financial stability and economic growth.

In a panel discussion with Kagame, Paul Jacobs of Qualcomm, Eric Nonacs of Endeavour Financial and Paul Meyer of Voxiva, Kagame said that by 'leap-frogging' older technologies developing countries were able to learn from mistakes and allow for new technological infrastructure to be "correctly implemented".

He added that the use of emerging technologies was particularly significant in Africa where, for instance, it's impossible to install a landline telecommunications infrastructure so other solutions such as cellular technology and satellite communications would have to be implemented.

Moreover, energy shortages and the poor, unreliable supply of electricity meant that even more inventive approaches were needed to provide a meaningful solution to the African problems.

Africa remains one of the most deeply impoverished regions in the world with limited infrastructure, few available funds for investment or development, major educational challenges and extreme, wide-spread poverty, illness and disease.

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Welcome to  
the playground.



Vegas was the first where leaders of the automotive and cable industries delivered keynote addresses. Moreover, President Paul Kagame, of Rwanda was invited to the show and outlined the African dilemma with regard to communications, computer technology, a lack of infrastructure and a dire need for greater levels of education. It is the first time that a President of any country has attended the show.

With typical American razzamatazz, the NBC broadcast its Nightly News from the show which was peppered with celebrities such as Michael Douglas, Kevin Costner and Jerry Seinfeld who were trotted out at regular intervals for the hordes of peoples who cluttered the aisles.

More than 20 000 new products were on show and more than 130 000 industry professionals streamed through the gates, making it the largest and probably most important show of its kind in the world.

The real question, though, is what trends in consumer electronics are emerging and what are the new technologies that will dictate future developments? Sadly there was no real block-busting application or technology that would change the way that people use computers. There were hundreds of refinements – ranging from new hard disks with a 500 GB capacity to Yahoo's Go 3, an update of previously released software. The head of Panasonic AVC Networks, Toshihiro Sakamoto, showed off the new 150 inch plasma flat-panel TV that boasts a 2000 by 4000 resolution. It will be made in Panasonic's fifth manufacturing plant. He also unveiled a flat-panel TV set that is just 24,7-millimetres thick and has double luminance technology that reduces power consumption by 50 percent.

From a convenience point of view, Sakamoto demonstrated the first wireless high definition video transmission using Panasonic's Home Base along with a wireless high definition camcorder that transmits video streams directly to a television set or other device without cables.

Integrated solutions for motor cars added to the many automotive products on display with BMW, Chrysler and Ford showing examples of the platforms they were using to bring what are called 'integrated solutions' to motor vehicles. So it's just a matter of time until there's Internet in a motor car with all the benefits that might represent.



Bill Gates

## Gibson's self-tuning guitar

World renowned guitar manufacturer, Gibson has introduced a self-tuning electric guitar that has tiny motors to adjust the string to perfect pitch in a matter of seconds. Initially only 4 000 of these guitars will be made. Gibson has fitted a processing unit into the neck of its latest Les Paul robotic guitar. Although the guitar is heavier than other units, mainly because of the robotic ear that detects the pitch, the small motors to tune the strings and the central processing unit to control the keys, all 4 000 models, costing \$2 500 each have already been ordered. Gibson is likely to include the technology in other models as it has proved extremely popular with both amateurs and professionals.



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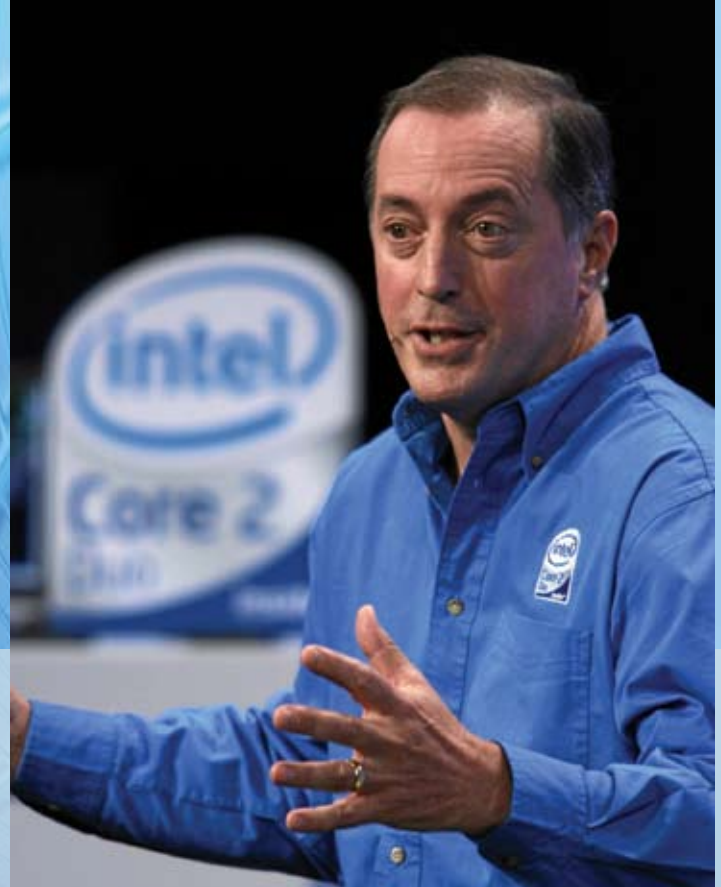
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Paul Otellini



And the ever-present issue of convergence continued to dominate many of the sessions and conversations. Industry insiders had some intriguing things to say as they guessed about, or searched around for answers about what this convergence actually means. But there was little clarity on how convergence will benefit consumers in America or, for that matter, anywhere else in the world.

Offerings such as streaming high-definition television on a mobile phone may be of some interest to people living in sophisticated countries such as America, Japan, Germany and Britain but for millions of others it's of scant interest or concern.

General Motors showed off its plans to build a driverless motor car (see box) that it believes will be commercially available within the next ten years, which is all well and good for highways in Los Angeles or New York. But the concept of building such an infrastructure in Africa is simply far-fetched.

Paul Otellini, president and chief executive of Intel, claimed that the Internet had started to kill-off industries such as music distribution and possibly even software and movies distribution channels.

He believes that the next important trend for the Internet is that "it will come to us" and will be "proactive, predictive and context aware". He shows, for instance, how software can be used to translate street signs and directions from Chinese into English. Moreover, he claims that when a camera is pointed at a particular restaurant it will be able to provide a recent review of its cuisine, what it offers on the

menu and what prices it charges.

This of course sounds rather far-fetched – particularly in Africa – but Otellini says that it is one of the ways that the Internet will become more proactive. The combination of global positioning system software, coupled with high speed Internet connections contained within the processing chips and the use of speech-to-speech translation software makes such developments a possibility.

Otellini also showed off Intel's new Menlo chip with its high computing power and its low voltage use, and demonstrated the chip's power by running Microsoft's Vista operating system on a device that fitted into the palm of his hand.

He conceded that broadband access remains a problem throughout the world and said that Intel's solution for this was the deployment of WiMax in cities, suburbs, towns and villages around the globe. Of course the cost of installing a major WiMax infrastructure was not considered as part of the Otellini star-gazing. But so be it.

Picking up on Bill Gates' comments on user interfaces, Otellini referred to Nintendo's Wii gaming console as an example of how user experiences will change and a more natural interface between humans and computers will evolve.

There's absolutely no certainty about the type of interfaces that people like Gates and Otellini imagine but then part of the hype around the Consumer Electronics Show is that some of the predictions are completely wide of the mark.

Bill Gates – referred to by some of the more serious geeks at CES as the pope of the computer industry – has made some famous, even legendary blunders. For instance he failed to identify the potential of the Internet and as a result Microsoft only took it seriously around

## Radio for the deaf

Technology firm Harris Corporation, working with Towson University, is developing real-time speech to text software that will allow deaf people to receive real time news broadcasts. It is working on a radio screen that will allow the voice transmission to be displayed on the screen. The first live broadcast of radio for the deaf was done at the Consumer Electronics Show in Las Vegas. Commercial versions of this radio will be available later this year.

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1996. He also predicted that the tablet PC would take over as the dominant computer design, and claimed that spam would no longer be around in 2006. Sadly such star-gazing from industry boffins is sometime utterly meaningless.

So when Otellini said that he believes people will connect to the Internet not just to go through e-mails or chat on social networks but will start to interact with people in novel ways. He introduced the head of e-Jamming, which offers a network for musicians to collaborate via the Internet. Low and behold, Otellini was joined on stage by Steve Harwell, lead singer of Smashmouth. Coincidentally, of course, Harwell's band mates just happened to be online and so the group launched into its hit song *Walking on the Sun* and the audience tapped their feet as Harwell and Otellini pranced around. Well scripted but is this likely to be widely used by musicians? One wonders?

Another dude from BigStage comes out to join them both on stage and while the Harwell and his band are jamming, he creates an animated three dimensional avatar of the musician, but gives him a Mohawk, sunglasses and a nose ring. Big deal, but what's the point? BigStage says that such avatars can be embedded in all sorts of entertainment content and manipulated by moving normally using Organic Motion's motion-sensing technology. Once again, who really

## Sony introduces MusicPass

Sony plans to start selling music downloads that are free from copyright protection and available in MP3. The downloaded files can be played on digital music players, including the iPod and can be stored on computers or even copied onto CDs or DVDs. Sony will charge \$12,99 for a card that must be bought from a retail shop and then use the digital password on the card to enter a MusicPass site and download the audio files. It will offer 37 titles at first but hopes to increase this dramatically in the months ahead. It seems a far cry from Apple's iTunes store, which already has thousands of albums available to users who purchase the tunes directly from the Apple store.

## Electric motorbike for \$11 000

Vectrix has introduced a zero emission motorcycle capable of speeds up to 100 kilometres an hour which has a battery life of about 80 kilometres using batteries that recharge in under three hours. The motorcycle is so quiet that the manufacturers had to add an artificial hum so that people could hear it approaching. It accelerates to about 80 kilometres an hour in under seven seconds. However, it has a hefty price tag of \$11 000.

Gary Shapiro



## GM's plan for driverless cars in ten years

General Motors believes that cars which drive themselves will be a reality within the next ten years and already part suppliers, university engineers and special research teams are working on the new vehicles capable of short and long distance travel.

According to Larry Burns, GM's vice president for research and development, the most significant obstacles facing driverless cars are:

- Government legislation;
- Liability laws,
- Privacy controls
- The passion that individuals have for controlling their own car.

"Much of the technology for driverless cars already exists: radar-based cruise control, motion sensors, lane-change warning devices, electronic stability control and satellite based digital mapping," he says.

He believes that driverless cars would probably reduce road accidents, congestion and fatalities. Burns says that it's likely that GM will release a car that is equipped with driverless technologies for use on highways, but with an ability to switch out of driverless mode so drivers can control the car in suburban streets.

He confirmed that GM will test a driverless car before 2015.

cares – apart from Otellini who believes that this is what will dominate the 'personal internet' of the future.

