CAPE
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Seaweed stops the burp

82% less emissions.
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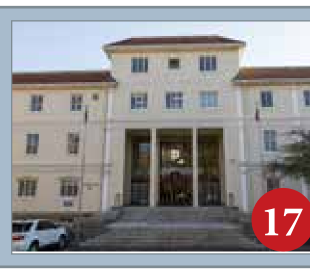
First energy performance certificate goes to...

Stellenbosch!
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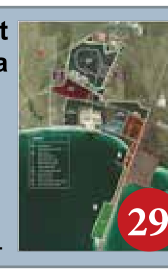
IDZ nets R21bn.
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All we want, all everyone wants, is regular, affordable electricity

Expounds Jacques Moolman, President of the Cape Chamber of Commerce & Industry.

SA's lifelines?

WHEN it comes to electricity, all members of the Cape Chamber of Commerce and Industry, all the private sector wants, all the citizens of South Africa want is a safe, affordable, and regular supply of electricity,

At present that is not the case. There have been repeated delays by the Department of Minerals. Most frustrating of all is that for ten years the Cape Chamber has lobbied hard for actions that could have been taken then but were not. Whatever the reasons for this delay, none of them are a credit to the public service as a whole.

The Chamber made several presentations to the national energy regulator (Nersa) on the Eskom situation, its impact on business and the economy. We consistently made three points. They are:

- Electricity demand has been regularly overestimated.
- The need for Eskom to reduce costs rather than increase tariffs
- Developments in new technology offer alternatives to grid power

Subsequent events have confirmed that our views have largely been correct. Electricity demand is declining, mainly in reaction to tariff increases and the availability of more efficient appliances, LED lighting, and alternatives such as LPG gas for cooking and heating and solar water heaters.

Figures from Eskom annual reports show that between 2007 and 2016, the number of employees increased from 32 674 to 47 978, employee costs increased from R9, 45 billion to R29, 2 billion, the costs of coal increased from about R10 billion to nearly R48 billion yet Eskom sold less electricity (214 487 GWh in 2016 compared to 218 120 GWh in 2007) and to sustain itself it increased its average selling price from 18 cents to 76 per kWh.

The figures paint such a clear picture of the problems within Eskom that it is beyond comprehension that international consultants were called in. Equally astonishing is the surprise when a World Bank Study found that Eskom was overstaffed by more than 60% and were over paid.

How it is possible that Eskom managers did not understand what was happening and put correctives measures in place? How could Nersa approve a steep series of tariff increases in these circumstances? Surely an interrogation of an organisation's rising costs is a fundamental part of decisions on whether or not tariff increases are justified.

The third problem we focused on are the changes in technology which provide alternatives to big thermal power stations and a big grid and pose a threat to Eskom's monopoly.

This has happened gradually but graphs clearly show the downward trend in the costs of wind power, PV solar and batteries. The trend is clear that it has led to major private sector investments in rooftop solar in, for example, the cooling sheds of the fruit industry, shopping centres and office blocks.

The main reason for these investments is that they give companies a measure of control over their future energy costs. As Eskom tariffs increase the pay-back time on these investments has shortened. We now have the situation when the main motive is to provide a cheaper supply of electricity than Eskom can.

It is a process that is ongoing.

A tariff increase of 52% over three years drastically changes the calculation on whether or not to invest in rooftop solar and to go off-grid. Such decisions are not going to go in Eskom's favour.

What can Eskom (and Nersa) do about this changing situation? There is only one answer. It has to come to terms with these massive developments in technology and change its 1950's way of thinking.

Power generation is going to be decentralized and Grid wheeling is coming. We could even have a move back to direct current. The challenge for Eskom is to equip itself to deal with a very different future. And it has to accept the fact that it no longer is a monopoly.

Eskom's first move should be to concentrate entirely on improving the maintenance for existing power stations. To continue building new units simply means that Eskom will continue its attempt to dig itself out of a hole by digging even deeper.

Secondly, it will have to strip down the organization, disposing of assets that are no longer essential to its requirements. Does it still need Megawatt Park? Does it have land holdings it no longer needs?

Why not sell a couple of its power stations to private operators and concentrate

Continued on P2

Kirsten beats the odds

Kirsten Prins aced her exams with 8 distinctions and a 93.5% average.

KIRSTEN Prins, the Milnerton High School alumnus who attended the Engen Maths and Science School (EMSS) in Cape Town for supplementary tuition, achieved an incredible 93.5% average for matric, with 97% for both Maths and Science and 87% for English, positioning her as the top national EMSS student for 2020.

The Parow local plans to study medicine at the University of Stellenbosch this year and follow her dream of helping those who come from disadvantaged communities.

"My parents are from a small, marginalised community which contributed to them not achieving to their fullest ability as a result of financial pressure," explains Kirsten.

Kirsten says losing her aunt to breast cancer last year and self-study with limited teacher access was also tough.

"Uncertainty of whether I would be able to complete the academic year and virtually no social contact with friends as well as constant concern about the health of my family over the lockdown period added extreme pressure and stress.

"But I pulled through thanks to the support of my parents. I have inherited my good work ethic and determination from them and their strong faith in me and my abilities, even when I doubted myself, definitely inspired me to work even harder," she adds.

Kirsten's advice for the matric students of 2021 is to do past papers and manage your time effectively.

Continued on P2

IN THIS ISSUE

Distell lightens up with seltzers

STELLENBOSCH-based liquor group Distell has joined the international craze in hard seltzers.

The group – best known for its brands like Amarula, Hunter's, Savanna, 4th Street, Klipdrift, Nederburg, Richelieu, Viceroy and J.C. Le Roux – has launched Vawter Hard Seltzer to capitalise on its strong position in South Africa's Ready-to-Drink RTD) market.

Vawter Hard Seltzer is a range of spirit coolers - sparkling water with a dash of vodka and infused natural fruit flavours. The brand – which is only 3,5% alcohol - is pitched at the fast growing light alcoholic beverage market – where beer brands like Castle Light and Windhoek Light sell strongly.

In recent years Hard Seltzers have become enormously popular in North America, and the category is currently the fastest growing ready-to-drink segment internationally as an easy-drinking alternative to 'lite' beers.

Hard Seltzers are leading in major markets like the United States, Australia and the United Kingdom. Hard seltzers already account for 6% to -7% of the US beer market.

In South Africa beer accounts for 76% of total alcohol volumes consumed. If Distell can emulate its success in marketing ciders like Savanna and Hunter's Dry then the Vawter hard seltzers could prove a viable addition to the brand portfolio.

The Vawter Hard Seltzers also have an added advantage of being low in sugar with only 29 kCals per 100ml.

Natasha Maharaj, Distell Southern Africa Marketing Director said there had been a trend of moderation; conscious consumption and mindful-living amongst South African drinkers. "The Vawter Hard Seltzer range was crafted to meet this consumer need…" Distell has already notched up considerable success with its zero alcohol Savanna ranges.

She said the brand would launch with a full through-the-line campaign, with the objective of driving mass awareness of the benefits to consumers looking for an alternative to the current 'lite' offerings on the market."

Of course, one cannot expect other big liquor companies like ABInbev and Diageo to give Distell too much 'first mover' advantage.

ABInBev is already testing new variations of Flying Fish flavoured beer and launched Bud Light Seltzer in the US last year.

Could be a fizzy little contest in the next few months…

Squeezing the Orange

THE Cape Town hotel industry has taken enormous strain during the prolonged Covid-19 pandemic, and the recovery is likely to be challenging for a number of operators.

But some property owners are managing to find some inventive solutions to manage the risks still prevalent in the convalescing hospitality sector.

Take local property group Spear, which is looking to squeeze better returns at lower risk from its 15-on-Orange hotel – a plush property located close to the parliamentary and law precincts in central Cape Town.

Last month Spear – which is mainly centred on retail, commercial and industrial real estate - exercised its right to terminate 15-on-Orange's lease agreement with Luxury Hotels International South Africa – a subsidiary of hotel giant Marriott.

Spear said the global pandemic had weighed heavily on the hospitality sector, and that South Africa as a travel destination remained precluded by numerous feeder markets. This meant the near-term prospects for an improved recovery remained challenging, which informed Spear's decision to terminate the lease with Marriott.

The hotel will be handed back to Spear by no later than June 2021.

Spear has subsequently clinched an agreement with The Capital Apartments and Hotels Proprietary Limited (CAH) for a fixed income lease. While clearly borne out of necessity, the new lease is at least in line with Spear's stated strategy of transitioning to fixed income assets only.

The lease period will be for seven years from August this year with an option to renew for another seven years.

The basic monthly net rental (excluding municipal and utility charges, which are recoverable from the new tenant) to Spear will be around R1.92 million for the first two years. After that, the monthly rental payable for the remaining years of the lease will escalate at a fixed rate of 5% a year (compounded annually).

Now here is the interesting bit. CAH will invest no less than R15m of its own capital into various upgrades - establishing 'aparthotel' rooms and related accommodation. CAH will also be responsible for the up-keep and on-going refurbishment costs for the hotel.

The bottom line is that landlord Spear will have zero involvement in the running or managing of the hotel for the envisaged lease period.

Spear, which must be greatly relieved at this arrangement, will secure net rental income of around R20 million a year. In this regard, one must remember, only R1.8 million was received from Marriott for financial 2021 as a result of the residual impact of the Covid-19 pandemic.

Progress at 15-on-Orange – which was developed at exorbitant cost by Quantum Property Group in 2010 – will be keenly watched by property pundits.

CAH's portfolio is one of the fastest growing owner operated hotel and luxury apartment providers - its current hospitality portfolio consists of over 1 400 rooms, apartments and conference centres across 10 hotels in South Africa.

Arguably the most interesting part of the new lease agreement is the option agreement offered to CAH, to acquire 15-on-Orange for R265 million. This option must be exercised within the first two years of the lease agreement.

For CAH, that is a very nifty option which banks on a fast recovery in Cape Town's tourism and leisure sectors.

All we want, all everyone wants, is regular, affordable electricity

Continued from P1

on running and maintaining the national grid? There is already a White Paper and legislation to make this possible.

Finally, there is no way of avoiding staff reductions. It will not be easy but the number of employees should be determined by its output of electricity and sales. International examples provide the necessary target ratios. Naturally, this will raise concerns about increasing the number of unemployed people at a time when we already have a massive unemployment rate.

It is necessary to ask how much unemployment has been created by the steep rise in Eskom tariffs over the years. Trade unions have given evidence to Nersa on the job losses caused by the closing of industrial firms as a direct result of tariff increases.

Five years ago Numsa's general secretary, Irvin Jim, argued that the 16% tariff increase Eskom wanted at the time would wipe out 37% of the small and medium-sized firms in the metal and engineering sector. He said seven foundries had already closed and "and this electricity increase will destroy the small manufacturing capacity we have."

Secondly, mines have been placed on "care and maintenance" resulting in the loss of thousands of jobs. Besides, there have been decisions not to go ahead with mines and other job-creating projects because high tariffs made them uneconomic.

The retrenchment of, say, 16 000 Eskom employees would be a smaller problem than the job losses likely to occur if Eskom fails or tariffs are increased by 52% and more over the next three years.

In these circumstances, the Chamber believes that tariff increases will not deal with Eskom's major underlying problems but will further damage the economy and aggravate our huge unemployment problem.

We have reached the stage where it is necessary to implement and update the Integrated Resource Plan, rather than commission imported floating generation at great cost.

The role of NERSA needs to be reviewed.

Kirsten beats the odds

Continued from P1

"Make the most of your matric year, work until you make yourself proud and enjoy every moment. Remember matric finishes in a blink of an eye."

Attending EMSS Saturday classes from grade 10-12 developed Kirsten's love for maths and Physical Science.

"EMSS helped me understand the core concepts in maths and science which enabled me to achieve top results. From starting EMSS I have been the top Physical Science student in my school and for the past two years also the top Maths student."

Dependable hake

CAPE TOWN's two premier hake fishing enterprises, Sea Harvest and I&J, once again produced pleasingly stout results to end December.

I&J's mainstay hake operation kept profits at R153 million for the half year to end December. Revenue – which included the loss-making abalone segment – inched up 4.5% to R1.24 billion thanks mainly to sales benefitting from a weaker Rand on exports.

Parent company AVI said I&J's fishing performance was in line with last year with higher catch rates largely offset by lower sea days.

Hake tons per sea day increased to 9.8 tons compared with 8.9 tons in the previous interim period. The improvement was largely due to higher wet vessel catch rates.

AVI also reported that hake demand and selling prices held up in a challenging trading environment with lower demand across retail and food service customers. But export revenue growth was 6.3% for the period.

AVI disclosed that I&J market share decreased from 54,2% to 49,3% due to "targeted value realisation" in a volatile market.

The performance of I&J in the second half of this financial year is expected to be materially better than the second half in 2020 with a less pronounced impact from Covid-19 predicted.