Of course what motivates Otellini most of all is that ne chips will be needed to run the devices that can perform these antics and that's all that really matters to him.

Staying with the mobile theme, Jerry Yang, head honcho of Yahoo introduced the new Yahoo! Mobile 3.0 which provides an easy-to-navigate platform for people using mobile phones or BlackBerry devices.

Like others at the show, Yang also has some ulterior motives. He wants to make Yahoo! The "most simple starting point to the Internet and make people's lives easier." Noble, as it may be, this guarantees substantial continued revenue for Yahoo! from subscriptions, high advertising rates and sponsorships. Revenue that will keep the company profitable for many years to come.

The overall view of many analysts and commentators who attended this year's Consumer Electronics Show was that there was nothing really exciting or new and that the forthcoming Macworld Expo where the effervescent Steve Jobs was planning to launch the new MacBook Air, dubbed as the world's thinnest computer. He also announced that Apple has started a movie download service to rent movies at just \$2,99 for a 24-hour period. As with all industry events such as this, there was a bundle of new software and hardware devices on show for Mac computers, iPhones and iPods. The Macworld Expo was certainly a more compelling event than the Consumer Electronics Show which was interesting but far from trend-setting.

Admittedly such predictions are dangerous. Remember Gates' conviction several years ago that everyone would wear SPOT Internet-enabled watch.

Well, has anyone ever had a SPOT? **Wn**

## **WiMax enabled – but no sites to log onto yet**

Asus's Eee PC – which has sold over 350 000 units in just three months – has added a seven inch, eight inch and nine inch unit to its range of mini-laptops. They are all wireless machines with an in-built WiMax capability which is all well and good, but there are very few WiMax nodes in the world although 70 countries are investigating its use. The small laptops come with a four-gigabyte solid state drive with a Linux operating system although they can apparently run Windows XP. The entry level new Eee model is expected to cost around \$999.

## **Ad removal tool for recorded programmes**

It had to come: one television viewer obviously irritated by the constant stream of advertisements appearing in a recorded programme has invented an advertising removal tool so that when watching recorded shows no viewer has to endure the advertising. The software, developed by VideoReDo automatically strips out the adverts. It works by looking for clues about what's on screen – such as a blank screen between adverts – and then cuts that section. The software has apparently been available for about three years and was originally bundled with a video-editing suite. The newest version has a useful feature that allows edited programmes to be recorded on a DVD. A trial version of the TV Suite including the ad removal tool is available for free download from the company.

## **Fashion with feeling comes to gamers**

TN Games has designed a wardrobe for serious gaming enthusiasts which comprises a vest with inflatable cells or bladders that are connected to the computer via a USB connection. When strapped into position, the 'shooter' version recreates the direction and force of the bullet fire, allowing the gamer to 'feel' when and where a shot has hit. Another version of the vest simulates G-forces that are commonly experienced by racing drivers and fighter pilots. For instance, in a motor racing game, when the driver accelerates, the cell inflates in the front of the chest and the faster the acceleration the more rapid the inflation. Conversely when the car is braking the back cells inflate and the front cells partially deflate creating the sense of pressure.

## **PVR for your PC**

American-based Hauppauge Digital has introduced a personal video recorder (PVR) for the home computer which can record high definition television video into H.264 in real time. The HD PVR uses its on-board hardware encoder to record television signals from cable or satellite set-top box receivers. It comes with the software to control channels on most of the popular cable and satellite television services, using the company's IR Blaster software. The HD PVR will be available in the first quarter of this year and will sell for about \$250.



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# Macworld wows consumers with Apple's new products



While the Consumer Electronics Show in Las Vegas is usually a trend-setting event for computer technologies and developments, this year's event did not see any major software or hardware announcements from any of the traditional developers including Microsoft.

However, at Macworld which is held a week after the Consumer Electronics Show, Apple's chief executive Steve Jobs once again wowed his audience with the introduction of Apple's MacBook Air – the world's thinnest fully-featured computer. It's so thin that it fits inside a manila envelope. (See Page 24.)

Intel's Paul Otellini, fresh from attending CES and joining Jobs during the keynote presentation said that Intel did not believe that it was possible to create a computer such as this. "It's the width of a dime and the thickness of a nickel," he told the audience.

Jobs points out that the MacBook Air has a display that is mercury-free, uses arsenic-free glass, has circuit boards that are BFR-free and PVC free. It's aluminium case is recyclable.

Apart from the staggeringly impressive new MacBook Air, Jobs announced that Apple is introducing its long-rumoured iTunes movie rental service. The company has partnership agreements with Twentieth Century Fox, Warner Brothers, Universal, Sony, Paramount and Disney representing the major studios in the movie business.

The rental service allows customers to download movies that can be kept on a computer for a period of up to 30-days but once the movies starts, viewers have 24 hours to watch it as often as they like. The movies cost between \$2,99 and \$4,99.

With the introduction of Apple TV software it is also possible to watch the downloaded movies on a widescreen, high definition television set. Two models of Apple TV are available. A 40 GB model at \$229 and a 160 GB model, which costs \$329.

As part of his keynote address, Jobs introduced Apple's new Time Capsule, a product that is used to back-up computer files and data effortlessly and save them on a hard drive that is reliable. Two versions of Time Capsule are available: the cheaper option with a 500 GB drive at \$299 and the more expensive 1 TB at \$499.

Jobs says that it's essential that people back-up their data but the problem they face is it's often an arduous, time-consuming task. Time Capsule uses a server grade hard drive and 802.11n base station. Users simply plug it in, set up a wireless backup for each Mac in the house and wirelessly copy files and data to the remote hard disk. Windows files can be stored on Time Capsule using a wireless network.



10

Check time.

9

Thank speaker.

8

Summarise points.

7

Bring about decisions.

6

Allocate tasks.

5



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3  
Close door.

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## Wii now being prescribed

Some therapists in the United States have started using Nintendo's Wii gaming console to provide therapy and exercise to patients who have suffered from a crippling injury as a result of a stroke.

According to occupational therapist Robbie Winget, the Wii helps patients to build balance, improve co-ordination and increase endurance and upper and lower body strength. Winget who works at Dodd Hall Rehabilitation Hospital in Columbus says that the Wii is used to help people recovering from strokes, spinal cord or traumatic brain injuries.

The console is connected to the Internet and patients are asked to find information on the news or weather channels to improve memory and brain function. Patients work with the console for about 30 minutes, twice a day.

Winget said that the Wii will not replace conventional therapy but is certainly useful in meeting specific goals associated with therapy.



## MacBook Air – Apple's own 'thin-novation'

Apple has introduced what it has dubbed as the world's thinnest computer, the MacBook Air which is just 1,93 centimetres (0,76 inch) thick and weighs just over a kilogram. It has a glossy 33,8 centimetre (13,3 inch) backlit LED screen with 1280 x 800 resolution and a full size, full feature keyboard with an over-sized trackpad for navigation enclose in an anodised aluminium case.

The MacBook Air has a port hatch, which covers a USB 2.0 port, a headphone jack and a micro-DVI port that supports DVI, VGA, composite and S-video output. The MagSafe power connection has been reduced in size to fit into the super-slim casing.

It comes with two gigabytes of RAM and an 80 GB hard drive which can be upgraded to a 64 GB solid-state drive with no moving parts and enhanced durability. Apple offers a choice of the 1,6 or 1,8 GHz Intel Core 2 duo processor which has been custom-built to fit into the new MacBook with a battery life of five hours.

The computer also comes with Apple's built-in iSight camera which is almost unnoticeable and includes the iChat software. The base model retail for \$1 799,00.



# Weird burials and memorials

An underwater reef off the coast of Florida has been built as a memorial site to house the ashes of people that have recently died. The reef has room for the remains of up to 125 000 individuals according to Jerry Norman, chief executive of The Neptune Society, responsible for creating the new memorial reef.

Known as the Neptune Memorial Reef, it covers an area of 16 acres – just over three miles – off the coast of Miami. The reef itself is a recreation of a lost city with columns, roads and city gates. Individuals can choose where they want their ashes to be placed after they have been cremated.

A simple 'placement' costs \$1 500, while a spot inside the body of a large bronze lion that guards part of the 'city' pushes the price up by several thousand dollars. A number of other companies in the US offer underwater burials, but the reefs are typically small and use separate pods created for each individual and then sunk to the ocean floor.

For just \$1 300 you could choose, instead, to send a small capsule of cremated remains into orbit around the earth. Celestis offers space burials and carries the capsules as a secondary payload on commercial satellite launches.

The late Gene Roddenberry, creator of the Star Trek series, and eccentric author Timothy Leary both chose to be launched into orbit and even made the trip on the same rocket flight in 1977.



## Bioshock the best game around?

Bioshock was voted the *Best Game of the Year* at the Spike TV awards held in Las Vegas at the end of last year. It also won the best Xbox 360 title, beating high-profile titles such as *Halo 3*, *Mass Effect* and *The Orange Box*. *Call of Duty 4* won the award for best shooter and military game while Nintendo's *Super Mario Galaxy* won the best action game and the best Wii game. *Halo 3* was rated as the best multi-player and most addictive game. *Crysis* won the award for best graphics.

Images: [www.gaming.hexus.net](http://www.gaming.hexus.net)



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# PlayStation used as password cracker

The power of the PlayStation chip has been used to crack a supposedly strong eight-character password in just a few hours. Previous attempts to crack such passwords took days to achieve.

Security researcher Nick Breese turned the PS3's cell processor into a password cracker and achieved astonishing results with the cell processor speeding through 1,4-billion cycles a second compared with an Intel chip that could only manage between 10- and 15-million cycles a second.

Breese said the speed boost was possible because each Cell chip had several processing cores and each one could be used to try letter and number combinations at the same time. He emphasised that while eight-character passwords are typically used to protect PDF and ZIP files the stronger encryption systems could not be cracked and remained safe at this stage.



facebook

&

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## used by Armed Forces

Syria has blocked access to Facebook, apparently because it fears that Israeli 'agents' will infiltrate Syrian social networks. Residents in Damascus have protested against this action but Syrian officials have refused to confirm or deny their involvement in preventing access to the popular social networking site.

Syrian authorities have regularly blocked any Internet sites that are critical of them or President Bashar Assad's conservative government, which has cracked down on political opponents and human rights activists.

In a separate development, the British armed forces have turned to YouTube in an effort to recruit soldiers into the armed forces. Britain's Ministry of Defence, the Royal Navy and the Royal Air Force all have channels on YouTube.

According to defence analyst Gordon Mackenzie, YouTube offered a low-cost medium for attracting new recruits and some of the video clips showing British forces in action were used to encourage youngsters to join up.

He added that the move by the British armed forces might be a response to Al Qaeda and the Taliban who have used the Internet extensively to broadcast messages and recruit new followers.