Sea Harvest also produced strong results in the year to end December with local fishing revenue up 12% to R2.8 billion and operating profits 21% higher at R570 million.

CEO Felix Ratheb said a solid set of results was achieved despite challenges on both the market and the supply chain sides of the business.

He said revenue benefitted from favourable exchange rates and increased in-home consumption in both local and international retail markets. These,

he said, were offset by a lower-value product mix and a slowdown in both local and international foodservice markets as a result of various lockdown levels being implemented across the globe. Ratheb said this was compounded by populations not yet fully comfortable with dining out after the Covid-19 lockdowns.

He said the jump in operating profit was helped by stringent cost containment and a lower fuel price with gross margins fattening to 42% (2019: 39%).

Ratheb noted that on the back of firm retail markets, export revenue increased 15%, while the combined export mix has improved to 54% (2019: 53%) of total revenue. Europe remained Sea Harvest's largest export market.

Locally, Ratheb said revenue through the retail channel increased 36%, driven by increased in-home consumption. The retail channel mix increasing to 13% (2019: 10%) of total sales.

Affected by the lockdowns, revenue in the local foodservice decreased by 2%, while the wholesale segment remained resilient and increased revenue by 25%.

Premier's mystery deal

PREMIER Fishing & Brands looks set to make some waves before the FRAP (fishing rights allocation process) has been finalised.

In a note to shareholders PremFish advised it was in negotiations with an unnamed party to sell an undisclosed subsidiary.

The move is most surprising with most deal making activity in the fishing sector on hold until the delayed FRAP is finalised at the end of this year.

Speculation is that PremFish may wish to sell any or all of its pelagic, lobster and squid interests.

The squid operations – held under Eastern Cape-based Talhado – and the south coast lobster operations have been good performers for PremFish in recent years.

Such a sell off would leave the group concentrating on its large abalone farming venture near Gansbaai. Aquaculture is not subject to FRAP.

PremFish has advised shareholders it was mulling a broad based black economic transaction.

Monatic fashions a new lease on life

LOCAL empowerment company Brimstone Investment Corporation's more than 20-year relationship with clothing manufacturer House of Monatic (HoM) has ended.

Sometimes that relationship hung by a thread – with HoM struggling against cheaper imports and watching as informal wear at work gradually replaced the donning of suits. HoM – which is over 100 years old - was best known for its stylish Carducci suits.

Still, HoM was one of the last clothing manufacturing enterprises still left in the Western Cape. The business was a significant employer in Cape Town, and thus there was constant fretting that after many years of successive losses that Brimstone would pull the plug in the company.

But last month it was confirmed that HoM had been sold to The Foschini Group (TFG) – one of South Africa's biggest fashion retailers - for an undisclosed sum.

HoM staff will be merged into Prestige Clothing, another enduring clothing manufacturing enterprise based in Cape Town.

According to a report in the Weekend Argus, Graham Choice – the head of TFG Design Centre, Manufacturing and Prestige Clothing – said Prestige would be integrating the HoM employees.

Choice said: "This is part of a multifaceted attempt to retain scarce skills in the clothing and textiles industry and specifically in Cape Town, where this industry has been decimated over the past two decades."

Older readers might remember that even in the nineties Cape Town hosted a good number of JSE-listed clothing manufacturing ventures – including Seardel, Rex Trueform, Pals, Towles Edgar Jacobs (TEJ), the Strebel Group, Pointer Fashionware, Burlington Industries and Romatex.

None of these companies remained on the JSE, and most have disappeared entirely or adapted their business models away from pure manufacturing. Seardel is still in existence in form of Deneb Investments, but most of its clothing manufacturing operations has been sold to the SA Clothing and Textile Workers Union (SACTWU).

HoM was not listed, but was part of the late Doug de Jager's JSE listed industrial conglomerate Lenco Holdings. In the late nineties Brimstone acquired HoM from Lenco.

Like fishing (where Brimstone owns stakes in Oceana and Sea Harvest), HoM was seen as an integral part of the Western Cape economy and a key component in retaining local employment.

Brimstone worked tirelessly in trying to find profitable traction for HoM – including an ambitious plan to build a retail platform that unfortunately did not work out as envisaged.

Brimstone had for many years been under pressure from some shareholders to cut its losses at HoM, and to focus on its more profitable ventures in fishing and health care.

To its credit, Brimstone – which has worked hard to cull its debt in the last 12 months - held out valiantly at loss-making HoM. But the strain was starting to show… and, if trade union representatives are to be believed, HoM was on the verge of closure.

In the year to end December, House of Monatic's revenue decreased by 57% to R58.6 million (2019: R137.3 million) and the company reported a hefty loss of R104.8 million (compared to a loss of R32.6 million in the prior year).

Brimstone CEO Mustaq Brey noted that the current year's loss included the recognition of impairments of R38.8 million on property, plant and equipment and inventory as well R6.1 million in retrenchment costs incurred during the year.

He explained that the Covid-19 pandemic had profoundly changed the social behaviour of consumers and had normalised remote working.

"These changes had the effect of severely decreasing demand for formal wear, which is HoM's core product."

Brey said consequently HoM started to manufacture cloth face masks and certain items of personal protective equipment. The business was classified as an essential service provider.

"While this enabled the company to provide some work to employees during the level 5 national lockdown, orders were not nearly enough to fully utilise production

capacity and make the business sustainable."

Besides selling the core clothing manufacturing business to TFG, HoM has also decided to run-down the retail operation over the remainder of the year in an orderly manner.

Whether consumers will still see the Carducci suits donning fashion racks at TFG's Markham's outlets remains to be seen.

The Weekend Argus reported that Choice said Prestige had big plans for the future. "Through its design and manufacturing division, TFG will upgrade the plant and manufacturing processes in line with their quick response manufacturing methodology."

"We believe that combining modern machinery and processes with the excellent skills House of Monatic employees have developed over decades will produce quality formal wear and will ensure commercial return for shareholders."

Well, here's to stitching together another 100 years…albeit in a different form.

THE BEE IN MY BONNET COLUMN

SAPO – a microcosm of SS South Africa?

AS a self-confessed petrol head and general addict of gismos and gadgets, I recently made an on-line purchase – or so I thought – of some small items to make my pride and joy look a little more appealing.

The cost including postage from the UK was less than £10.

A few hours after placing my order I received a polite email telling me that my order was cancelled and I would be refunded my money, but I could order again so long as I used a courier service.

The reason, the vendor explained, was that its experience had shown that items posted to South Africa almost never reached their destination – either 'lost' or stolen. So to avoid the considerable inconvenience – and financial loss – only courier services orders would be expedited.

As the cost of a courier service on such a small item was double the cost of the item, I had second thoughts.

This incident brought back memories of other dealings I had with the postal service, both here and overseas.

As a younger petrol head, (a petrol pimple?) while visiting the UK some (pre-internet) years back, I ordered some essential parts for a car renovation project – a sizable object, a fuel tank - and the package was delivered, by post, 24h after I had placed the order to the UK address.

In 2006, while visiting a relative in the USA, my wife and I made a side trip to see the lights in Las Vegas. Four days before Christmas, we realised that we had forgotten to send our grandchildren in the UK their customary gifts, which prompted some hasty gift shopping and a visit to a Las Vegas post office. There we were able to purchase all the packaging materials, labels and a pen necessary to despatch the gifts to the UK address. Thinking that we had missed the 25th deadline, we should not have worried as the US and UK postal services delivered the gifts 48h after posting, intact.

Fast forward to 2017 – again as a serial renovator – I ordered a small item from a supplier in Germany which was immediately despatched and I was provided with a tracking link to monitor the whereabouts of my purchase.

The item was received in Johannesburg within 48h of despatch but it then took *three months* before I received the goods in Melkbosstrand. I am unable to differentiate the blame between the SAPO and Customs and Excise, but between them a bungling delay was the end result.

I had hopes that Mark Barnes would sort out the incompetence, theft and vandalism endemic in the SAPO when he was appointed CEO in 2016 with a five year tenancy, but alas, political interference in his turnaround strategy forced his resignation after 3½ years. No permanent replacement has been appointed. More recently Khathutshelo Ramukumba, the newly appointed CFO resigned 'unexpectedly', after just three months in the job.

In common with just about all significant SOE's, the SAPO is facing bankruptcy – having received more than R8bn in government (read taxpayer) bailouts over the last decade and is currently facing a loss in the 2020/21 financial year of R2,1bn. Some of the SAPO current debtors, amounting to more than R640m, have been waiting since August last year for payment…

What a way to run a country.

Eish.

2021 recycling heroes announced

Enterprising individuals and organisations across SA are rethinking the recyclability of packaging, educating and uplifting communities, and creating revenue streams among waste reclaimers and SMMEs to boost the circular economy and the environment.

FROM Paarl to Fisantekraal and Zebediela to KwaMhlanga, innovative South Africans are turning recyclable waste into revenue streams, uplifting communities and creating jobs.

Among the eco-warriors making a tangible impact on sustainability and the circular economy are 13 individuals and organisations who have been lauded for their environmental efforts by the national polyethylene terephthalate (PET) Extended Producer Responsibility body, PETCO.

Announcing this year's winners of the annual PETCO Awards, chief executive officer Cheri Scholtz said these recycling champions had seen the environmental and economic value of post-consumer PET recycling.

"We are proud to celebrate these extraordinary people and organisations across the country for their contribution. Their success shows that PET plastic waste is not trash," said Scholtz.

The category winners in this year's recycling awards include a company turning traditionally unrecycled material into pallets made from 97% recycled PET (rPET), a reclaimer so determined to start a recycling business that he sold his car, and a Johannesburg resident who forged a unique resident-reclaimer recycling initiative.

2021 PETCO AWARDS CATEGORY WINNERS:

Environmental Education and Awareness Initiative
WINNER: Giving Them Wings Foundation NPC (Nelson Mandela Bay, Eastern Cape)
Top Woman in Collection and Recycling
WINNER: Loretta Waterboer of LW Recycling and Trade (Fisantekraal, Western Cape)
Recycling Partnership Gamechanger
JOINT WINNER: African Reclaimers Organisation (ARO) and the Bordeaux South Homeowners Association
PET-repreneur
JOINT WINNER: Mandlenkosi Nkosi of Man Recycling (Boksburg, Gauteng)
PET-repreneur
JOINT WINNER: Matsobane Mawasha of Circular Green (Zebediela, Limpopo)
Best Community Recycling Initiative
JOINT WINNER: The ReTrade Project (Nelson Mandela Bay, Eastern Cape)
Best New End-Use Products
WINNER: Palletplast (Pty) Ltd (Blackheath, Western Cape)
Design for Circularity
WINNER: The Mpact Versapak company (Paarl, Western Cape)
Media Spotlight
WINNER: Pippa Hudson, Cape Talk Radio (Cape Town, Western Cape)
Best Community Recycling Initiative
JOINT WINNERS: Belville Recycling and Trolley Project (Cape Town, Western Cape)
Recycling Partnership Gamechanger
JOINT WINNER: GreenUP (Stellenbosch, Western Cape)
Local Authority Recycling Innovation
JOINT WINNER: City of Cape Town (Cape Town, Western Cape)
Local Authority Recycling Innovation
JOINT WINNER: The Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) (KwaMhlanga, Mpumalanga)

Celebrating 100 years of Engineering Excellence

THIS year marks a historic milestone for Knight Piésold, a consulting engineering firm whose roots go back 100 years in South Africa.

The company was founded in Johannesburg in 1921 and has grown from small beginnings into a global consulting firm operating in 15 countries worldwide. With a staff complement of 850 people, the firm aims to create value for clients at every stage of a project.

Regional Manager: KP Africa, Vishal Haripersad comments, "We are so proud of this landmark achievement, which showcases the ability of local talent to meet global needs and create a reliable and sustainable business."

With the company's roots firmly anchored in South Africa, and with a history dating back to include clients such as South African Railways and Harbours, the Victoria Falls and Transvaal Power Company, the Anglo-American Corporation, and the Electric Supply Commission; the firm now caters to clients across the world in the mining, power, water resources, infrastructure, and oil and gas industries.

"We would not be where we are today without a strong strategic focus on sustainable development, innovation, and technical excellence," comments Haripersad. "Thinking about the past 100 years in South Africa - it's incredible that this business has navigated through decades of change and transformation. Our team, and all the individuals who have been part of this journey since 1921, can be proud as this celebration is an achievement that belongs to everyone."

Knight Piésold began operations on 1 April 1921, when founder Dr F.E. Kanthack started a private practice as a consulting engineer. A pioneering water engineer, he explored rivers in Northern Rhodesia (now Zambia) during the 1920s to assess their hydroelectric potential for lead-zinc and copper mines. He created the company, F.E. Kanthack and Partners.

Over the last 100 years, the company has expanded geographically beyond Southern Africa, and branched out to other industries and service areas. Its mining and infrastructure expertise has been applied to hundreds of surface and underground mining projects in every major mining district in the world and has pioneered and advanced the development of alternative tailings management technologies.

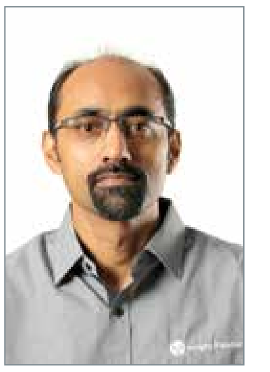
The company has also identified and developed renewable energy projects since it started working on its first hydropower project in 1925 and continues to assess the hydroelectric potential of rivers around the world, together with solar, wind, and hybrid clean energy solutions.

"In the coming years, we look forward to building on our strong track record. We are excited by the new challenges and opportunities before us – not just in South Africa but on the African continent as a whole," says Haripersad.

"Africa's growing population and rapid urbanisation requires innovative solutions, but these need not come only from abroad. We have the talent and drive locally to create uniquely African solutions which cater to our specific requirements." Knight Piésold is dedicated to creating thriving energy, infrastructure, and natural resources industries throughout the continent.

These sectors are set to create ever more economic opportunities and aid the development of the region in the coming years.

"While we are backed be a global workforce, we are immensely proud of the Africa-centric talent we hold within Knight Piésold. We have remained true to our roots and have ensured than our offices throughout Africa are staffed by local professionals who understand the intricacies of those operating environments."



Vishal Haripersad.

New DAF Trucks to hit the highways

DISTRIBUTED by Babcock in southern Africa, the latest DAF Trucks will soon be hitting South Africa's highways as DAF CF and XF series are launched into the market. Specifically engineered for local road conditions, the latest DAF trucks are said to offer transport efficiency while setting new benchmarks for driver comfort and safety.

Sporting a striking and polished new look, the new CF and XF series trucks deliver higher torque, optimised drivelines, high-efficiency rear axles, and enhanced electronics performance. A new aerodynamic design completes the package and contributes to overall market-leading fuel efficiency.

Mark Gavin, sales director for Transport Solutions at Babcock, emphasises that the new DAF Trucks are not merely upgrades or facelifts of previous models, but are completely new vehicles, showcasing improved chassis, cabs, gearboxes and engines.

"DAF's new CF and XF models are smart, efficient and profitable, setting higher standards for transport safety and productivity," says Gavin.

Significant savings for long distance operators

Besides a fresh exterior design featuring excellent aerodynamics, central to the new trucks' transport efficiency is the PACCAR MX-13 engine offering more torque at lower revolutions per minute (r/min) for higher fuel efficiency and lower noise levels. The low r/min also reduces CO_2 emissions, while the trucks' Eco Performance Mode ensures an optimal balance between high driveability and best fuel efficiency.

Gavin says local tests carried out on the new DAF trucks in South Africa have shown an average 10% reduction in fuel costs. "This means significant savings for long distance operators where up to 60% of overall expenses are allocated to fuel consumption," comments Gavin.

He adds that operators can also expect to see a reduction in maintenance costs of the new DAF and CF and XF trucks, as components have been optimally designed for the African climate and road conditions. These include modifications to the air intake and filtration, cooling system, suspension and transmission, as well as a new high-efficiency rear axle with low-friction wheel ends and revised gear ratios, to take advantage of higher torque output at lower engine speeds, resulting in greater fuel efficiency.

Supplied standard with both the CF and XF, the latest generation TraXon automated gearbox offers less friction losses, faster upshifts, and the extended use of EcoRoll contributing to lower fuel consumption. The gearbox also provides specific software settings for long haulage, liquid transport, heavy duty and off road applications.

"The ability to set separate transmission settings for trucks which have to change speed frequently during their daily operation contributes to exceptional vehicle efficiency as well as driver comfort," says Gavin.

Other engine innovations enhancing fuel economy and performance include fully variable oil, steering pumps; a new piston ring package and skirt profile; and a new turbo charger and combustion system.

It's all about the driver

Adding to driver comfort and safety is the new DAF cab, with the XF offering the largest interior space on the market. Both CF and XF truck cabs feature new temperature and climate controls to improve driver comfort, as well as best-in-class interior lighting. Expanded driver information enables operators to respond to hazards quicker and includes intelligent tips for economical driving. Enhanced features include:

- Adaptive Cruise Control (ACC) to automatically adjusts the truck's speed and maintain a safe following distance from the vehicle ahead
- An Advanced Emergency Braking System (AEBS) to slow the vehicle down in an emergency
- Forward Collision Warning (FCW) using sound and visuals to warn the driver and help prevent a collision
- A Lane Departure Warning System (LDWS) to deter drivers from swerving out a lane as a result of drowsiness or distraction
- Front and rear cab crumple zones for industry-leading vehicle safety and passenger protection
- Vehicle Stability Control (VSC) to minimise the risk of jack-knifing and overturning.

"An exciting aspect of the new DAF CF and XF trucks is that they are also equipped for the future fitment of predictive cruise control (PCC) which can determine the terrain the truck is negotiating and automatically adjust gears accordingly," adds Gavin.

Total transport solutions

Babcock is fully geared up to provide total transport solutions for the new XF and CX range. Gavin says that part of the unlimited mileage warranty on the XF range is a number of various maintenance packages which can be tailor-made to suit all applications. In addition, all vehicles are fitted as standard with the Babcock Driver Management System – Executrax – which not only provides operators with real-time location information, but provides valuable feedback on each driver's driving style. All of this contributes to low Total Cost of Ownership on all DAF models. Driver training is also offered as part of the handover process, with courses available through Babcock to help drivers reduce fuel consumption, anticipate hazards better and increase road safety.

The new DAF CF and XF trucks are supplied by Babcock in a range of model variants.

Vehicle warranty covers in the first year, unlimited mileage on both the CF and XF models, for the complete vehicle, followed by, for CF vehicles: 3 year or 600 000km driveline warranty (whichever occurs first) and for XF vehicles: 3 year unlimited mileage driveline warranty.

Older DAF Trucks models can be traded in on the new trucks. Babcock will continue to provide full service and spare parts support for older series versions.

For more information contact Mark Gavin Tel:071 205 5832 or email: mark.gavin@babcock.co.za

The hidden costs and motives of land invasions

Comment from Mr Jacques Moolman, President of the Cape Chamber of Commerce & Industry.

"SQUATTING" in plain speech and "land invasions" in the language of officialdom, has wider economic consequences that are seldom aired in the media.

Our natural human sympathy assumes that the driving motive is the need for shelter by people who have nothing and would otherwise be compelled to sleep in the open in all weathers -- a cry for help, for attention, by the dispossessed.

While this can be true and evokes much sympathy in consequence, unfortunately, there can be more to it.

The practice of squatting is common in cities everywhere. Their bright lights and promise of plenty exert a magnetic attraction for those seeking to escape from grinding poverty, or a chance to start afresh. The motives of those who move are as varied as human nature. It makes them easy prey for the unscrupulous who encourage them to settle in flood plains; lets them believe they have purchased rights to land that belongs to other people or encourages them to settle close to industrial areas where the prospect of a job seems more likely.

Where movement to the cities is a trickle, this can be handled. Where it turns into a flood as it has in Cape Town, the problems multiply.

Here, jobs are scarce, even labouring ones. Unemployment is high. Newcomers are resented, especially when they seek to jump the sub-economic housing queue; building shacks between railway lines; occupying vacant land scheduled for housing; squatting in places guaranteed to draw the swift attention of officialdom -- and even occupying new houses already allocated to those on an official waiting list.

Managing this situation costs cash. Lots of it. In seven months, according to Western Cape officials, R355-million was spent preventing more than a thousand illegal land invasions, mostly in greater Cape Town. It was money that could not be spent on formal housing planned for these sites.

So what is to be done?

Top of the list must be to reduce the inordinate amount of time it takes to build new housing – more than four years from plans to handover. This is a disgrace. It is an indictment of local by-laws. It questions the competency of officials and their application of time-consuming rules that are the joy of planners at a provincial and municipal level and the despair of professional architects and developers.

Twenty years ago the state rightly placed housing top of its priorities and successfully built thousands of homes. Today, thanks to corruption, what money there is for social housing goes less far than it once did. The demand however is greater than ever, especially in cities that have a good reputation for governance as the Mother City enjoys.

It's time the Treasury recognized that mass movement to the cities cannot be stopped, and ensured that the housing authorities have the resources to meet it.

The true cost of time-wasting from whatever source is infinitely more than the R355 million publicly acknowledged this week by the provincial administration.

Blaming criminals for housing delays is not the whole picture. With 600 000 people on the housing waiting list in the Province, it is far more than that. It is a disgraceful blot on all planning managers

The perfect excuse for housing delays is the recent court ruling that no eviction of City-owned land may take place during the lockdown. But the pandemic will not last forever. The planners' spare time can best be used to speed-up their decision-making.

Access to relief financing still vital as SME clients not yet out of woods

AS local business relief initiatives such as the COVID-19 Loan Guarantee Scheme come to a close, many small and medium enterprises (SMEs) continue to struggle, with an unfortunate number of businesses' liquidity eroded by the pandemic and various lockdowns - especially those that operate in the hospitality and tourism industry.

According to Jeremy Lang, General Manager of Business Partners Limited - financiers for small and medium businesses - a survey conducted amongst clients at the onset of the national lockdown in 2020 found that 96% of respondents needed assistance to survive the continued lockdown and its effects. He adds that a study conducted by Stats SA also revealed that 30% of formal businesses surveyed indicated that they were unable to survive a month without turnover, while over half (55%) indicated that they could only survive between one and three months.

Lang notes that while the easing of some lockdown restrictions and opening of many sectors has provided some relief, in order to weather the ongoing storm and stay afloat, many SMEs require working capital to restart their businesses and replenish reserves used to cover fixed overheads. Added to this, with the country's gross domestic product (GDP) contracting by 7% in 2020, experts are speculating that the economy may take years before reaching pre-COVID levels, which is bound to negatively impact SME turnover further.

He says that, in response to these needs and to help these businesses get back on track, financial institutions have to be creative and innovative in their approach by offering products that are quicker to access with simpler processes driven by technology.

"Most COVID-19 relief programmes were designed to assist businesses to cover fixed overheads. We have found that there is also a growing need amongst our clients to replenish eroded working capital. As a result, we have launched the Restart Capital Fund, designed to assist our existing SME clients to speed up post lockdown recovery and get them back to pre-COVID levels of trading.

"The COVID-19 crisis has forced business owners to restructure and re-invent in the scramble to save their business and retain staff. Financiers have also developed programmes to ensure that clients have the resources they need to successfully navigate the new COVID-19 world."

"As the country navigates its way to economic recovery, we appeal to fellow business financiers in both the public and private sectors to modify their offerings, in order to provide more relief and recovery finance to ensure we can save as many SMEs as possible," concludes Lang.

Green Cross still taking painful steps

ARE the most painful steps over in the plan to turnaround Cape Town-based healthy footwear brand Green Cross?

Consumer brands giant AVI – which paid a whopping R382 million for Green Cross in 2012 – will certainly be hoping so…

Last month AVI disclosed that restructured Green Cross had seen a further deterioration in its turnover – which dropped 32% to R82 million in the half year to end December.

This followed store closures that have reduced the retail chain to just 29 stores. Green Cross also made headlines in 2019 when it closed down its manufacturing plant in Epping, and opted to import its footwear ranges.

Even more worrying was that operating profits at Green Cross slumped R19 million into the red compared with the R12m loss reported in the previous interim period.

This nasty performance stumble detracted from AVI's mainstay footwear brands Spitz and Kurt Geiger – which managed a credible performance in a tough trading environment with combined profits of R224 million.

AVI reported that selling and administrative costs at the footwear segment were significantly lower due to cost cutting, completion of the Green Cross integration into Spitz and lower store costs in line with closures over the last twelve months.

AVI CEO Simon Crutchley confirmed the Green Cross volume loss was higher than Spitz and Kurt Geiger. Green Cross also saw retail trading densities impacted more during COVID-19, and there were 12 store closures since December 2019.

Crutchely also noted a 12.8% drop in Green Cross selling prices as well as a change in sales mix with lower retail sales and maintained wholesale volumes.

It seems the months ahead could see even further Green Cross store closures to "match retail space to brand opportunity".

AVI's patience with Green Cross must have been severely tested over the past four years – especially as other comfort footwear brands like Birkenstock stole a march on Green Cross. If

profitable traction is not found quickly in Green Cross, the once valuable brand might end up trudging a very lonely path.

A pinch of seaweed reduces cow's greenhouse gas emissions 82%

By UC Davis - https://phys.org/news/

A bit of seaweed in cattle feed could reduce methane emissions from beef cattle as much as 82 percent, according to new findings from researchers at the University of California, Davis. The results, published in the journal PLOS ONE, could pave the way for the sustainable production of livestock throughout the world.