The RAF Recruitment Marketing is one of the most active channels on YouTube and since March 2006 it has broadcast 139 videos reaching 76 600 channel views. It recently starting broadcasting the Afghan Diaries, which chart the activities of Lossiemouth-based 51 Squadron's deployment in Afghanistan.

The Ministry of Defence has two 'friends' that link from its page: The Foreign and Commonwealth Office and the Multi-National Force – Iraq (MNF-I). One of its current videos shows soldiers in a battle on Haifa Street in Baghdad.

## Billboards used to track outlaws

American authorities have started using billboards on major highways to help track down wanted criminals. The first case involved a suspected bank robber, Oscar Finch, who was captured on a surveillance video taking part in a bank heist in Mobile, a small town in Alabama.

The police posted a picture of Finch on 12 digital billboards. It was mixed in with commercial advertisements for everything from liposuction to hamburgers. Finch surrendered within 24 hours of the advertisements being flighted, having been on the run for more than ten days.

Wanted posters have been widely used in the United States for generations and photographs of the FBI's most wanted fugitives are displayed in Post Offices around the country, on the Internet and, from time to time, on television stations.

This is the first time that billboards have been used to track down a criminal and according to the state police they will be used more frequently from now on. There is a problem though: of the 450 000 billboards in the US less than 1 000 are digital, which means that widespread use of the technology is unlikely.



## Norway to build a tunnel for ships

Norway is to build the world's first tunnel for ships, which it claims will save shipping companies millions of dollars as the vessels will no longer have to sail through dangerous seas along the country's south-west coast.

The tunnel will be 1 800 metres long, take about five years to build and cost in the region of \$300-million. It will be known as Stad Skipstunnel and has been approved for construction by Norway's Coastal Administration. It is estimated that about 90 percent of all the shipping traffic on the route will choose to use the tunnel rather than sail around the west coast.

Stad's main claim to fame is undoubtedly the Vestkapp or West Cape, which is where the North Sea ends and the Norwegian Sea begins. The strong currents and winds whip up storms that literally sweep you off your feet. So important is the area as a landmark that meteorologists consistently relate what the weather will be like south of Stad.

Even the Vikings – renowned as they were for bravery – often dragged their vessels over the peninsula's narrowest point rather than venture into these treacherous seas.



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# Artificial Intelligence

By David Seshai, a Computer Science student at Unisa and a Technology Leadership Programme (TLP) candidate with Stratek and Tshwane University of Technology.

There has been a lot of discussion concerning the philosophy of Artificial Intelligence (AI) and its future role in our small and getting smaller world. With the Internet and the PC becoming so common people are now asking the question "What next?"

There can be no doubt that Artificial Intelligence is about to become a real force in our technological evolution. There has been so much development and change in the last 10 years that it is hard to believe how far we have come, but there is going to be another technical revolution ... and it will be about AI.

Computers and robots have been functioning features in our world for several years. These man-made 'slaves' can seemingly do everything from making your morning coffee to lowering the thermostat for night time sleeping. However, does performing a simple task, such as flipping a switch, mean that these robots are actually 'intelligent' or are they just performing a specific function as programmed to do? The question arises, will computers and robots be able to evolve and incorporate human like tendencies and the ability to learn from previous experiences into their programming?

There are several definitions of artificial intelligence, with some of the definitions relying on more of a technical or scientific standpoint. To put it simply, artificial intelligence, commonly referred to as AI, is the capability of a device to perform functions that are normally associated with human intelligence. This includes learning through reasoning and gaining additional knowledge through experience. AI can also be seen as an interdisciplinary field where computer science intersects with philosophy, psychology, linguistics, engineering and other fields.

Human beings make decisions based upon experience and intuition. The concept behind artificial intelligence is that computers will integrate the necessary components to mimic this human learning process and evolve as they accumulate and process new learning experiences.

The ultimate test of artificial intelligence was developed by Alan Turing, a British mathematician famous for the invention of the theoretical Turing machine and for deciphering the German codes during World War II. Turing's test is very simple. You place something (or someone) behind a curtain and then have it speak with you. If you cannot determine whether this entity is human being or a computer, it passes the test and can be considered a true form of



# - Nightmare, Myth or Reality

Artificial Intelligence. So far, nothing has been created that can pass this test. So, can we define artificial intelligence as a device that can communicate with us as another human being can and has the ability to learn and adapt through experience? Scary if you think about it. If these machines with their extensive computing abilities can learn from their experiences and then evolve to the next level, would they determine that human life is a detriment to the earth and to their existence? This brings to mind the concept of Isaac Asimov's Three Laws of Robotics.

## Artificial Intelligence - Human Enablement

Human enablement refers to any attempt, whether temporary or permanent, to overcome the current limitations of the human body, whether through natural or artificial means. The term is sometimes applied to the use of technological means to select or alter human aptitudes and other phenotypical characteristics, whether or not the alteration results in characteristics that lie beyond the existing human range.

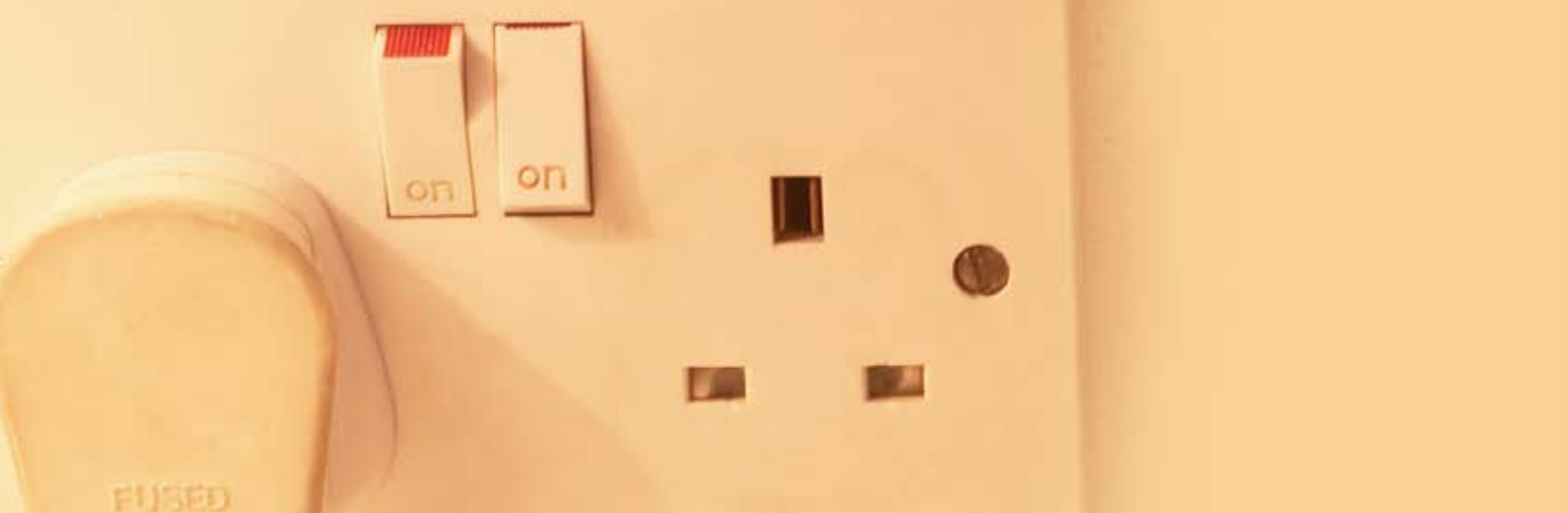
The theory of enablement promotes the idea that intelligent machines will allow us to achieve more by supplementing our capabilities. This would include automating the work of survival (agriculture and manufacturing for example), and allowing us to leverage greater computational power for solving complex human problems like weather prediction, addressing world hunger, and mapping the genome. It would also promote human pursuits like interstellar space travel and the design and development of complex bio-industrial projects furthering the goals of exploration and population of the universe. But the theory of enablement starts small. We are already beginning to see increasingly smart automations helping us in our daily lives.

The beginning of robotics involved the integration of computers and robots. Initially, robots were taught to perform repetitive tasks. As the field of AI advances and develops, robots will incorporate more than mere programming. They may use human sensory perceptions in the areas of touch, sight and hearing. Useful robots with artificial intelligence will be able to take on a variety of roles and lessen the burden now instilled on a company's employees. Imagine a robot that could roam an office building at night and can empty the recycling and trash containers throughout an office building, freeing up the time of other maintenance staff to work on more detailed tasks. Security

robots could be programmed to listen for unusual sounds, look for intruders and contact the authorities when abnormalities were discovered.

Working in conjunction with human being AI offers many positive outcomes. Increased production and lowered costs have been seen when using robots on factory assembly lines. American Express has developed an Authorization Assistant that uses artificial intelligence to determine whether a purchase is out of character of the card member's general purchases. This system has proven to be more accurate than when undertaken by humans and it saves time. Recently released products include robotic vacuum cleaners and lawnmowers that the human owner can use to perform humdrum tasks while devoting their human energy to other less mundane activities.





# History and development of the plug and home electrical wiring

By Glynnis Koch

It's probably true that most of us take electricity for granted and do not question the fact that we can read a book without worrying if we'll burn the house down because we might fall asleep while a candle's still burning. What's more, we can watch TV, have access night and day to the Internet, communicate with family and friends by telephone and cook a hot meal in a microwave in a fraction of the time it took our grandmothers.

While we may erroneously believe the 20th Century was a time when most technology progress was made, particularly in terms of electricity, this is not true. It was the 19th Century that brought the greatest revolution to electrical technology for homes around the world. The harbinger of the greatest progress was gas lighting which was common in Europe as early as 1830 and introduced to the US just after the Civil War in the 1860s. The invention of the incandescent lamp by Thomas Edison in 1879, was the beginning of the electrification of homes in the US which was well underway by the mid-1890s. In older houses, gas chandeliers were taken down and electric wires run through the piping!

As a matter of fact, electric lighting was such a symbol of progress that many early lighting fixtures flaunted bare bulbs so that they could not be mistaken for gas lights. It was not long before every room in a house in the US would have an incandescent light bulb ceiling fixture – and, to top it all – a single electrical outlet.

## Early days

In the early days of home electrification, the junction boxes for switches, plugs and fixtures were simply screwed to the surface of walls and ceilings. When electricity was first introduced it was primarily used for lighting and many electricity supply companies in the US operated a split-tariff system with the cost of electricity for lighting being lower than if it was used to power appliances such as heaters, vacuum cleaners, electric fans or toasters. In order to circumvent this, many appliances were actually plugged into electric light fittings.

Unfortunately, while mankind's almost limitless demand for electricity (the average electrical capability of homes in the industrialised world has increased by at least tenfold in the past century), the apparatus of home electrical systems has changed

very little indeed. If Edison was still alive, he'd easily make sense of the wiring diagrams and the actual installation. Compare this with progress in flight and in the space of 100 years the world went from the Kitty Hawk to the International Space Station that orbits the earth today. Surprisingly, home electrical devices such as switches and receptacles (or outlets), still require us to wrestle with a tangle of wires in much the same fashion as our great-grandparents used to do. In fact, many electrical contractors believe that because of the enforcement of national codes and standards, innovation in wiring has been inhibited or prevented.

## Knob-and-tube wiring systems

When homes were converted from using gas lighting to the more modern and convenient electric lighting, the wires were often installed inside the old gas pipes. So much so that builders, today, still use conduits to bury wires inside the walls instead of fixing them on the surface. The first concealed wiring systems had separate 'hot' and neutral wires running side by side throughout the structure, spaced about eight inches (20 cm) apart. This situation changed when electricity became the common method for lighting houses and using labour-saving devices which needs a different method of connection to the electrical circuit.

For the most part, houses built in the '20s and '30s were originally wired using what was called 'knob-and-tube' wiring. The wires were strung on porcelain insulating knobs and ran parallel to wooden members and were encased in small porcelain tubes when they had to go through joists or studs. This system is actually still in place many old homes around South Africa. Most of the problems associated with knob-and-tube installations have little to do with the original wiring and are usually a result of later modifications and additions done by unqualified electricians.

There is no longer an easy way to install grounded electrical equipment if the knob-and-tube format is in place as there is no way to earth the installation. In fact it was only after the Second World War that armoured cable and flexible cable replaced the old knob-and-tube wiring systems. These cables combined the positive and neutral wires in a single cable but encased in their own insulation which



made for better protection and, more importantly, saved builders time and money as they only had to drill half as many holes through the structure.

### Fuses, circuit-breakers and switches

In some older homes it's still possible to see the fuse systems that were used in the electrical distribution panels. The fuse would melt if there was a fault in the circuit, shutting off the power. Humans, in their quest for easy, instant solution, often replaced blown fuse wire with foil or any conducting material to resolve the problem without realising the risks they were taking. In fact thousands of homes burned down over the years because of faulting wiring and fuses that had been 'jimmied'. Of course another problem is that over the years the fibre insulation material erodes, exposing bare wires against the ceilings, joists or studs.

Circuit-breakers were invented to avoid accidents caused by uninformed (or careless) humans. They are reusable and not nearly as easy to change to the wrong size. Although fuses are arguably safer than circuit-breakers, simple circuit-breakers will not, however, save a life if some of the electricity is leaking to the ground (where it will go by default, through whatever path it can). The ground-fault circuit-interrupter (GFCI) is a protective device that is designed to trip the electric circuit and shut off the electrical flow before a deadly shock can occur. GFCIs were added to the US electrical code around 1970 and must be installed wherever one may come in contact with water, such as in the bathroom, kitchen or garage.

In 2002 arc-fault circuit-interrupter (AFCIs) were introduced and made mandatory for bedroom outlets because of the history of fires starting in bedrooms. All newer homes now have cables that include a ground wire which allows for the use of three-pronged receptacles needed to power many of today's appliances, particularly those with metal shells, such as fridges and washing machines.

As far as switches were concerned, in a 100-year period, they changed from the earliest surface-mounted types to the push-button versions of the 1920s and then back again to plastic toggle switches with which most of us today are familiar. So, we are still using devices that are, in essence, no different from those used a century ago! The few progressive companies that have experimented with newer technology (miniature switches that can be installed or replaced in seconds by snapping them into a modular socket) have unfortunately offered them a too high a price (and in too complex a mechanism) to make them affordable for most homeowners or builders.

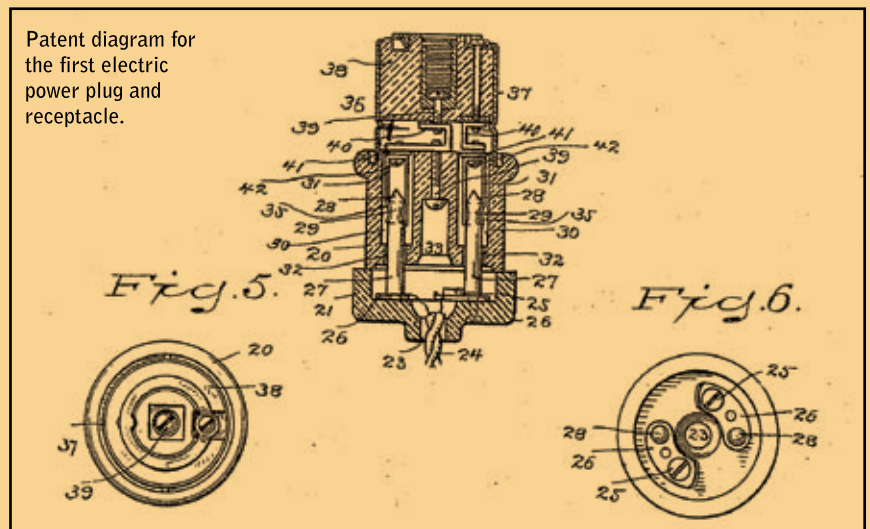
### Development of the plug

Harvey Hubbell, in 1888 in Connecticut in the US, was one of the first people to devise new ways to use and control electricity. In

fact his first electric switch design was submitted for patent in 1891. Hubbell's later idea was to provide convenience, safety and control to an electric light with a 'pull socket' which he patented in 1896. The same device, with its on/off pull chain, is still in use today.

Hubbell's inventive mind later devised a product with individual wires permanently attached in the proper sequence and correct polarity, which could easily be connected or disconnected to or from a power supply in the wall. The original Hubbell two-blade electrical plug and socket were patented in 1904. This 'separable plug' design

Patent diagram for the first electric power plug and receptacle.



was followed by separable plugs in different configurations and also a single flush-mounted receptacle. In addition, Hubbell developed new products for electrical circuits such as cartridge fuses and a fuse block, lamp holders, key sockets and even the duplex receptacle still found everywhere electrical power is used. Later standards for the interchangeability of plugs and receptacles were based on those Hubbell had devised.

By 1915 these types of plugs and sockets were widespread (other manufacturers had by now adopted the Hubbell pattern). However, in the US, even in the early 1920s, household and light commercial equipment was still powered through cables connected with Edison screw-base adapters to lampholders.

The three-prong plug was invented by Philip Labre while a student at the Milwaukee School of Engineering. Labre developed the grounded plug and receptacle, his patent being issued in 1928. This was the beginning of earthed three-contact systems in electrical installations which has since become mandatory in most industrial countries.

### Plugs in general use today

Plugs come in 'polarised' and 'non-polarised' varieties, polarisation helping to reduce the potential for shock. Polarised plugs can be identified easily, as one blade (or prong) is wider than the other in two-pronged plugs, whilst three-pronged ones are automatically polarised because they can only be inserted one way.

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The three basic types of plug used today are: self-connecting, terminal-screw and three-prong. Lamps and small appliances most often use self-connecting plugs. The prongs clamp onto the wires of the cord and make an automatic connection. With terminal-screw plugs, the wires attach to screws inside the cord body and the plug often has a removable insulating disk covering the terminals and wires. Newer plugs have rigid insulating barriers. Three-pronged plugs include a prong that grounds the appliance (mostly larger appliances such as dryers and power tools, as well as fridges and washers). A word of warning from those in the know: never force a plug into a receptacle that does not accommodate it. Always replace receptacles with outlets that have the same ampere flow and voltage as amps and voltages vary.

### The future for home electrical needs

A recent development (patent issued in December 2006) is the pre-wired, hard-wired receptacle whose body is sealed except for three outlets through which pass pre-cut 'pigtail' wires – the 'hot' wire, the neutral wire and the ground. All an electrician has to do is remove the end cover from the pigtails and simply connect them to the circuit wires in the box using common wire connectors.

It's true, however, that even homes built about 20 years ago often have insufficient power for today's entertainment and personal computer systems. Not only is more power capacity required in a modern home, but the number of receptacles or outlets in each room is increasing steadily. Extension cords are only a temporary measure and experts stress that they should not be used as a substitute for permanent wiring.

Although the technology exists already for eliminating the need for bulky transformers and separate power cords, the logistics involved in attempting to integrate and mass-produce them for use in households would be a legal and regulatory nightmare, according to one informed source. One view held by some is that the monopoly held by electric companies in most countries is a recipe for stagnation, though The Foundation for Economics Education in New York has researched several projects for making the production of electricity a free market (see, for example, [www.fee.org/vnews.php?nid=3898](http://www.fee.org/vnews.php?nid=3898)).

Furthermore 'X10', a family of devices used to control lighting and appliances in today's smart homes, also avoids the need to install additional wiring. A wide range of X10 devices are available, including a number of intelligent controllers. Most of the devices simply plug into a three-pin wall outlet and can be moved from room to room as users' requirements change. Handheld remote controllers using radio signals which operate through walls, are commonly used today, providing control of lights or appliances from anywhere in the house!

The 'smart home' of the future may be right round the corner, with Sunbeam a leader in the race, with its new line of appliances called HLT (Home Linking Technology)-Smart products. This product line

includes a coffee maker, an electric blanket, a smoke/CO detector, a bathroom scale, a blood pressure monitor and a stand mixer which 'communicate' with each other: imagine an alarm clock that 'talks' to your coffee machine so that when you get out of bed ten minutes later, your coffee is brewed. All this and more can be accomplished by reusing the technology we already have, such as radio frequency, power line carrier, infrared and phone lines.

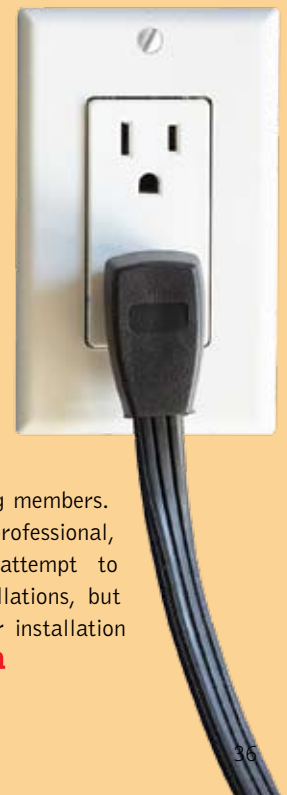
### Some closing words of advice

The Occupational Health and Safety Act in South Africa requires virtually every electrical installation to have a Certificate of Compliance. This certificate has no expiry date except if any alterations are done to your installation. The Act also states that this certificate is the homeowner's responsibility. The onus rests on the homeowner to ensure that electricity in his house does not pose a threat to him, his family or any other person. This also places the responsibility on the homeowner to prevent any hazardous situations that may trigger an electrical incident.

Following are some less common facts about the prevention of hazardous situations:

- Ensure your household appliances bear the label of a testing laboratory. This should indicate that it meets the basic safety standards.
- Avoid using several high-amperage appliances (such as irons or heat producing appliances) on the same circuit.
- Avoid plugging two appliances in the same outlet or circuit if together they exceed 1 000 Watts.
- Ensure that stationary appliances permanently connected by means of fixed wiring, such as stoves, geysers, gate motors etc, are controlled through an isolating switch.
- Always use an accredited electrical contractor to work on your electrical installation.