"We now have sound evidence that seaweed in cattle diet is effective at reducing greenhouse gases and that the efficacy does not diminish over time," said Ermias Kebreab, professor and Sesnon Endowed Chair of the Department of Animal Science and director of the World Food Center. Kebreab conducted the study along with his Ph.D. graduate student Breanna Roque.

"This could help farmers sustainably produce the beef and dairy products we need to feed the world," Roque added.

Over the course of five months last (US) summer, Kebreab and Roque added scant amounts of seaweed to the diet of 21 beef cattle and tracked their weight gain and methane emissions. Cattle that consumed doses of about 80 grams of seaweed gained as much weight as their herd mates while burping out 82 percent less methane into the atmosphere. Kebreab and Roque are building on their earlier work with dairy cattle, which was the world's first experiment reported that used seaweed in cattle.

Less gassy, more sustainable

Greenhouse gases are a major cause of climate change, and methane is a potent greenhouse gas. Agriculture is responsible for 10 percent of greenhouse gas emissions in the U.S., and half of those come from cows and other ruminant animals that belch methane and other gases throughout the day as they digest forages like grass and hay.

Since cattle are the top agricultural source of greenhouse gases, many have suggested people eat less meat to help address climate change. Kebreab looks to cattle nutrition instead.

"Only a tiny fraction of the earth is fit for crop production," Kebreab explained. "Much more land is suitable only for grazing, so livestock plays a vital role in feeding the 10 billion people who will soon inhabit the planet. Since much of livestock's methane emissions come from the animal itself, nutrition plays a big role in finding solutions."

In 2018, Kebreab and Roque were able to reduce methane emissions from dairy cows by over 50 percent by supplementing their diet with seaweed for two weeks. The seaweed inhibits an enzyme in the cow's digestive system that contributes to methane production.

In the new study, Kebreab and Roque tested whether those reductions were sustainable over time by feeding cows a touch of seaweed every day for five months, from the time they were young on the range through their later days on the feed lot.

Four times a day, the cows ate a snack from an open-air contraption that measured the methane in their breath. The results were clear. Cattle that consumed seaweed emitted much less methane, and there was no drop-off in efficacy over time.

Next steps

Results from a taste-test panel found no differences in the flavour of the beef from seaweed-fed steers compared with a control group. Similar tests with dairy cattle showed that seaweed had no impact on the taste of milk.

Also, scientists are studying ways to farm the type of seaweed—Asparagopsis taxiformis—that Kebreab's team used in the tests. There is not enough of it in the wild for broad application.

Another challenge: How do ranchers provide seaweed supplements to grazing cattle on the open range? That's the subject of Kebreab's next study.

Kebreab and Roque collaborated with a federal scientific agency in Australia called the Commonwealth Scientific and Industrial Research Organization, James Cook University in Australia, Meat and Livestock Australia, and Blue Ocean Barns, a startup company that sources, processes, markets and certifies seaweed-based additives to cattle feed. Kebreab is a scientific adviser to Blue Ocean Barns.

"There is more work to be done, but we are very encouraged by these results," Roque said. "We now have a clear answer to the question of whether seaweed supplements can sustainably reduce livestock methane emissions and its long term effectiveness."

Scrap merchants need to know their steel

By Jonathan Margalit, PhD.

THE USA Steel Recycling Institute (SRI) reported that steel is North America's most recycled material. More than 63 million tons of steel are recycled every year.

Steel scrap is an essential raw material in making new steel. In fact, according to SRI, in each of the past 50 years, more than 50 percent of the steel produced in this country has been recycled through the steelmaking process. A well-established network of more than 2 000 ferrous scrap processors and more than 70 end markets help meet the steel industry's demand for steel scrap.

Those figures prove how important steel is to the scrap recycling yards. There's one problem, however: steel scrap is usually mixed with other materials. So how much of that scrap is not steel, and what else is it? It could be a variety of metals.

- Food cans — sometimes called tin cans, metal cans or aluminium cans — are usually made of steel with a tin-coating or they may contain some chromium or nickel.
- Appliances are a major source of scrap steel and SRI reports that a typical appliance is produced using about 65 percent steel, as well as aluminium, zinc and copper.
- A typical passenger car consists of about 60 percent steel and iron, and other metals. Cars can even contain precious metals like Platinum, Palladium, and Rhodium found in their automotive catalytic converters.

Many steels have coatings applied to them. A zinc coating is applied by hot dip galvanizing (HDG). Other coating materials include cadmium, aluminium, chrome, nickel, nickel-chromium, iron oxide, and silver. Coating choice depends on the type of steel, and the type of corrosion you're trying to prevent.

"Stainless" steel is actually a generic term referring to a variety of steel types. Like all other kinds of steel, stainless steel is made primarily from iron and carbon in a two-step process. What makes stainless steel different is the addition of chromium (Cr) and other alloying elements such as nickel (Ni) to create a corrosion-resistant product.

With steel recycling being such an important business, scrap yards must ensure that their inventory is identified precisely and sorted appropriately. Manufacturers who are buying their scrap will insist that the metal is identified accurately because the quality and the costs associated with manufacturing their produced goods depend on it.

Accurately ID'ing the type of steel is especially important to the amount of money a scrap yard will pay for incoming metals, and charge for its inventory. Prices for different types of metals can vary dramatically from material to material, as well as day to day.

Scrap yards use portable X-ray fluorescent analysers to identify the various elements contained in the metals and then grade and sort them appropriately. The XRF analysers can help determine the metal composition, discover tramp/trace elements, and positively identify numerous alloys at material transfer points to help ensure product quality. It's a non-destructive technology, so the metals do not have to be melted down first.

Best practices for scrap yard operations should include inspection of all metals that come into the facility against paperwork, quality checks after metals are sorted and throughout the process, and then final analysis before the metals leave the facility. In addition, the exact chemical composition of scrap, including the existence of contaminants or hazardous elements, must be determined for quality, safety and regulatory compliance. A scrap yard's reputation depends on the integrity of the metal scrap that reaches the customer.

Afrox invests in a new speciality gases plant

AFROX has recently completed a new made-to-order speciality gases plant in response to rising market demand for complex gas mixtures.

The complex gases produced at the new gravimetric filling plant will be Afrox's main source of all made-to-order gas mixtures, supplying customers throughout South Africa and its neighbouring countries.

Designed for improved accuracy and efficiency, the new automated facility in Germiston allows for up to 16 fixed line input components, which can be increased by introducing premixed components on separate filling rigs for oxidant and flammable/toxic mixtures. The filling and component selection procedures are pre-programmed and digitally controlled in a process that also operates actuated control valves integrated with a scale.

Tony Flude, Project Manager at Afrox, says the need for an improved, automated facility arose as customer needs evolved and the demand for complex gas mixtures increased, which had previously been processed at Afrox's Special Gases manual gravimetric filling plant. The original plant's ability to produce complex mixtures within acceptable lead times and within acceptable tolerances had become a challenge and some gas mixtures had to be imported to meet customer requirements. Safety was also a consideration and the total separation of oxidant and flammable mixtures is an additional benefit of the new facility.

"The new facility is capable of producing many of the multi-part mixtures that were previously imported," says Flude, explaining that local complex gas production not only improves lead times but is also safer, due to the risks involved in importing hazardous and volatile gases.

"The semi-automated fill valves also reduce material wastage, while a booster pump that increases the pressure of low pressure gases significantly reduces filling time," continues Flude.

"After thorough analysis, our engineering team concluded that Afrox could design and construct a filling plant utilising a process description based on the facility at BOC Australia. While our process was 100 percent locally designed, being part of the Linde Group gave us access to the latest technology and international experience," says Flude.

He comments that the brownfields project was logistically challenging as the new facility had to be built without affecting the operation of the existing plant, and stringent safety measures were vital owing to the proximity of toxic and flammable gases.

The nationwide COVID-19 lockdown further complicated the project, halting the installation of new equipment for several months. Despite these delays and challenges, Flude says the new plant is now fully operational, with only a few minor works to complete.

Afrox's extensive range of special gases is widely used in the automotive and petrochemicals industry, and plays an important role in mining and metallurgy. Afrox also has longstanding partnerships within the healthcare and pharmaceutical industries supplying precise, bespoke gas mixtures. The company is at the forefront of environmental management, providing products, services and expertise to help customers tackle environmental challenges.

Used electronics present security concerns

By ITAD specialist Bridgette Vermaak

BUSINESS owners could be in for a data protection headache as many used electronics that are returned still hold personal information such as credit card details, personal passwords and photos.

They need to realise the importance of data security when issuing and decommissioning IT assets. There are major privacy concerns as more used laptops and smartphones are returned to employers with sensitive personal data.

Imagine the monumental task of preparing and issuing thousands of new laptops to remote workers that are distributed across the country. This is, in context, far easier than trying to recover the retired equipment securely.

Employers have a legal obligation to clean these devices professionally and ensure that all data is erased from them prior to decommissioning and disposal or redistribution. Sadly, this is not done professionally and new users inadvertently are able to access confidential information of the previous owner.

ITAD firms traditionally provided secure erasure of hard disk drives onsite at their customers' locations. This approach offers convenience for the customer as well as maintaining security by only allowing drives to leave the secure facility after they had been sanitised.

However, at the same time, onsite secure erasure was resource intensive for ITADs to dispatch operators to customer sites.

With innovative erasure technologies, IT asset disposition (ITAD) service providers can now safely decommission and erase storage media that are physically located anywhere, without staff travel. This approach helps ITADs cost-effectively enhance enterprise data security for their customers. Xperien has developed a solution to remotely sanitise any IT asset. This means remotely removing the data, which is important to maintain compliance and to ensure that the company's proprietary information is removed completely from those assets.

More importantly, there are minimal or no costs for this service because it is recovered from the residual value of the asset, which is ultimately give back to the organisation. They may still even find that they get a return on investment from the clean asset.

Compliance

This function is governed by legislation including the Protection of Personal Information Act (PoPIA) and General Data Protection Regulations (GDPR).

One needs to ensure that the data is removed according to the regulations. ITAD providers need to provide evidence that the data has been removed securely.

Xperien provides a certificate of authentication that the data has effectively been removed and that the organisation complied with the respective regulations

Agri Disc Hubs offer reliability in extreme conditions

EXTREMELY harsh working conditions, along with high-pressure washing routines, place a raft of demands on the bearings and seals found in equipment for the agriculture industry. A low-quality bearing will not be sufficiently robust in its design or performance levels to provide the uptime necessary for reliable and productive operation. Instead, frequent downtime and costly failures will be the likely result.

NSK's solution to this challenge is the Agri Disc Hub, a cost-effective, self-lubricating bearing unit that delivers a number of major benefits to users of farming implements. High-performance Agri Disc Hubs feature double-row angular-contact ball bearings that can support high axial and radial loads, while the meticulously devised configuration locates the bearings within a sturdy housing that connects directly (and simply) to the implement via an integrated flange.

Importantly, NSK can offer fast, Europe-wide availability of Agri Disc Hubs as manufacturing takes place in Germany. The Munderkingen facility can boast almost 70 years of high-quality production output.

Alongside high-performance bearing technology, Agri Disc hubs are equipped with a highly effective sealing system for robust protection against extreme condition applications. This comprehensive system is a combination of labyrinth and contact seal designs, which serves to prevent both the ingress of contaminants and the escape of grease. 'Greased for life' Agri Disc Hub bearings provide users with maintenance-free operation.

A cutaway section of the Agri Disc Hub housing shows the double-row angular-contact ball bearings.

The innovative design of the bearings and sealing system significantly increases service life. Even under extreme stress, Agri Disc Hub bearings - and thus the implement which they serve – grant a service life that is several times beyond that of other commercially available solutions, while their modularity means they can be adapted very quickly to individual user requirements. In such instances, flexible manufacturing at the Munderkingen plant ensures rapid deliveries at competitive costs, even more so for custom requests.

City's Smart Office Handbook a step-by-step guide to greening your workplace

THE latest City of Cape Town Smart Office Handbook and Toolkit is now available on the City's website.

Many businesses and organisations want to implement sustainability programmes, but often are not sure where to start, or how much they are able to do. The Smart Office Handbook and Toolkit provides a comprehensive and user friendly package that enables businesses, as well as government and non-profit organisations, to implement effective sustainability programmes in the workplace.

'We have prioritised the revision of our Smart Office Handbook so that we can advise businesses on the most relevant guidelines for greening their offices and workplaces. Aside from providing practical tips for creating healthier environments, our aim is to provide a guide that could spark ideas among residents on the positive impact sustainable practices will have on their business and the environments in which they operate,' said the City's Mayoral Committee Member for Spatial Planning and Environment, Alderman Marian Nieuwoudt.