Associations such as the ECA(SA) encourage and train electrical contractors to perform safe installations in terms of safety legislation and guidelines and takes disciplinary action against non complying members. By supplying the electrical industry with professional, qualified electricians, the ECA(SA) attempt to protect the public against faulty installations, but the responsibility for the upkeep of your installation ultimately lies with the homeowner. **Wn**



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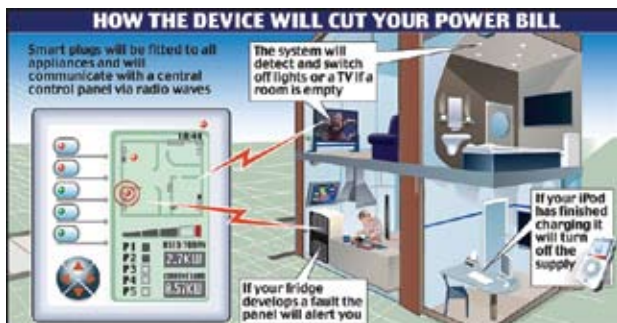
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# The new smart plug that will switch off the TV if you forget

**A**n 'intelligent' plug is being developed that will switch off electrical devices such as TVs and desk lamps when they are not being used. This device forms part of an electrical system designed to cut household power bills by keeping watch over energy use. The plugs will transmit information to a central control point in the home thereby allowing homeowners to see how much power each device is using, as well as when equipment is operating needlessly. The system will also detect and switch off devices that have been carelessly left on in empty rooms.



Researchers hope to see the plugs fitted as standard to all domestic appliances within a few years.

The plug, which will look no different from a normal 13 amp one, will also contain an 'integrated motion sensor', which will detect when there is little activity in a room where an appliance such as a TV has been left on. The plug will alert the central controller, which can then switch off the appliance.

"If something is turned off and you don't want it to be, you simply flick the switch off and flick it back on again and the central controller will recognise that you don't like that service being compromised," said Dr John Woods, one of the researchers working on the project at the University of Essex in Colchester in the UK.

The plug is being developed with a £90,000 award from the Carbon Connections Development Fund, a green initiative managed by the University of East Anglia. A batch of prototypes should be ready within six months, say the researchers. These will be tested in Essex University's 'iSpace' department, where hi-tech gadgets can be tried out in home surroundings.

Dr Woods estimates that the plugs would have to cost less than £1 each to be a commercial proposition. However, with mass production, he believes this should be possible.

Source: 'Daily Mail' online, *Science and Technology* section, 2 January 2008

## Jellyfish aquarium



**A** huge hit in Japan, the Aquapict Jellyfish aquarium shows beautiful colour-changing jellyfish swimming as they do in the deep sea, but none of them is real!

Made with highly-realistic silicone, the Aquapict jellyfish swim and change colour subtly with the five-colour LED lighting system (red, yellow, green, blue, and purple). They move by a slow current created in the tank that does not have an obvious flow or bubbles that make it look fake.

Features include: an energy-saving timer; a colour mode selector with 11 colour patterns and a 'Deep sea' mode that brings out striking LED-flashing colors

The Aquapict measures 270 mm (h) x 210 mm (w) x 120 mm (d) and is powered by an AC adaptor.

Source: <http://www.neatorama.com/category/gadget/>  
<http://www.kilian-nakamura.com/catalog/aquapict-led-jellyfish-aquarium-banpresto-p-41.html>

## Vintage iPod Tube Amp/Charger



**T**his black stylish iPod amplifier/charger allows you to enjoy your playlists with the "warmth and richness only a vintage tube amplifier can provide".

You'll be amazed at how time-proven, pre-amp tube circuitry can reveal the subtle detail of brushes on a snare drum, or the sonic thunder of a Fender Precision Bass striking that low 'E' – as when the Funk Brothers' James Jamerson sets the groove for Marvin Gaye's *I Heard it Through the Grapevine*. Aural details, that have been lost as MP3 files have been compressed for storage and transmission, dramatically re-emerge through this 25 watt RMS per channel, all-tube pre-amp system.

A rugged steel chassis finished in gloss piano black includes a massive power transformer, and three multi-plate vacuum tubes protected in a removable, ventilated cage. Optional stereo speakers in matching gloss black, feature efficient Bass-Reflex design, 3/4" tweeters, and robust 4" woofers.

Source: <http://www.neatorama.com/category/gadget/>  
<http://www.geekalerts.com/vintage-ipod-tube-ampcharger/>

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# Wrinkle cure – for mice but not for women yet

**B**y blocking the action of a particular protein, scientists have been able to reverse the effects of ageing on the skin. Lead researcher, Dr Howard Chang from Stanford School of Medicine in California, says that the findings support the theory that ageing is due to genetic changes and not wear and tear.

And, judging by the experiments done by the researchers, it's possible to reverse those changes, making people look more youthful and attractive. Dr Chang stresses, however, that the findings are not a potential 'fountain of youth' but suggest rather that older folk could heal as quickly from injuries as they did when they were young.

It's unclear whether the effects are long lasting, as the NF-kappa-B protein is implicated in cancer and in the regulation of the immune system so, by blocking it, there could be other dangers for the individuals concerned.

According to the British Association of Dermatologists, gene therapy for the skin is difficult, and while it may help with wound healing, any research has to be done with a strong element of caution because the longer term effects of gene manipulation are unknown.



# Drug to relieve sleepiness

**S**cientists have isolated a drug that will eliminate sleepiness. It is a nasal spray that contains the naturally occurring brain hormone orexin A and it reverses the effects of sleep deprivation in monkeys, allowing them to perform just as well as rested creatures in cognitive tests.

Jerome Siegel, a professor of psychiatry at the University of California and Los Angeles (UCLA), says that findings have shown that the drug reduces sleepiness without causing edginess.

He believes that orexin A is a promising candidate for a sleep replacement drug. Many stimulants have been used to combat sleepiness in the past, including amphetamines that are provided to military pilots who fly long distances.

The military has been funding research that will help combat troops to stay awake without inducing any side-effects such as mood swings, addiction or high blood pressure. Siegel points out that for the tests, monkeys were deprived of sleep for between 30 and 36 hours and then given either orexin A or a saline placebo before taking standard cognitive tests.

The monkeys given orexin A as a nasal spray scored about the same as the alert monkeys, while the saline control group's cognitive abilities were severely impaired. In PET scans the sleep deprived monkeys looked 'awake'.

Siegel discovered that the absence of orexin A appeared to cause narcolepsy, a condition that puts people to sleep uncontrollably or inexplicably. Furthermore, research has shown that there is a direct association between insufficient sleep and cardiovascular disease or metabolic disorders.

Statistics from the National Sleep Foundation in the United States show that more than 70 percent of the population gets less than the recommended eight hours of sleep per night.



# NASA details Mars trip



**N**ASA plans to send a 'minimal' crew on a 30-month round trip to Mars. Initially, a Mars Ship will be built using a three or four Ares V rockets assembled in a low Earth orbit. The cargo lander and surface habitats will be sent to Mars separately and launched two or three years ahead of the crew.

The likely date for the Mars trip is February 2031 and the mission's journey from Earth to Mars will take six or seven months. The spacecraft will be powered using cryogenic fuel propulsion systems and will cost anything from \$20-billion to \$450-billion.

Astronauts will spend up to 16 months on the surface of Mars and will use nuclear energy to provide power for their living environment. They will have to be remarkably self-sufficient, as the difficulties of aborting the mission or re-supplying the crew are extremely limited.

The spacecraft will use what NASA calls 'closed-loop' life support systems, allowing air and water to be recycled. Plants will be grown onboard the spacecraft to provide fresh fruit and vegetables and contribute to the 'psychological health' of the astronauts.

NASA still needs to come up with a solution that will protect astronauts from the high levels of cosmic radiation in deep space and on the surface of the planet. They will carry medical equipment for the diagnosis and treatment of any illnesses or injuries.

Many of the new systems planned for Mars will first be tested when astronauts return to the Moon and live there for sustained periods.

## Communication's tough from Mars

**W**hen the first astronauts leave Earth on an 800 day mission bound for Mars they are likely to experience an enormous amount of alienation and an incredible remoteness from Earth. The National Aeronautics and Space Administration intends to send a team of astronauts halfway around the solar system on a flight that will last 180 nights before landing on the Mars surface. The team will spend 500 days working there and then travel back.

NASA is currently working to create a networking and virtual reality technology that will allow astronauts to connect with families, friends and colleagues on Earth in a three-dimensional virtual world, modelled on games such as World of Warcraft.

What NASA wants is for astronauts to 'phone home' and feel that they are sitting around a dinner table with their families, helping their kids with homework or meeting with colleagues to interpret data sent back from the Mars surface.

The difficulties facing NASA scientists are enormous: for instance, when Mars and Earth are on diametrically opposite sides of the sun, the time lag for communication is 20 light- minutes. This drops to four light-minutes when the planets are at their closest points. Either way, it's a long, long time to wait for an answer to a question.

NASA has admitted that it is difficult to resolve the problem and says that it is working on what it calls 'immersive synthetic environments' in a bid to resolve the lag dilemma. The astronauts would readily be able to communicate with their families using e-mail but NASA wants to go beyond that to give them a sense of immediacy and intimacy when they phone home.

Mars astronauts – and those who will return to the moon – will take with them an array of high-technology gadgets including high-resolution video cameras, the ability to make podcasts and even host web-forums.

In fact, through NASA research and development it might be possible for Mars astronauts to send Christmas cards from Northpole.com, order music and books from Amazon and even send tunes or albums to their family using iTunes.





# Why the sun is burning hot



**T**he sun is bristling with x-ray jets that send hundreds of blobs of gas the size of North America and more hurtling into space at two-million miles an hour. These jets add significant mass to the solar wind and may help to explain a long-standing mystery of astrophysics: the super-heating of the sun's corona.