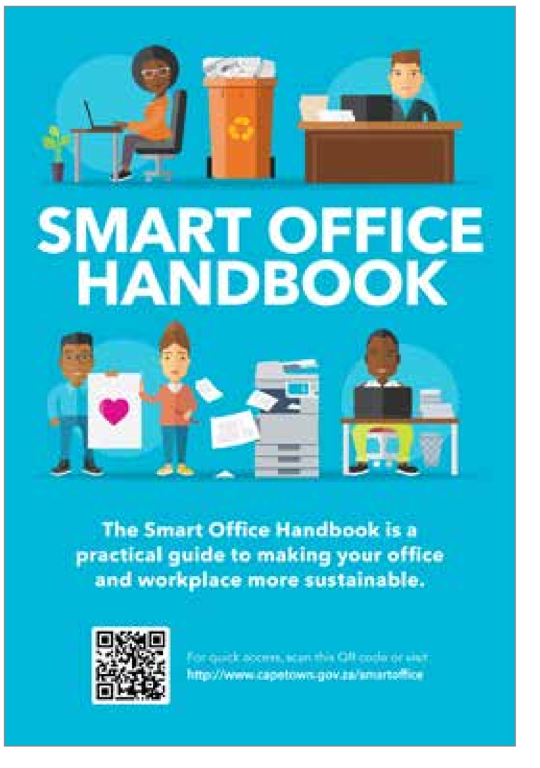
Going 'green' is no longer a trend. It is the responsibility of every business, big or small, to apply the principles of sustainability, regardless of whether you are working from home or an office.

'Buildings are a priority area for addressing climate change, reducing greenhouse gas emissions and building city resilience. To this end, in its own operations, the City is committed to ensuring that all new facilities owned, occupied and developed by the municipality are net-zero carbon by 2030. In the same way, and where it is possible, we intend to ensure the same for existing facilities. We encourage other organisations to follow suit.

'Let's act together in creating a carbon neutral, climate-resilient city,' said the City's Mayoral Committee Member for Energy and Climate Change, Councillor Phindile Maxiti.

The new handbook covers eight key topics:

- the basics of greening your office;
- energy efficiency;
- waste reduction;
- water conservation;
- eco-procurement;
- transport;
- environmental and social impacts; and
- sustainable development in business and beyond the office, such as green buildings and greener events



Useful supporting resources have also been added to the toolkit, which offer scoping eco-audit sheets; educational posters and reminder decals for around the office.

The City will be running relevant training programmes for staff and the general public on how to implement the sustainability strategies outlined in the handbook.

The City manages a comprehensive Smart Living and Working Programme, which includes the Smart Living Handbook. Several Smart Living resources were and are being developed complementary to each other. These include the Smart Living Handbook; Smart Cooking; Smart Driving, Smart Events and Smart Living Audit guides, as well as several capacity building; training; education and outreach programmes.

To download the Smart Office Toolkit, please visit www.capetown.gov.za/smartoffice

OneFarm Share platform provides over 1 million meals for food relief

STANDARD Bank's OneFarm Share initiative in South Africa, which matches requests for food relief to suppliers with good quality excess fresh produce, has, since November 9 2020, collected and distributed more than 270 tons of food to accredited beneficiary organisations, providing over 1 million meals to vulnerable individuals.

In 2021, Standard Bank hopes to increase OneFarm Share's impact by ten times - delivering 7 400 tons of food across all nine provinces, enabling over 30 million meals. The partnership provides a digital platform where emerging and commercial farmers can sell or donate their produce into new markets.

"The need for food relief is greater than ever, with over 12 million South Africans unsure of where their next meal will come from," says Lungisa Fuzile, Standard Bank South Africa Chief Executive. "Farmers are aware of this need, but feel unable to meet it, without a clear mechanism to manage the requests for donations and an efficient, quick and transparent process to donate food. OneFarm Share brings all the role players together from producers and logistics companies to consumers and beneficiaries under a single digital platform where needs can instantly be identified and addressed."

Agriculture has been prioritised as being one of the top five ecosystems for the Standard Bank Group. As a result, the OneFarm platform has been launched as a digital business-to-business platform to connect and provide services across the agricultural ecosystem through Lend, Protect, Grow, Trade and Share services. To date this has been piloted in Uganda since August 2019.

In South Africa, the OneFarm Platform was launched through OneFarm Share as a result of the food crisis caused by Covid-19 lockdowns and to increase the sustainability of farming operations in the country.

As Standard Bank firmly believes that co-creation is the key to acceleration, it partnered with HelloChoice, a South African AgriTech with a digital fresh produce marketplace, as well as FoodForward SA, the largest food distribution non-profit organisation in South Africa. FoodForward SA focuses on the recovery and redistribution of edible surplus food from the supply chain (including retailers, manufacturers, and farmers). By partnering with organisations with existing capabilities, the initiative was up and running within just four months.

Standard Bank plans to grow the platform funds by approaching corporates with CSI funds earmarked for food relief as well as the bank's retail base and high net worth clients. It has also launched a SnapScan account and code for members of the public that wish to donate.

Donations can be made on Snapscan or through an EFT. For more information on OneFarm Share and how you can get involved visit www.onefarmshare.co.za

Thakadu nickel sulphate refinery starts production

Thakadu Battery Materials plant in Marikana, North West Province.

THAKADU Battery Materials, a supplier of high-purity battery raw materials, has commenced production at its U$20 million nickel sulphate refinery, adjacent to Lonmin's base metals refinery in Marikana, NW Province, putting Africa on the map as a supplier of battery-grade product to the growing global markets for electric mobility and stationary energy storage.

Thakadu's 30 000tpa refinery is the first of a series of projects that will fast-track the company's aim to become a multi-asset producer of battery raw materials.

"This is a huge milestone for our team, and we are pleased to bring this nickel sulphate refinery to production at a time when high nickel cathode chemistries are set to dominate battery and electric vehicle production," says Thakadu Chief Operating Officer, Danie Smit.

The new nickel sulphate refinery uses proprietary process technology to purify crude nickel sulphate extracted from a platinum group metal concentrate that would otherwise be sold as a lower value product. Targeting production of 16 000tpa in 2021 with ramp up to steady state production of 25 000tpa, Thakadu will refine crude nickel sulphate feed from its long-term supply agreement with Sibanye-Stillwater and other supplemental feed sources.

"We see enormous value in having a battery materials platform with a producing asset and we are pursuing synergistic M&A opportunities to leverage that into a clean and reliable source of battery materials for the global market," says Thakadu Chief Executive Officer, Ruli Diseko.

Nickel demand from the automotive sector is growing rapidly with electric mobility expected to represent the single-largest growth sector for nickel demand over the next 20 years. According to Roskill, nickel sulphate consumption has grown at 20% a year since 2014 and that has primarily been driven by the rapidly growing EV battery sector. The commodity research firm expects to see demand grow from around 90 000-100 000 tons contained nickel in 2020 to 2,6 million tons by 2040.

"We are excited about leading Africa's contribution to a cleaner planet," said Diseko. "We believe that investing in value addition of battery raw materials at source is not only developmental but creates logistics and supply efficiencies that are a net positive for a greener future."

New leaders for the Cape Chamber of Commerce and Industry

JACQUES Moolman is the new president of the Chamber following his election to succeed Ms. Janine Myburgh at the chamber annual general meeting.

Jacques is general manager of Southern Sun The Cullinan in Cape Town, appointed to run this premier destination in the Mother City after a stellar career in the hotel industry which took him rapidly up the managerial ladder, gathering numerous awards as he went.

He has worked for Tsogo Sun Hotels since 2003, holding general manager positions in seven different Tsogo Sun Hotels in different provinces.

He was previously vice-president and director on the Board of the Cape Chamber of Commerce and Industry, a Chamber Council member, chairman of the Cape Town Central Chapter and serves as a director on the Board of the Cape Castle Control Board.

Jacques Moolman.

Derryn Brigg.

Jacques has a degree in Strategic Management, Diploma in Hospitality and Business Administration. In his spare time, he practices as a qualified business coach.

The new deputy President of the Cape Chamber of Commerce and Industry is Derryn Brigg of Derryn Brigg Consulting. She is also the chairperson of the Chamber's Constitution Review Committee.

Derryn has an Honours degree in Industrial Psychology from Unisa attaining four course-distinctions. She is an accredited business advisor with various private and government small business agencies, a judge for the International Women's Entrepreneurial Challenge, and is the author of a quartet of books titled The Seriously Light-hearted Guides -- to Planning Your Business! Basic Compliance for Small Businesses! BBBEE Benefits for Black Owned Small Businesses! And a Guide to Funding Your Start-up Business.

For good measure, Derryn is also the administrative manager and co-owner of TS Rigging Solutions as well as a small eco-friendly cleaning products distribution company.

WC reveals R1,92 bn spent on Covid-19

By David Maynier, Western Cape Minister of Finance and Economic Opportunities

"WE are pleased to publish the eighth edition of the Procurement Disclosure Report by Provincial Treasury which affirms our commitment to transparency and clean governance in the Western Cape.

"This edition of the Procurement Disclosure Report confirms that to date R1,92 billion has been committed towards Covid-19 related expenditure across departments and public entities in the 2020/21 financial year in the Western Cape.

"For the period 1 April 2020 to 31 January 2021, provincial departments' total Covid-19 expenditure was R1,917 billion, while provincial public entities spent R3,01 million.

"A total of R907,69 million, or 47.26%, of all Covid-19 expenditure by provincial departments and public entities was spent with small, medium and micro-enterprises (SMMEs), which exceeds the national target of 30%.

"Total Covid-19 procurement expenditure for January 2021 amounted to R66,22 million, of which R66,19 million was spent by provincial departments and R30 369.11 by public entities.

"This month we also published the first of our quarterly Procurement Disclosure Reports which provides an in-depth analysis of Covid-19 expenditure by transaction, commodity and supplier for each Western Cape government department and entity for the period 01 October 2020 to 31 December 2020.

"Monthly reporting on all Covid-19 procurement expenditure transactions is available via the National Treasury Covid-19 dashboard with a summary report provided by the Provincial Treasury in the Procurement Disclosure Report."

To access the dashboard and the Procurement Disclosure Reports, visit: www.westerncape.gov.za/provincial-treasury/procurement-disclosure-report

Public servants need lessons in basic economics

Expounds Jacques Moolman, President of the Cape Chamber of Commerce & Industry.

THE continuing insistence of public service unions on a 7% pay increase, 4% above inflation, for their members, has people in the private sector shaking their heads in disbelief.

Most private-sector employees know that their pay depends on the success of the business that employs them. They know it's suicidal to insist on high salary increases – or indeed any increase at all – when the business is on the edge of bankruptcy.

How does one explain such apparent lunacy?

The most obvious one lies in public service hiring practices. They have been subverted by ideology. Balancing the racial composition of the public service was needed but it has too often downplayed the skills demanded resulting in corruption of the original intent of the post-1995 policy.

There are worrying allegations of other non-job-related factors creeping in.

True or not, there has been over-manning in the broader public service that includes the numerous state-owned enterprises, the municipalities, and a State wage and salary bill the Treasury believes cannot be afforded. Despite this, the public sector trade unions seem determined to keep the cornucopia of union dues regularly topped up.

Next among possible explanations of the attitude is the extraordinary ignorance of public servants and their union leaders of the state of the South African economy. Surely by now, everyone who can read, listen to the radio, or watch television must know the country is in deep financial trouble? It appears not.

Yet it is obvious there is no extra money to be had.

The small number of people who pay income tax (including public servants) have been squeezed to their limits; the state-owned enterprises are chin deep in debt, Eskom cannot guarantee an electricity supply, South African Airways, the railway system, and Denel, are economic Dodos on the brink of collapse. Why is this not obvious?

Logic says public servants at all levels—local, provincial and national – should ease off wage demands and tighten their belts like everyone else. Instead, the belief in a magic money tree maintains its strong hold on the public service mind.

It is ignorance without parallel in South African history. Searching for a cure, one grasps at a compulsory course in first-year economics for every teacher, policeman, and nurse (a group suffering like everyone else) together with all municipal and provincial workers, with a double-dose of economic reality for public service workers e in the first-class seats on the gravy train.

Maybe, when economic reality dawns, public service trade unionists will instead of asking for impossibly high pay rises, demand that their monthly union dues be reduced instead -- at least until the country's economy revives.

John Deere to expand into construction

WELL known in the agricultural sector, John Deere has announced its intension to compete in the construction sector in eighteen countries across southern and western Africa, where Deere-branded construction products were not previously available.

This expansion, which will include the availability of backhoe loaders, excavators, wheel loaders, motor graders, and crawler dozers, will be sold and supported by independent, newly appointed John Deere dealers. Targeted countries include South Africa, Botswana, Zimbabwe, Swaziland, Namibia, Zambia, Kenya, Uganda, Mozambique, Angola, Malawi, Tanzania, Ethiopia, Egypt, Rwanda, Burundi, South Sudan, and Sudan.

"This expansion provides an opportunity for us to increase our global footprint in the construction industry, as we build upon our existing presence in Africa and deliver our product portfolio under the John Deere brand for the first time to these key markets," said Jaco Beyers, managing director for John Deere Africa Middle East.

In Africa, John Deere is well represented in the agricultural market, as well as an increasingly prominent player in the construction and forestry industries in many parts of the continent. This expansion marks the first time that the John Deere construction products are sold under the John Deere name in these key markets.

In this new era, John Deere is taking full control of the marketing and support of its own branded construction products.

Customers in these markets will also have access to product support through the world-renowned John Deere dealer network. Each piece of John Deere construction equipment will be supported and serviced by highly trained and certified equipment technicians who are in turn supported by a network of regional parts distribution centres, including one in Kempton Park, Gauteng.

Customers will also have access to the John Deere suite of technology solutions, including JDLink™ Telematics, which provides valuable fleet insights on the job site.

EPR is coming – will you be ready?

THE implementation of the Government's upcoming EPR (Extended Producer Responsibility) scheme is well advanced and impending legislation requires producers especially in the packaging industries to register and become or join an industry PRO (Producer Responsibility Organisation).

Knowing the why, how and industries new responsibilities is outlined below, with insight provided from www.factssa.com website.

South Africa's waste generation continues to increase; significant volumes of waste are still being diverted to landfill, a dead-end disposal of waste rather than the desired approach of a circular economy . If we are to protect our environment's natural resources and develop green economies, producers of products will be required to take responsibility for their products throughout the product life cycle, from raw material extraction through product design and use, and ultimately, recovery and recycling or re-use.

The regulations regarding Extended Producer Responsibility (EPR) (R.1184) were published on 5 November 2020, under the National Environmental Management: Waste Act (NEMWA) (Act 59 of 2008). The Extended Producer Responsibility Scheme for Paper, Packaging and Some Single-Use Products (R.1187) was also published. The primary intention of the regulation and the scheme used together is to extend the financial and physical responsibility for a product to the 'producer' of that product, which importantly includes the post-consumer stage (waste disposal).

('Producer' has been defined by The Department of Forestry, Fisheries and Environment, (DFFE) as a manufacturer, importer or brand owner.)

The purpose of the EPR Regulations is: "to provide the framework for the development, implementation, monitoring and evaluation of extended producer responsibility schemes by producers, to ensure the effective and efficient management of the identified end-of-life products and to encourage and enable the implementation of the circular economy initiatives."

This Regulation refers to the term 'producer', meaning "any person or category of persons or a brand owner who is engaged in the commercial manufacture, conversion refurbishment or import of new and/or used products as identified by the minister". It is important for all members throughout the product life cycle to identify their roles and ascertain whether they fall within the definition of 'producers', as this may affect their responsibilities and what compliance is required.

The EPR Regulation (R.1184) requires that existing producers must register with DFFE within six months of the publishing of the regulation. All new producers must register within three months of the publishing of the regulation by completing the prescribed form, obtainable from the Department. The regulations go on to stipulate that the Department must consider and issue a number for each producer within 30 days of receipt of the form.

Regulation 1184 details specific minimum requirements for EPR schemes. The Extended Producer Responsibility Scheme for Paper, Packaging and Some Single-Use Products (R.1187) will have a particular impact on the 'producer' in the context of the food industry. This scheme includes targets for each identified product waste stream; these are defined for each class of products. Classes include paper, plastic, biodegradable and compostable, glass, metal, and single-use packaging.

The EPR Regulation (R.1184) goes on to stipulate that failure to comply with various provisions is an offence, which may on conviction lead to an "appropriate fine", imprisonment for a period of 15 years, or both.

It is advisable to ascertain whether you or your company could be defined as a 'producer'; and if so, to prioritise understanding the intention of the regulation and what the obligatory requirements are for the responsible stakeholders.

No doubt additional resources will be required to abide by these new regulations. Focusing on the common goal of supporting the environment, by recognising that EPR is a component that underpins the overall strategic approach of waste minimisation and a circular economy in South Africa, may well assist the transitional process.

Consultations on the development of an EPR for packaging in South Africa are still ongoing between the public and private sectors. The Section 18 EPR Notice is currently in the final consultation phase before it becomes official policy.

Important timelines:

- End Q1 – Task Team comprising of industry representatives and DFFE officials to revise regulations for review (publication before 5 May)
- 5 May 2021 – Effective date of regulations
- 5 Nov 2021 – Revised date for final compliance with regulations.

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IWMA webinar

A recent webinar hosted by the KZN branch of the Industrial Waste Management Association (IWMA) discussed amongst panellists the implications of the impending legislation.
In attendance were the

- Anben Pillay: Director, Waste Policy & Information Management (Dept of Forestry, Fisheries & Environment)
- Shabeer Jhetam: Packaging SA PRO which represents:
  - PETCO
  - Polyco
  - Polystyrene Association of SA
  - SA Vinyls Association
  - The Glass Recycling Company
  - Plastics SA
  - Fibre Circle (Paper) and
  - MetPac-SA
- Keith Anderson: EWASA – e waste, and
- Patricia Schröder: **Lightcycle SA.**

Issues discussed included how the EPR initiative was going to be financed - a fee for a 'Producer's' membership of the relevant PRO may be based on value of product or tonnages produced or sold per annum. Such fees would need to be ratified by Treasury and audited by DFFE and almost certainly would be recovered from 'Producers' customers.

While EWASA has more than 1 000 collection points around the country, it was not clear how and where end users would dispose of redundant electronic goods or the wide variety of packaging materials.

Clearly the legislation intends that the end user should not be charged for disposal which must be handled in a responsible manner. Whether municipalities have a responsibility to establish collection points at established landfill or other sites is unclear at this time but one thing is for certain that this new initiative – which is not unique to South Africa – will require a high profile communications strategy from all involved to ensure success.

Low diesel engine oil pressure – a problem?

“USERS of diesel engine oils often note a change in oil pressure when they change from a monograde oil to a multigrade,” says Llewellyn Owen, National Marketing Manager at Lubrication Engineers (LE) South Africa. “Typically, oil pressure is lower with a multigrade, and people might mistakenly interpret the pressure drop as indicating a problem with the engine.”

Owen says that low oil pressure is not necessarily bad. “In fact, it can be beneficial to a diesel engine operating within normal limits, while high oil pressure can be caused by blocked oil galleries or a lubricant that’s too viscous,” he says. “The main thing to check is that oil pressure remains pretty stable. Any large increase or decrease should be investigated.”

He adds that it’s also critical to remember that as the oil viscosity breaks down, which happens over time, especially with poor quality oils, the performance in the asset is greatly reduced in terms of load-carrying abilities, torque and reliability. This may result in units having to be serviced more frequently than the indicated intervals.

With winter weather on the way, Owen says that cold start is one operating condition under which oil pressure should be checked. “At start-up, all the oil is in the sump, and oil pressure is zero. The pump cannot begin to deliver oil or generate pressure until it sucks cold oil through the filter screen and pick up tube. We suggest to customers that they use a short, wide pick-up tube and an oil with good cold flow properties, such as a multigrade, to improve cold start lubrication.”

Cold oil generally has high flow resistance; therefore, oil pressure on start-up is high. As the oil circulates and warms up, it flows more freely and oil pressure drops to a stable level. Only at this point is the engine being lubricated properly. Until oil pressure stabilises, wear rates are high because of insufficient oil delivery to the mating surfaces. Therefore, a “good” oil is one that reaches a stable oil pressure quickly.

There are, however, situations where low oil pressure can indicate a problem, which is why it’s worth checking pressure and noting changes. The table shows some of the most common causes of low pressure:

Cause of low oil pressure	Consequence	Solution
Low oil level	Possible catastrophic engine failure	Top up oil level and look for possible oil leaks
Oil not flowing into pump at start-up	Possible catastrophic engine failure	Shut down engine; change to oil with better low temperature properties; improve cold start procedures
Lugging; pump runs too slowly to deliver sufficient oil	Reduced engine life	Downshift to increase engine speed; check pump
Oil too hot; viscosity too low	Oil breakdown, engine problems, wear, deposits	heck temperature gauge and engine temperature controls; check oil viscosity for correct grade.
Worn oil pump	Engine problems	Replace pump
Worn bearings allow oil to flow freely through increased clearances	Engine problems	Replace bearings
Oil viscosity reduced by dilution (fuel or coolant)	Increased oil consumption, engine wear	Change oil; if problem persists, check for fuel system or head gasket leakage
Oil change	None	None – soot loading or oxidation increase viscosity of oil; new oil flows better

“Our diesel engine oils are CJ4 rated, heavy-duty oils providing outstanding year-round performance,” says Owen. “They are available in SAE 5W-40, SAE 10W-30, SAE 15W-40 and SAE 20W-50 grades, they improve fuel efficiency, increase engine life, provide extended drain service and wear reduction.”

Specifications exceeded include Mack, Cummins, John Deere, Allis-Chalmers, Detroit Diesel, Owen, GM, Chrysler, Caterpillar. LE’s diesel engine oils are also available in straight grades: SAE 20, 30, 40 and 50.

Mars Rover tyres to become available for use on Earth

By Sarah Katz , Tech Xplore.

THE SMART Tire Company has revealed its first space-age tire, soon to be available to the general public. Already tested by NASA for use on Mars Rover missions, these tires come equipped with the company’s Shape Memory Alloy Radial Technology (SMART), made from the super-elastic material NiTinol+.

While regular elastic can stretch, smart memory metal goes a step further by rearranging its molecular structure when bent and then immediately resuming its former shape. Thus, these tires never lose air, never go flat and have strength like titanium.

Such tires present many uses here on Earth, including an alternative to pneumatic bicycle tires that promises a light, durable and smooth riding experience. In fact, these tires can enhance safety through improved traction for commuters on concrete and gravel roads alike. The tires even use a synthetic, rubber-like material called Polyurethanium for the strongest grip and tread in all weather conditions. In other words, these SMART tires can last the entire lifetime of your bike without ever needing a replacement due to leaks, tears, messy sealants or punctures.

Perhaps the most exciting thing about these new tires is that they are manufactured by NASA. Indeed, the SMART Tire Company has also collaborated with the Ford Motor Company’s micromobility provider Spin to develop this shape memory alloy for electric scooters. The two companies seek to combine efforts in creating an easier and securer transportation experience for consumers.

Moreover, tires made of this material exhibit 30 times the recoverability rate of ordinary steel under strain. Looking back on why NASA first developed this tire and its corresponding material gives an idea why such durability was necessary. As a component of the Mars Rover wheels, this alloy had to be capable of withstanding harsh terrain and cratered topology on the red planet’s surface. In fact, the tires were effectively designed to act as shock absorbers to protect the Rover’s internal systems against jagged rocks.

Deemed METL, this space-age shape memory alloy will challenge the $250 billion international tire market in realizing a cleaner, safer solution for bicycle and scooter tires as well as the wheel at large. For now, The SMART Tire Company aims to release these tires to the cycling community in early 2022 before moving on to the auto industry and beyond.

Malware: the biggest threat

By cybersecurity expert and J2 CEO John Mc Loughlin.

MALWARE remains the biggest threat to corporate networks, more costly than any other threat including ransomware and trojans. A research study conducted by Deep Instinct reports on the hundreds of millions of attempted cyberattacks that occurred every day throughout 2020 showing malware increased by 358% overall.

Emotet maintained its number one position in the Global Threat Index, highlighting the global impact of this malware. The highly destructive banking trojan remains the top malware as it has already impacted six percent of organisations globally.

This malicious spam campaign uses various delivery techniques to spread the malware, this includes phishing emails, embedded links, attachments and password protected Zip files.

Emotet also collaborates with other campaigns where cybercriminals used it to drop ransomware and spyware onto systems that were already infected by this malware. Its worm-like capabilities enable it to spread to other devices within the same network.

Regardless of how it is spread, Emotet is persistent and avoids detection. This means victims are unaware that they have been compromised until it’s too late.

Emotet is one of the most costly and destructive malware variants. It’s critical for corporates to be aware of this threat; they need robust security systems to prevent data breaches. More importantly, employees need comprehensive training so they are able to identify and react to Emotet.

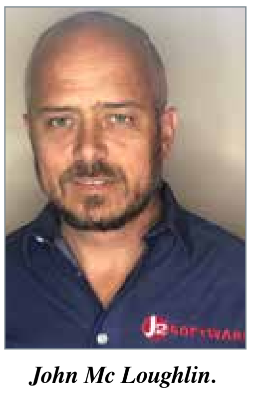
Trickbot is another banking trojan that is used in various cyber-intrusion campaigns. Similar to Emotet, it is often installed on computers to provide a gateway to install ransomware. The third biggest malware is Formbook, a credential-harvesting trojan that is used by cybercriminals to steal information like usernames and passwords.