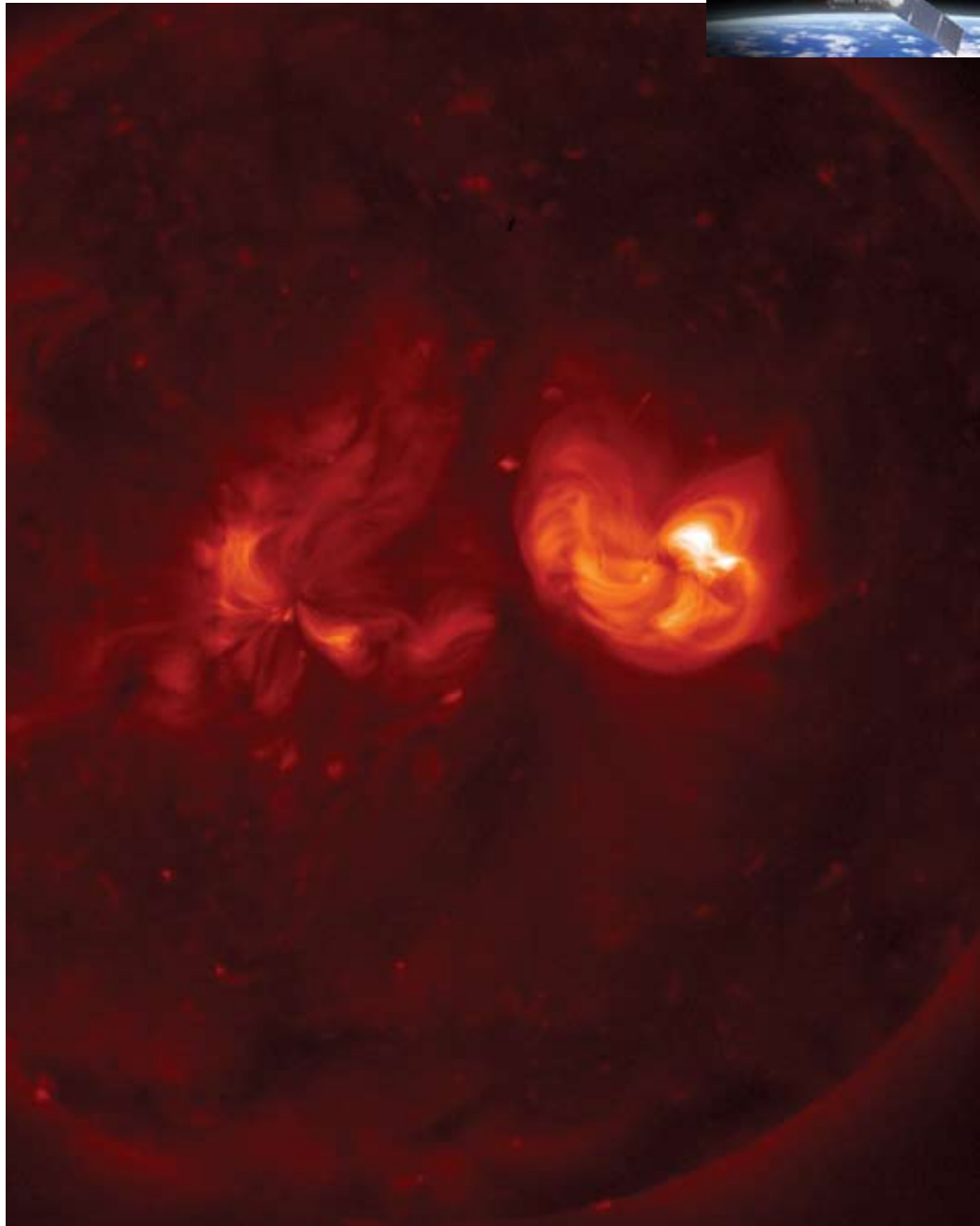
According to Jonathan Cirtain at the Marshall Space Flight Centre, soon after Japan's Hinode spacecraft was launched in 2006 and in order to calibrate the x-ray telescope, mission controllers in Japan pointed the telescope at a dark hole in the sun's atmosphere.

When Cirtain analysed the data he found the x-rays. He says the x-ray jets seen through the coronal hole look like the "twinkling of Christmas lights that are randomly oriented and very pretty".

While x-ray jets have been observed since the 1970s, scientist were uncertain about the frequency of such events. The Hinode telescope was able to capture detailed images of the fast-moving eruptions. "We now see that these jets happen at all times, as often as 240 times a day," says Cirtain. "They are a major form of solar activity."

Cirtain says that one of the mysteries is that the actual surface of the sun is estimated to be about 6 000 °C but, just above the surface, the corona heats up by millions of degrees and scientists have wondered what causes this temperature change?

Cirtain and his colleagues believe that the x-ray jets launch magnetic waves into the sun's upper atmosphere. These Alfvén waves, propagate in the corona where they 'crack', heating the gases around them and it is this 'cracking' that could explain the incredibly high temperatures.



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# New applications for LEDs?

Light emitting diodes (or LEDs) have a really bright future as scientists use the technology to purify water, make light that mimics the colour of sunshine and even keep data immune from an attack by hackers.

In fact, Dr Rachel Oliver, a researcher at the University of Cambridge, believes that LEDs could soon replace conventional tungsten light bulbs as they are energy efficient, can be made in a great many different colours, and offer exceptionally long life.

LEDs are made with semi-conductors - one half is filled with negatively charged electrons while the other contains a positive charge. When the two halves meet, the positive and negative charges join, causing the electrons to emit energy as photons of light.

The colour of the light depends on the material that is used: for instance, gallium arsenide gives off a red light while gallium nitride produces blue light. Blue LEDs are among the most widely used in the world, with blue LEDs being used for backlighting on cell phones.

Researchers have moved beyond this, using gallium nitride to create an ultraviolet light they hope soon to convert this to white light suitable for use in homes and offices. White light is produced in an LED when the ultraviolet light reacts with a phosphor coating on the inside of the bulb.

LEDs have an efficiency level of about 40 percent compared with just five percent from tungsten bulbs. However, the white light given

off by LEDs currently contains a lot of blue, making it a very cold, harsh white light to live or work under.

But the Cambridge research team hopes it will solve this problem by changing the chemistry of the phosphor. According to Dr Oliver, the researchers are aiming for a white light that looks like sunshine and think this can be achieved by mixing phosphors to get the right blend.

She says that ultraviolet LEDs could be used to revolutionise water quality in the developing world by using deep UV light to kill bacteria and viruses that may lurk in streams or reservoirs. Deep UV is currently used for sterilising water but this UV bulbs are bulky and must regularly be replaced.

Dr Oliver believes that it will be possible to create the deep UV colour that was sufficiently powerful to act as a sterilising agent and yet could be run on solar power or even on a wind-up mechanism.

A further experiment being tested by researchers relates to computer security using quantum cryptography which involves sending a stream of individual photons from one computer to another. Information is encoded onto the photons. Once the information is read, the data on the photon changes.

If, for instance, a hacker were to intercept one of the encrypted photons, the data would change and corrupt the message. Immediately both the sender and the recipient of the message could be alerted that someone else is trying to read the information. In turn the sender could re-encode the message and send it again ensuring complete security.

Quantum cryptography is some way from being used as a standard technology but it has show considerable promise as an ultra-secure banking and online protection technology of the future.



# Power cuts – theft and digging to blame

The Ekurhuleni Metropolitan Municipality claims that more than a third of the major power cuts in the region, which includes Bedfordview and Kempton Park, are due to some form of illegal activity including unauthorised digging and cable theft.

According to municipal spokesman Zweli Dlamini, the council is considering pressing charges of sabotage against contractors who damage municipal infrastructure.

He claimed that a number of innocent people had recently been killed or maimed because contractors had left high voltage cables exposed. Dlamini said that these unauthorised activities were costing households and businesses millions of Rands each year.

## Wind farms off Britain's shores

British homes could be supplied with wind-power by 2020. This is according to reports from Energy Secretary John Hutton, who claims that the country has some of the best wind conditions for generating electricity. He admits that high construction costs and sluggish planning have inhibited growth of wind-power.

Britain plans to build offshore wind farms capable of generating 8 GW of electrical power and this is expected to climb to about 25 GW by 2020. Environmental assessment studies are underway.

The announcement comes at a time when the Medway Council in Kent has approved plans to build a new coal-fired power station at Kingsnorth near Rochester. This is the first coal-fired power station to be built in the United Kingdom in 24 years.

The final decision on the power station will be made by the government.

In a separate development, a group of academics has said that the public consultation on nuclear power plants undertaken by the British government is 'flawed and misleading'.

The government has repeatedly said that new nuclear power plants will have to be built to bridge the looming energy gap in the country. Britain's ageing nuclear power stations supply about 20 percent of the country's electricity but these power plants are due to close by 2035 and a decision by government on whether to build two new nuclear plants is expected during the first quarter of this year.



# Bujagali power station gets go-ahead

The World Bank has confirmed that it will loan Uganda \$360-million so that it can build the Bujagali hydroelectric power station on the Nile river. The project will inject an additional 250 MW of electricity into the power grid in a country where a shortage of electricity has retarded social and economic development.

The new plant – which is expected to be fully operational by 2011 – will re-use water flowing from two of the existing upstream facilities to generate additional power. It is the lowest cost expansion available to the country, which has two other hydroelectric power stations.

According to the World Bank, the Bujagali project is just one element of the overall plan to improve Uganda's energy supply. A further \$300-million has been set aside for the Power Sector Development Operation which will providing funding investment and policy measures that are aimed at reducing the supply-demand gap until the new power station is commissioned.

There are three other projects underway in Uganda:

- The Power IV investment project worth \$62-million that sets out to improve power supply and boost the government's capacity to institute reforms in the energy sector.
- The Energy for Rural Transformation project which is worth \$50-million and seeks to provide renewable energy measures in rural areas around Uganda.
- A \$40-million loan that will be used to create and run an electricity distribution company.

The World Bank apparently undertook extensive economic, environmental and social assessments before committing itself to the funding agreements. A new commercial organisation, Bujagali Energy Limited, will control the project. It is a joint venture between Industrial Promotion Services of Kenya (IPS(K)) and the United States-based Sithe Global Power.

IPS(K) is the industrial development arm of the Aga Khan Fund for Economic Development while Sithe is an international development company that develops, builds and operates strategic power assets in markets around the world.



# Soybeans help transformers perform

Vegetable oil is being used as an insulating fluid in two power projects in different parts of the world. In Britain, two 132 kV 90 MVA transformers run on vegetable oil and in Brazil a 242 kV shunt reactor, used to control capacitive voltages in long lines, uses Envirotemp FR3 vegetable-based oil.

According to Areva T&D it's the first time that vegetable-oil transformers have been used in Britain while, at the Brazilian site, the 242 kV shunt reactor is probably the first 242 kV shunt reactor in the world to use vegetable oil. In Brazil, vegetable oils have been used since 2002 for transformer oils.

Areva T&D has done considerable research into using vegetable oils in transformers and says that this is particularly important in densely populated areas such in the metropolitan areas of Britain.

In the case of the British site, two transformers were installed, one with conventional oil and the other with vegetable-based oils and then monitored for a sustained period. Envirotemp FR3, an ester oil made from soybeans, was used for the tests as it is biodegradable and offers great fire safety and insulation life.

According to Areva T&D's Milan Saravolac, who heads the transformer research and development division, the natural ester oils are able to absorb moisture and can extend insulation life by a factor of five. This means that there are lower life-cycle costs, the oil can be recycled and reused and it has lower gassing tendencies under electric stress.

"The vegetable oil's viscosity and ability to polymerise when thin layers are exposed to warmth and air flow means that it does not spread along the surface or leak into the sub-surface soils. Moreover, the soybean-based vegetable oil is fully miscible with used mineral oils so it can be used to refill existing transformers without having to first remove all the mineral oil," Saravolac says.



# Zimbabwe – the woes continue

**M**ozambican authorities have pulled the plug on Zimbabwe electricity supply and are refusing to supply electricity to the country until an initial payment of US\$10-million has been made. Zimbabwe currently owes Mozambique's *Hidroelectrica de Cahora Bassa* (HCB) about \$22-million.

The Zimbabwe power utility, ZESA had been warned at the end of last year that unless outstanding debts were paid the electricity supply would be interrupted. ZESA ignored the warning and in December HCB reduced supplies from 150 MW to just 75 MW. The supplies were cut on 28 December but on New Year's Eve, HCB restored power until the following day when it was cut again.

Zimbabwe did manage to pay \$7-million of the outstanding debt but HCB still refused to reconnect the supplies until the full 'minimum payment' of \$10-million was received. HCB's attitude is much the same as Eskom's when householder's short-pay the bills.

Meanwhile Eskom has confirmed that despite load shedding it has been supplying electricity to Zimbabwe, but only when there is sufficient capacity. Eskom says that when load shedding starts, supplies to Zimbabwe are interrupted or reduced.

Eskom confirmed that this is the case with other neighbouring countries including Swaziland, Botswana, Mozambique and Namibia. In a recent radio interview Eskom confirmed that it was "being paid for the electricity supplies to Zimbabwe".

In a separate development, ZESA has confirmed that it has already spent US\$20-million out of an estimated \$40-million on refurbishing the power generation units at Hwange.

ZESA entered into a strategic alliance with Namibia's state-run NamPower to refurbish the power generation units at Hwange. NamPower agreed to fund the foreign currency component of the power station and then import 150 MW of power for the next five years from Hwange once the refurbishment was complete.

Hwange will have a generation capacity of 500 MW once the upgrade and refurbishment work is done. In the past, Zimbabwe was able to supply about 60 percent of its total national power requirements from Kariba South Power Station and from Hwange, with the balance of 40 percent being supplied through imports from SNEL in the Democratic Republic of Congo, Eskom, HCB and Zambia's ZESCO.

# Ghana to build nuclear power plant

**G**hana is to build a nuclear power station that will be operating by 2018, according to the country's Nuclear Power Committee. Head of the organisation, Prof Daniel Adzei-Bekoe believes it may be possible for the new plant to be operating before then.

The Commission was established by President John Agyekum Kufuor in an attempt to find ways of vamping-up Ghana's electricity resources after serious electricity shortages disrupted the economy and the social infrastructure in that country last year.

If Ghana goes ahead with its nuclear power plan it will be only the second country in Africa – after South Africa – to have a nuclear power station. According to Prof Adzei-Bekoe, the rising prices of

petroleum mean that Ghana is unlikely to waste its oil reserves on creating oil-fired power stations, but will use coal or nuclear energy as an alternative.

He said that while nuclear power was a viable source of electricity generation, the country would not stop exploring the possibility of using hydroelectric or thermal power generation to increase electricity supplies.

The country's goal, according to Adzei-Bekoe, is to have adequate energy resources for industrial and domestic use by 2015.

# Eskom's funding plans questioned

**E**skom's ambitious plans to spend up to R720-billion on providing new or improved electricity infrastructure over the next 25 years and more may be in danger after rating agency Standard & Poor said that it was downgrading its rating of the electricity utility to 'credit watch with negative implications'.

The organisation says that Eskom's full capital expenditure plans have not been defined and it doubts that Eskom will be able to undertake the capital expenditure programme using only debt funding.

Eskom recently applied for a substantial tariff increase to fund expansion but this was turned down by the National Electricity Regulator which cut the proposed hike of 18,7 percent to just 14,2 percent, which is still considerably higher than South Africa's official inflation rate.

Eskom initially planned to spend R150-billion over the next five years to improve power generating capacity and said that about R100-billion of this amount would be financed by debt. However, since the initial announcement Eskom has said that its five-year capital expenditure plans will now cost about R300-billion.

While admitting that the capital expenditure had increased, Eskom has not said how it plans to fund the five-year programme. It seems likely that the government will have to step in to provide some of the funding to the electricity utility, which is owned by the Department of Public Enterprises.

According to the Department, funding options being considered include external borrowing, consistently high price increases over the next five years, injections of capital for the shareholder, the provision of government guarantees and partnerships with independent power producers.

Meanwhile South African President Thabo Mbeki has publicly apologised to all citizens saying that while Eskom had warned the Cabinet that it needed to build new power stations, government had stopped the expenditure programme believing at the time that it was unnecessary.

Mbeki conceded that the government was wrong and that it should have heeded Eskom's warning and invested in new generating capacity several years ago.

Power cuts are commonplace throughout South Africa these days. Eskom dislikes the term power cuts and uses instead its euphemism of 'load shedding' to explain that it cannot meet demand for power and so shuts down the supply to selected regions throughout the country usually for a period of about two hours.

In a separate development, Eskom has confirmed that it is considering building several new nuclear power plants to boost supply to the national grid by about 20 000 MW. French company, Areva, which built Koeberg, and American company Westinghouse have been asked to submit bids for a new nuclear power station that will have twice the capacity of Koeberg.

Eskom is hoping to start construction by 2010 and have the new plant working by 2016. Five coastal sites are undergoing environmental impact assessments and the most suitable site will be used for the new nuclear plant. The sites being investigated are:

- Brazil near Kleinsee and Schulpfontein near Hondeklipbaai on the Northern Cape's west coast.
- Duynefontein and Bantamsklip near Pearly Beach, east of Gansbaai on the Western Cape's coast;
- Thyspunt near Oyster Bay, west of Cape St Francis on the Eastern Cape's coast.

The new nuclear capacity includes plans to build the first pebble bed modular reactor. Once the technology is proven and working another 24 of these smaller generating units will be installed around the country to provide an additional 3 960 MW of power.

## 30 MINUTES WITH...

### Athol Hankey

SAIEE Power Section Chairman 2007

MBL (Unisa), NHD Elec Eng, GCC Factories, SMSAIEE



During your years of study, culminating in a Masters in Business Leadership, did you have any mentors, and if so, who were they?

Yes most definitely. I am a firm believer that people come into your life and leave a mark no matter how small, but my mother and father have had the greatest impact in my life, in that, no matter how hard things got, they stuck it out together and always got through.

During my initial years at the power station, Robbie McEwan, who was the electrical engineer at the time, had the greatest impact on the way I dealt with technical issues and situations as well as the handling of people. He was a true professional in every sense of the word, in both family and work.

My current mentor is my Managing Director, Craig Brown, who has a wealth of knowledge with respect to business practice which he takes the time to share with me. Because of him I was given the opportunity to study for my MBL degree.

You have excellent experience and skills to mentor others; do you see yourself in this role? As it is, you are a member of a number of organisations, including being the chairman of the Executive Committee of the Electrical Engineering Allied Industries Association. How would you find the time to mentor and is this a problem experienced by many engineers at present?

Thank you. Yes, I see myself in this role daily, but in reverse as well, I see myself also *being* mentored, since mentoring is not a contract and both parties must be open to dialogue in order to achieve understanding.

My approach is that there are no designated times to be a mentor; in saying this, there needs to be a balance in the amount of time spent in this process as well as getting your own workload done.

I believe that most engineers are faced with time issues these days due to technology such as email and cell phones which make one available 24/7 – and mentoring is a face-to-face process.

How do you think the role of an engineer has changed over the past couple of decades? Do you miss some of the work you used to be involved in, now that you are business development manager at ALSTOM Low Voltage Equipment?

I do not believe that the role of the engineer has changed dramatically over the past few decades. What has changed, however, is the access to technical information via the internet, etc, which assists the engineer in his role.

I do not really miss the work I used to do, but am very grateful for the experienced received when I was employed at the power station. I believe this experience assists me in my new function as business development

manager, in that, previously I was the client and called the shots. I am now the supplier and this has helped me in understanding clients' needs so that you give the customer what he wants and not what you think he needs.

What were the highlights of your time spent at the Kelvin Power Station as chief engineer: production?

Having lived at the power station for 25 years I came to know and love the people who worked there. So when I came into this post I wanted to reinstate the value proposition that people must be proud and happy where they work. This was no easy task. At that stage there was a moratorium on permanent positions which, after much debate and justification, was finally lifted. This gave people the hope that it was not *a status quo*; that there was a new lease of life to the power station. This also assisted in reducing absenteeism and thereby reducing the exorbitant overtime bill due the fact that electricity is an essential service.

How did the Government Certificate of Competency (Electrical: Factories) help you in your career? How valuable do you think it is today?

Firstly, in the power station environment you could not be appointed to a senior position without it, but in respect of my move to ALSTOM, it assists in my daily dealings with clients and with personnel.

I do believe that the GCC still holds firm today, as safety is paramount and all young engineers should be exposed to this training as the Act places responsibility on engineers.

What should young people (Grades 11 and 12, even tertiary education students) involve themselves with (other than their academic subjects) in order to prepare themselves to become good engineers?

In my opinion, this requires a twofold response. Firstly, with access to information on the internet, students are able to obtain a broader spectrum on engineering matters and need to maintain this thirst for knowledge. Secondly, they need to become involved in engineering institutes in their field from an early stage, in order to gain access to mentors, site visits and to be able to pose questions with respect to projects, assignments, etc.

How do you see the skills shortage in South Africa being improved in the near future?

I do not see it being improved in the near future without serious input from Government and the private sector. Sasol, Eskom and Spoornet, for example, used to produce great engineers and artisans. However, most of these businesses do not enter into training contract volumes as in the past. In my opinion, Government needs to provide incentives to these larger businesses in order to recreate the training facilities of the past.

Would you encourage your children to become engineers?

This reminds me of a song which went: "Dad, don't let your sons grow up to be cowboys". So, I would maybe not encourage them, but if they do choose this path, I will be there to give advice and support.



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| Nov/Dec 2006 |  | Jan 2007 |  |
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| Apr 2007     |  | May 2007 |  |
| Jun/Jul 2007 |  | Aug 2007 |  |
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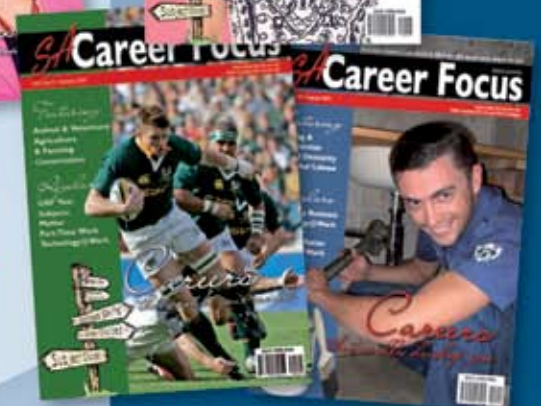
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# From the President's Pen

Ian McKechnie,  
President SAIEE



I trust that you have settled into the 2008 working year and I hope that your aspirations for the year will be achieved. I would like to highlight this month the topic of mentorship.