Other malware includes Phorpiex, Hiddad Android malware, Dridex trojan and XMRig cryptocurrency mining malware. Phorpiex is a botnet known for distributing other malware families via spam campaigns as well as fuelling large scale sextortion campaigns.

Hiddad is an Android malware which repackages legitimate apps and then releases them to a third-party store. Its main function is to display ads, but it can also gain access to key security details built into the OS.

xHelper is a malicious application that is used for downloading other malicious apps and display advertisement. The application is capable of hidin g itself from the user and reinstall itself in case it was uninstalled.

To help prevent becoming a victim to malware attacks, businesses must ensure that they have a comprehensive cyber resilience program in place. This program will ensure a layered defence and provides visibility across the full environment, no matter where their users are.



John Mc Loughlin.

It must incorporate all aspects of their operations including email, data, applications, internet and the people who are accessing these. The program will ensure that all software is up to date, users are well trained and anomalies can be rapidly detected and threats remediated.

One cannot manage what you cannot see. You cannot keep defending the same way and expecting different results. The threats and cyber criminals have evolved, so should your security.

SAWC aims to shape water policy in SA

AGAINST a background of catastrophic mismanagement in the water and wastewater sectors, dysfunctional administrations, corruption and a R1- trillion deficit in Government funding, the SA Water Chamber presents an initiative to shape future water policy in South Africa.

Statement of the Problem

In 2002, the First National Water Resource Strategy, found that 98% of all available water had been allocated in South Africa, with some Water Management Areas being over-allocated by as much as 120%. Subsequent to that, science has improved and the accuracy of measurement now possible has shown that the Mean Annual Precipitation (MAP) is changing and the Mean Annual Runoff (MAR) (water available for economic development) is less than originally thought to exist before 2002. Subsequent high confidence research has shown that before 1982 South Africa was generally wetter, with a measurable shift in the seasonal distribution of rainfall patterns post 1982. Winter rainfall areas are specifically affected. In effect, in 2002 South Africa became a fundamentally water constrained economy.

In 2013, as a result of other factors, the South African economy also became capital constrained. All future job creation and economic growth potential will increasingly pivot around the ability of the water sector to attract technology and capital, both of which are in abundance. This is the primary mission of the SA Water Chamber.

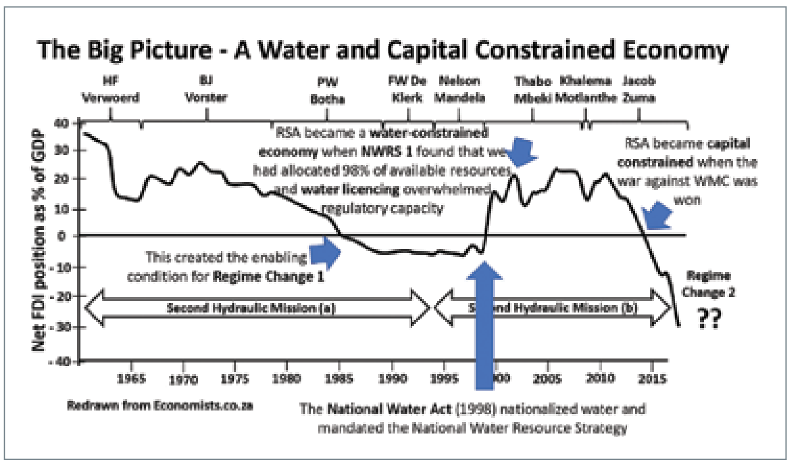
The SAWC Approach

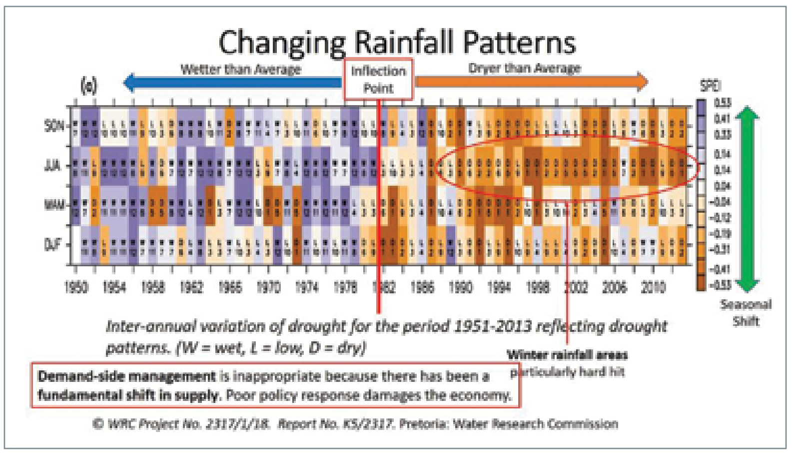
The water crisis is only a constraint if we continue to manage it as a finite stock. This is called the Old Paradigm of Scarcity, which is increasingly interpreted by investors as a risk to be avoided.

In reality water is a flux and is therefore infinitely renewable. The core logic of the SAWC is to shift our approach away from the Old Paradigm of Scarcity, where water was managed as a stock and used in a linear economy, to the New Paradigm of Abundance where water is managed as a flux in a circular economy. This requires technological upgrades to the 1 000+ Water Treatment Plants and 800+ Waste Water Treatment Plants. This can be funded by private capital and managed more efficiently in a purpose designed Special Purpose Vehicle (SPV) backed by policy and regulatory certainty.

Considerable research has been done by the Water Research Commission which co-ordinates much of the water research and knowledge transfer done in South Africa.

SAWC represents the water sector within the presidency's Public Private Growth Initiative (PPGI). The PPGI is the brainchild of Doctor Johan van Zyl, CEO of Toyota Europe and his friend Roelf Meyer.





	Old Paradigm of Scarcity	New Paradigm of Abundance
Perception of Water	* Stock * Finite therefore scarce and limited	* Flux * Infinite because it's a renewable resource
Economy	Linear	Circular
Technology	* Dams as principle elements * Master and Owners of Nature through hard engineering and control * Centralization under the state * Single use water at lowest cost * Groundwater managed separately * Desalination avoided as costly	* Recovery plant as principle elements * Nature-Based Solutions (NBS) through softer engineering and partnerships * Decentralization increasingly under private control * Dual Stream Reticulation at variable cost * Aquifer Storage & Recovery (ASR) as key element * Desalination embraced as source of New Water
Capital	* Cost to be avoided as much as possible * Limited multipliers because of linear configuration of the economy * Fiscus is the sole source	* Investment to be encouraged as an economic enabler * Many multipliers because of networked nature of the circular economy * PPP's with private capital as new source
Management Structures	* Highly centralized under State control * State Owned Enterprises only	* Increasingly decentralized under both private and state control (new markets for solutions e.g. Residential Estates and Facilities Managers) * Special Purpose Vehicles contracted to SOE's but meeting capital risk mitigation requirements

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What the SAWC is doing as part of this initiative is shaping water policy in South Africa. The information under "Water" (page 26) in the extract from a document produced by South Africa's National Treasury.

Water: Infrastructure, Regulation & Institutional Models

The estimated demand for water in South Africa will reach 17.7 billion cubic metres in 2030 (Boccaletti et al. 2010). Supply, by contrast, will equal only 15 billion cubic metres—not including the possible effects of climate change (Boccaletti et al. 2010). In addition to our water resource constraints, a significant amount of water is lost in the water provision system. Water lost to leakages makes up 25 per cent of total water consumption and 68 per cent of non-revenue water.

This situation can be attributed to old and poorly maintained infrastructure, a complex institutional structure, water tariffs that do not adequately cover the costs, and entities that face significant technical, financial, and management challenges.

South Africa will be unable to support inclusive growth and economic transformation if water supply is severely constrained. According to the 2019 Budget Review, water infrastructure projects have been allocated R90.4 billion between 2019/20 and 2021/22. There needs to be a comprehensive management strategy for investment in water resource development, bulk water supply, and wastewater management. It is also critical here to learn from the success of the IPP programme in the electricity space and adapt this model to infrastructure provision in the water sector, particularly in areas such as the provision of water, irrigation, and sanitation.

The department is currently developing appropriate institutional options for service provision, through the creation of regional water and wastewater utilities and expanding the mandates of the existing water boards. It is also in the process of establishing an independent water regulator—which will improve the overall efficiency and effectiveness of water provision and ensure appropriate price setting. In addition, there needs to be a national water conservation programme to reduce water waste and demand in urban areas.

Way forward

The focus is on two policy/strategy items:

- The creation of an independent water regulator,
- The creation of a regulatory/contractual environment in SA that encourages the private sector to invest in the severely depleted water infrastructure in the country.

One specific example of this depletion is 800+ dysfunctional wastewater treatment works. However, the South African fiscus is severely constrained – therefore the majority of the approximately R1 trillion in capital required to rehabilitate this infrastructure will need to come from the private sector.

The SAWC is currently setting up constitutional and administration processes to enable memberships to be processed early in 2020.

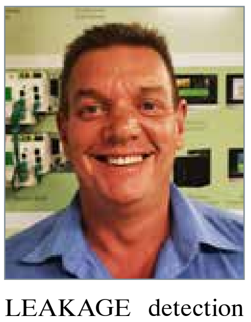
Working groups are focussing on an ongoing basis:

- Policy and regulatory input to government with the Water & sanitation Master Plan released in November 2019
- Refining the contracting Special Purpose Vehicle arrangements with government
- Provide seed funding to resource up the SAWC

For further information contact Benoit Le Roy on 082 414 5289 or visit: www.SAWC.co.za

Technology offers a very real solution to leaking water infrastructure

By Jacques Squire, Water & Wastewater Segment Lead, Southern Africa, International Operations, Schneider Electric.



LEAKAGE detection remains a very real challenge with a report from the CSIR in 2018 stating that as much of a third of the country's water supply is lost due to leakage and aging infrastructure. Also, SA continues to deal with a dire energy shortage which means water infrastructure must operate in an optimised and sustainable manner.

Financially strained local municipalities must also heavily invest in their water infrastructure to upgrade and maintain it, unfortunately, in some instances, very little or no maintenance is done on plant and water networks.

Considering the above, what steps can be taken to alleviate some of the pressure posed by SA's aging water infrastructure?

Technology has the ability to reduce both energy and water usage, while also recovering and reusing water when utilised in wastewater, consumer packaged goods (CPG) plants and mining operations.

Leakage detection

Leakage is not unique to SA. The Anglian Water region in the East of the United Kingdom faced serious drought conditions compounded by significant population growth. To mitigate future water supply challenges, the water sector in England and Wales decided to implement an integrated leakage and pressure management solution (ILPM).

The system now enables Anglian Water to monitor its network on a daily basis and identify new leaks as it happens while benefiting from a system that allows for improved planning and expediting repairs, thus improving water savings and outperforming the leakage targets.

Saving water and energy with intelligence

The benefits of smart solutions include asset protection, cost savings, performance benchmarking, energy savings and increased safety. Employed technologies include sensors, intelligent motor protection, variable frequency drives, and advanced process controllers.

Managing energy needs efficiently is a big step towards sustainability. Energy management, reducing consumption, and improved visibility of operations are therefore essential. Likewise, reducing water losses, ensuring water quality and optimising the use of hydraulic and treatment infrastructure are crucial.

Intelligent pumping, for example, can take operations to a whole new level by capturing and analysing large amounts of data. These applications often communicate across multiple systems within a utility and enable the convergence of operational and business systems, which empowers operations, maintenance and management to make more intelligent decisions.

> "Intelligent pumping, for example, can take operations to a whole new level..."

Technology realises ROI

With the right solutions in place, water infrastructure operators can realise as much as 30% of the cost of energy.

At a typical wastewater plant, power represents 35% of operational costs with 65% used in aeration processes. Experience shows that energy costs can be reduced by 3 to 5 percent if effective plant automation and control systems are implemented.

Effective application of instrumentation and control systems can help increase the capacity of a wastewater treatment plant by up to 15%.

KSB expands in Namibia

THE newly appointed managing director of KSB Pumps and Valves (Namibia) (Pty) Ltd, DeWet van Wyk will head-up the recently established KSB Pumps and Valves Namibia.

The evolution from a sales office of the South African operation to a fully-fledged company comes at a time when increasing demand for pumps and services necessitates a move to bigger premises with a fully stocked distribution warehouse, service and repair facilities, to meet future growth potential.

Established company

"KSB has been one of the preferred pump suppliers in Namibia for decades and with the government encouraging more local content, the decision was made to establish a fully-fledged Namibian company.

"Situated in the Northern Industrial area of Windhoek, the company's new premises consist of a $370m^2$ office block and $420m^2$ workshop.

"Additionally, we will have a field service team and a sizable stockholding of spares to meet current and anticipated demand" says DeWet.