With the ongoing skills shortage in the engineering sector and the demands of industry, many younger members of the engineering team are finding themselves placed relatively early in their careers in positions of significant

technical and/or managerial responsibility. It is important that these folk are not 'set up to fail' through their relative inexperience, and mentorship is a key support mechanism to assist people such as these, and indeed all younger members of the engineering team, in the successful development of their careers.

Unfortunately the demands of work commitments mean that in some organisations senior engineering staff are stretched and unable to offer younger members of the team this mentoring facility. In other organisations there may simply not be that reservoir of senior advisors and experience available. The SAIEE recognised this need in the industry and amongst our membership, and established a mentoring programme for younger SAIEE members as part of the tangible value that the SAIEE can add to (particularly) our younger members. Some 190 SAIEE members at present have volunteered their time, expertise and experience to mentor younger members, and the programme attempts to match as closely as practical the mentor's fields of activity and experience, and geographic location, with that of the mentee. I would like to encourage any of our younger members who could benefit from this programme to get in touch with our Business Director, Stan Bridgens, at the SAIEE Head Office on (011) 487 3003, who will be able to get the process moving for you. Similarly, if you are an experienced member who would like to volunteer your services as a prospective mentor, please contact Stan to take that further.

Whilst on a topic related to skills issues, the 2007 matric results again underlined the major challenges faced in respect of the availability of prospective students to enter into engineering programmes. The number of Higher Grade passes in Mathematics reportedly increased marginally by 0,8%, whilst the number of Higher Grade passes in Science decreased by 5,6%. This is against reported increases in the Standard Grade level passes for these subjects of 12,1% and 7,8% respectively. The Minister of Education noted "with some alarm, the inadequate progress in our higher grade passes in mathematics and science". She added that, "however, there are encouraging signs of progress. Our Dinaledi schools initiative (the introduction of centres of excellence in maths and science) must be given focused attention and support as must our priority of ensuring that every child studying mathematics and science has a qualified and competent teacher for these subjects."

I think that this latter priority is a particular challenge, given the new curriculum. The SAIEE remains committed to continuing and growing our activities aimed at addressing these issues. These include growing and extending the distribution of our 'WattNow' publication

amongst our youth to foster an interest in science and technology, and building on the success of our pilot outreach activities. These activities include 'careers day' presentations, sponsorship of tutorial programmes for learners, and presentation of science week programmes to expose learners, particularly those in disadvantaged areas, to the scientific field. I again want to encourage our various centres, and their members, to take the initiative in this respect in their areas.

I mentioned in a previous column our upcoming Power Generation conference being held at the Eskom College facility in Midrand on 19 February 2008. This event has been organised in collaboration with Eskom, and eminent experts in various power generation technologies will be making presentations. The programme is scheduled to end with a panel discussion. The topic of power generation and alternative generation technologies is of particular interest at present and it is therefore timeous for the SAIEE to facilitate this opportunity for information-sharing and discussion. Costs have been kept down through generous sponsorship and event support, in particular from Siemens and Eskom, and I would encourage your attendance at what promises to be a worthwhile event. Full details are available on our website at [www.saiee.org.za](http://www.saiee.org.za).

The SAIEE fully supports the 2008 Electricity Distribution Maintenance Summit which was to be held in early March, organised by EE Publishers with strong support from the SAIEE and other industry stakeholders and role players. This event has unfortunately had to be postponed by the organisers due to various factors. The issues to be addressed by the summit remain critical in terms of the ongoing and reliable delivery of power in our country. We hope that the event will take place as soon as possible later this year, and that all relevant role players (public and private sector) will participate.

The Engineering Council of South Africa (ECSA) elected a new President in late November 2007 and I was able to attend his inauguration function. On behalf of the SAIEE I would like to congratulate Mr Trueman Goba on his election as ECSA President and wish him well in his new position. The SAIEE has close interaction with ECSA, and our members are involved in many activities with ECSA, including, for example, the evaluation of professional registration applications and participation in tertiary education institution (universities and universities of technology) ECSA accreditation evaluations which are conducted on a regular and ongoing basis. SAIEE members also benefit from a significant discount in their ECSA registration fees, in recognition of the important role that voluntary associations such as the SAIEE, and their members, play in the activities of ECSA and the industry.

The SAIEE continues to interact with other voluntary associations in respect of issues of mutual interest and concern around continuing professional development (CPD). Our initiative in convening this forum has been well received by the other associations and has resulted in constructive interaction. We look forward to further initiating an extension of this forum to address other issues of mutual interest.

We will be continuing our focus on centre extension this year, in particular in respect of getting our proposed new centres properly established in Mpumalanga (Secunda/Witbank-centred), Free State (Bloemfontein) and Eastern Cape (Port Elizabeth). Our new Southern Cape centre continues to grow and our long established centres in Cape Town and Durban continue to service local members and grow their activities.

# SAIEE Charity Golf Day 2008

The annual SAIEE Charity Golf Day for 2008 will be held once again at the Pretoria Country Club on Friday 28 March 2008. All profits from the day will be donated to a charity nominated by the SAIEE President. The format of the day is a 4-ball Alliance, and there are also various sponsorship opportunities available. This is a great networking opportunity as well as an opportunity for a social responsibility contribution, and the day includes a prize-giving function and excellent dinner.

The 2007 Charity Golf Day, also held at Pretoria Country Club, was a great success and participants provided very positive feedback about the day. The charity beneficiary nominated by the SAIEE President, Ian McKechnie, was the Irene Homes, and the golf day profit of R11 300 was donated to them. (For more about Irene Homes see their website at [www.irenehomes.co.za](http://www.irenehomes.co.za).)



Tucked away in the wooded village of Irene, is the peaceful safe-haven of Irene Homes. Irene Homes was established in Pretoria by the Anglican Church in 1903, moving to Irene in 1920, when the present grounds and property were generously donated to the Home.

Irene Homes is a unique, tranquil residential care facility providing life-long care facility to mentally disabled ladies. Residents (74 ladies in total) are housed in seven residential 'home from home' houses, being cared for by qualified nursing staff and house-mothers. Of the residents, 20 of them are orphans to Irene Homes; they have been abandoned not only financially, but in support and care by their families.

A total of 60 resident staff and day-workers provide stimulation in centres such as Contracts, Creativity, Knitting & Weaving Protective Work Centres, whereby each lady is evaluated and given tasks suited to her individual mental and physical capabilities. Therapy of this nature creates self-worth, self-advocacy and dignity in our society.

Without the facility that Irene Homes offers, these residents would find life awkward, unpleasant and most probably unmanageable because of their intellectual disability that makes life threatening for them in today's demanding society. Mental disability has no aids: they cannot be helped with white canes, hearing aids, glasses or Braille. Their only aid is specialised care within a protective environment.

SAIEE President, Ian McKechnie (left), hands over a cheque for R11 300 to Irene Homes Acting Administrator, Ann o'Mahony (right), in the company of some of the residents.

## Engineering Council of South Africa (ECSA) matters

SAIEE Vice-President and ECSA Council member, du Toit Grobler, recently attended the ECSA Council midterm Lekgotla at the end of November 2007. It included Council meetings where a number of important decisions were taken. He reported back as follows on some of the important decisions and actions.

Mr Trueman Goba (Pr Eng) was elected as the new ECSA President for the remainder of the current term of office 2007-2009. Mr Goba has been a member of the ECSA Council since 2001. He is a registered professional engineer (civil engineering) and chairperson of a multi-disciplinary engineering consulting firm Goba (Pty) Ltd. Mr Goba was inducted as president at a ceremony which was attended by presidents of voluntary associations on the evening of 29 November 2007. His CV is available on the ECSA website at [www.ecsa.co.za](http://www.ecsa.co.za).

Some important policy amendments were made in respect of Renewal of Registration and CPD. These included:

- For 2006 and 2007 all registered professionals will be credited with one (1) complimentary Developmental Credit per annum. This has been done to overcome the difficulties experienced with

the non-availability of validated activities during the early stages of implementation of the CPD requirement and to encourage registered professionals to submit their CPD returns on a regular basis, even if they did not attend any validated developmental activities during 2006 and 2007.

- The requirement to obtain a minimum of one Credit for developmental activities every year has been done away with. The minimum requirement of five (5) Credits in this category per five-year cycle with a maximum of four (4) Credits in any one year, remains.
- Renewal of cancelled registrations will in future be subject to acceptable CPD Credits.

The Council also undertook to embark on an information campaign to inform registered professionals of the requirements of the Policy on the Renewal of Registration and CPD.

He reported that Council Members were strongly supportive of the stance taken by the SAIEE with ECSA earlier in the year against the erosion in real terms of the discount in ECSA fees to voluntary association members.





Shongweni, 2006

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# SAIEE participates in ECSA/Eskom roadshows

The SAIEE participated in two road shows organised by ECSA and Eskom in August and October 2007. These were held in Witbank and Cape Town respectively. The aim of the road shows was to inform Eskom personnel about relevant issues and information pertaining to professional registration and continuing professional development (CPD), and the role of the voluntary associations such as the SAIEE.

The SAIEE was invited to participate in terms of discussing the role of the voluntary associations, using the SAIEE as an example.

This provided a great opportunity to discuss the objectives and activities of the Institute with both members and non-members in the audience. The events were well attended with close to 400 people registering for the two events.

SAIEE President, Ian McKechnie, gave a presentation on the Institute at each event and answered questions from the attendees. Larry Khuvutlu, the SAIEE Western Cape Centre Chairman, also gave a presentation at the Cape Town event on the activities of the centre and encouraged attendees to get involved in their activities.



Part of the audience at the Cape Town presentation on 31 October 2007.



SAIEE President, Ian McKechnie, talking to attendees at the Cape Town presentation



Larry Khuvutlu, Chairman: SAIEE Western Cape Centre, giving his presentation in Cape Town

## IMPORTANT DATES TO DIARISE

15 February 2008 – Western Cape Centre Annual Dinner Dance (Kelvin Grove, Cape Town)

19 February 2008 – Power Generation Conference (Eskom College, Midrand)

18 March 2008 – SAIEE Annual General Meeting (SA Military History Museum, Johannesburg)

28 March 2008 – SAIEE Annual Charity Golf Day (Pretoria Country Club)

22 May 2008 – President’s Invitation Lecture (University of Johannesburg)

7 November 2008 – SAIEE Annual Banquet (Emperors Palace)

Refer to the SAIEE website at [www.saiee.org.za](http://www.saiee.org.za) for details of these events.

## Discussion Forum on SAIEE website

The discussion Forum on the Institute’s website, [www.saiee.org.za](http://www.saiee.org.za), is up and running.

You are heartily encouraged to make use of this virtual meeting place at which various forums are available where you may discuss technical, industry and SAIEE issues with like-minded people.

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