The new address is KSB Pumps and Valves Namibia (Pty) Ltd, 27 Birmingham Street, Northern Industrial Area, Windhoek, Tel: +264 61 22 12 66, Email: dewet.vanwyk@ksb.com

The KSB Namibia team. L to R; front: Johannes Andreas, financial accountant, Francois Jooste, sales engineer and Shaun Theron, service supervisor. Back: Klaus Streit, area sales manager, DeWet van Wyk, managing director and Kenneth Kasita, sales engineer.

Pump company invests R3-m in CNC machine tools

WERNER Pumps, designers, manufactures, suppliers and maintenance specialist of high-pressure jetting equipment, has installed and commissioned new CNC equipment at its headquarters in Springs. The R3 million investment in the cutting-edge Haas machine tools has enabled the company to cut production time on some components by 50% or more, helping to speed up turnaround time on its 100% locally manufactured high-pressure jetting equipment.

Sebastian Werner, MD at Werner Pumps, says that the new CNC machine has also helped his team to create more components in-house.

"There are certain things that we could not make ourselves or justify manufacturing in-house previously, because they were simply too time-consuming.

But with the new equipment, we're able to create even more of our components than ever before, and to prototype and test new ideas more quickly."

The investment in the CNC machine has sparked other additions and changes to the Werner Pumps workshop, including installing a German-made compressor from Keiser that services the entire workshop floor.

Modernised building utilities save money and resources

BUILDINGS are not short-term entities. They can be around for decades, and their internal workings are often also meant to function for as long. Ripping and replacing internal plumbing, pumps, and readers can be costly as well as self-defeating, so the very idea of modernising a site's water systems is often very unappealing.

The first step to avoid this perception is to divide a building's water usage into different categories. A building will have water storage and boosting systems. It might also have systems for waste- and storm water, as well as firefighting measures. Then there are HVAC systems that consume water to cool or heat the building.

Any of these areas can offer significant benefits if they could make use of modern technologies. A prime example is the deployment of pumps with Variable Frequency Drives (VFDs).

Traditional pumps don't have much granularity in their performance: they either pump, or they don't, and when they do, it's at a set rate. Yet water usage varies during the day. Sometimes the pumps work too hard and sometimes not hard enough. These factors result in two common problems: too much power consumption and too much demand for maintenance.

In contrast, VFD pumps change their activity based on the system's demand, correlated with smart meters and monitoring systems. In a Xylem case study, retrofitted pumps at New York City's Astor Place showed amazing results. Before the retrofit 30% of the building's utility costs went to electricity for the pumps. Once Xylem and its partners established a hydraulically-balanced system, pumping energy used dropped by an unbelievable 95%.

New York's Twin Peaks residential blocks offer another example. Constructed in the 1970s, these buildings are a typical example of outdated building management systems and technical challenges, such as boilers in very tight spaces. Xylem and its partners deployed VFDs and integrated sensor component products to upgrade the Twin Peaks boilers and create substantial energy savings.

Solving water

Many buildings outlive their internal fittings. It's relatively easy to renovate a floor but substantially more challenging to realise better plumbing, heating, cooling and those areas that affect a building's utility bill. The choice once was to either change them at great expense or leave them to degrade further. But Xylem provides a third choice.

The answer is progress in innovation and digital technology by using new materials and designs, and modular, retrofit-friendly solutions – all designed to operate without frequent maintenance or operator interventions.

Engineers make filters from tree branches to purify drinking water

Xylem tissue in gymnosperm sapwood can be used for water filtration (as seen on top). Xylem is comprised of conduits that are interconnected by membranes that filter out contaminants present in water (bottom). Credit: N.R. Fuller, Sayo Studio.

By Jennifer Chu, Massachusetts Institute of Technology.

THE interiors of non-flowering trees such as pine and ginkgo contain sapwood lined with straw-like conduits known as xylem, which draw water up through a tree's trunk and branches. Xylem conduits are interconnected via thin membranes that act as natural sieves, filtering out bubbles from water and sap.

MIT engineers have been investigating sapwood's natural filtering ability, and have previously fabricated simple filters from peeled cross-sections of sapwood branches, demonstrating that the low-tech design effectively filters bacteria.

Now, the same team has advanced the technology and shown that it works in real-world situations. They have fabricated new xylem filters that can filter out pathogens such as E. coli and rotavirus in lab tests, and have shown that the filter can remove bacteria from contaminated spring, tap, and groundwater. They also developed simple techniques to extend the filters' shelf-life, enabling the woody disks to purify water after being stored in a dry form for at least two years.

The researchers took their techniques to India, where they made xylem filters from native trees and tested the filters with local users. Based on their feedback, the team developed a prototype of a simple filtration system, fitted with replaceable xylem filters that purified water at a rate of one litre per hour.

Their results, published in Nature Communications, show that xylem filters have potential for use in community settings to remove bacteria and viruses from contaminated drinking water.

The researchers are exploring options to make xylem filters available at large scale, particularly in areas where contaminated drinking water is a major cause of disease and death.

The team has launched an open-source website, with guidelines for designing and fabricating xylem filters from various tree types. The website is intended to support entrepreneurs, organizations, and leaders to introduce the technology to broader communities, and inspire students to perform their own science experiments with xylem filters.

"Because the raw materials are widely available and the fabrication processes are simple, one could imagine involving communities in procuring, fabricating, and distributing xylem filters," says Rohit Karnik, professor of mechanical engineering and associate department head for education at MIT. "For places where the only option has been to drink unfiltered water, we expect xylem filters would improve health, and make water drinkable."

Karnik's study co-authors are lead author Krithika Ramchander and Luda Wang of MIT's Department of Mechanical Engineering, and Megha Hegde, Anish Antony, Kendra Leith, and Amy Smith of MIT D-Lab.

This article has been edited for length. To read the full text, visit: https://techxplore.com/news/2021-03-filters-tree-purify.html?utm_source=nwletter&utm_medium=email&utm_campaign=daily-nwletter

Turning smart meters into water leak detectors

WATER leaks are becoming a significant cause for concern with municipalities desperately trying to conserve more water while attempting to decrease the amount of clean water that is being wasted through burst water pipes.

Old infrastructure, metal pipes rusting and clean water gushing onto the street or into drains, costing municipalities millions in revenue. Adding to that growing loss are consumer and household based leakages.

According to the Department of Water and Sanitation, 41% of municipal water does not generate revenue and 35% is lost through leakage across many cities in the country. In addition to that, over 3 million people still do not have access to basic water supply service and only 64% of households have access to a reliable water supply.

Smart metering has become a productive tool for municipalities and consumers alike as a means of reducing water wastage, managing water bills and detection of water leaks.

Lesira-Teq, a smart meter manufacture, focuses on using cutting edge technology in its products that send notifications to authorities and consumers when a leak or burst pipe is detected. The products also aim to assist municipalities in recovering the 41% of water that does not generate revenue by providing effective billing management through its smart meters.

By changing litre values to Rands and displaying information on the smartphone app, Lesira-Teq enables consumers to monitor their water consumption, be notified when an unusual water flow has been detected and be made aware when their water meter is being tampered with.

"The more effectively we can manage water consumption and supply; the more transparent and fair the billing process becomes between the municipalities and their customers, the quicker we will be able to reduce the number of people who do not have access to basic water supply." concluded Edwin Sibiya, Managing Director, Lesira-Teq.

Go with the Water Meter Flow

What is the purpose of a water meter? To measure the amount of water delivered to a household. A water meters main function is to register the amount of water consumed by a customer so that an accurate bill can be charged.

The purpose of a prepaid water meter is to eliminates the risk of utility bills not being paid. If all transactions are on a prepaid basis then the consumer in most cases a tenant, will always know exactly how much water they use and can budget accordingly. Having a prepaid water meter instead of a post paid water meter will also reduce unjust billing or confusion between landlords and tenants, where as you only pay for what you actually consume.

This in turn is also a risk reducing factor for landlords. In today's economy, utilities have become 50% of the actual rental fee, in some cases.

In order to solve this problem which is mainly seen in Metropolitan cities where it is either too difficult to obtain an accurate reading or tenants are making it too difficult for meter readers to take an accurate reading. Installing a prepaid water meter would be the solution. Since it works on a pay as you go basis, tenants will only have water if they purchase them. They in turn will also be protected from having to pay for another users miss use of utilities if for example they were living in a sectional title scheme, where bills are divided and you are billed based on an aggregate and not an actual reading per unit.

That being said, Prepaid water meters are not only for trouble areas or remote areas where access isn't easily granted. Sectional title schemes and body corporates can and do benefit from installing prepaid water meters into their developments. All metered environments prove to save money and create efficiency.

Installing a prepaid water meter or a prepaid system for other utilities like electricity and gas can help any individual, household or sectional title scheme become more energy efficient, cost effective and improve the quality of life with minimal initial investment cost.

Aerial view of typical agibloom.

Technology set to save Setumo Dam

GLOBAL water tech company, BlueGreen Water Technologies, in collaboration with Sedibeng Water, has begun implementing its innovative algae treatment solution at Setumo Dam on the Molopo River, North West Province

Using in-situ data as well as satellite imagery to identify and surgically treat toxic algal hotspots, Blue-Green's Lake Guard™ solution is anticipated to provide a lifeline to Setumo Dam, where drinking water operations have been severely impaired by years of uninterrupted algal growth.

This is the second major South African dam to be treated by BlueGreen following thousands of successful commercial applications around the world.

In 2015 it was estimated about 62% of South African water bodies were subject to toxic blue green algal blooms. This raised alarm bells around the safety of South African water sources, and the impact of contaminated sources on the environment, human and animal health, and the economy.

Last year marked a turning point in the fight against toxic blue-green algae in South Africa when BlueGreen introduced Lake Guard™ to the country. The company was tasked with a strategic intervention at Roodeplaat Dam, Pretoria, ahead of an international regatta championship. Following an interventional application of Lake Guard™, water quality tests and satellite images confirmed a significant drop in toxic cyanobacteria levels in the dam.

Cyanobacteria, which form blue-green algae blooms, are reported to infest around 60 million lakes around the world. Mostly left untreated, they increase in frequency and severity year on year, ultimately turning infected waterbodies into dead aquatic zones. In addition to creating hostile living conditions in the water, cyanobacteria release potent, and offensive smelling and tasting, metabolites and toxins, which present an immediate health risk to local communities. Both direct contact with, and breathing in the aerosol from, infested waters is dangerous.

Jurgens van Loggerenberg, GM of Blue-Green Water Technologies in South Africa, says the arrival of this cutting-edge technology in the country heralds a new dawn for local water resource management.

"Water bodies like Setumo Dam are in desperate need of intervention and rehabilitation. In a water-scarce country like South Africa, every drop of water in every lake, dam, river and stream is precious. Working with local government, we can turn the tide on contaminated water sources, helping to provide clean water for all, including underprivileged communities," says van Loggerenberg.

First SA Energy Performance Certificate issued

THE South African National Energy Development Institute (SANEDI) believes that the issuing of the first-ever Energy Performance Certificate (EPC) for a building in South Africa recently is a landmark achievement that will encourage energy efficiency across the board. According to the International Energy Agency buildings account for approximately 30% of global energy consumption and 40% of total direct and indirect CO2 emissions. These figures could easily grow in Africa – and particularly in South Africa – due to increasing urbanisation.

Admin B building at Stellenbosch University, which houses the vice chancellor and executive team, received the first-ever EPC for a building in South Africa, in recognition of its commitment to energy efficiency. Bluedust Engineering Solutions, Stellenbosch University's energy management consultants, were instrumental in achieving their EPC. The EPC was issued by Energy Management and Verification Services (EMVS) who is the first inspection body accredited by the South African National Accreditation System (SANAS), to assess and issue an EPC rating for eligible South African buildings.

Background to EPCs

EPCs rate buildings' energy performance from A to G, with A being the most energy efficient and G the worst, with D being the mid-point, when benchmarking against the average figures quoted in the national South African Building Standard SANS 10400-XA.

For the purposes of the EPC, a building's energy performance is measured in terms of kilowatt hours per square metre per annum (kWh/m2/pa) of net floor area in accordance with the National EPC Standard, (SANS 1544).

Barry Bredenkamp, SANEDI's General Manager for Energy Efficiency & Corporate Communications, explains: "Buildings must try and achieve at least a D-rating which is on par with the national benchmark. Their EPC must be displayed at the building entrance, no matter what their rating, in order to be compliant with the regulations.

"The regulations apply to non-residential buildings (specific occupancy classes) with a net floor area of at least 2 000m² in the private sector, and 1 000m² for buildings owned, operated or occupied by an organ of state."

Property owners and government entities have until 7 December 2022 to ensure that their buildings adhere to the regulations. Penalties for non-compliance have not yet been stipulated, and currently stand at the discretion of the Mineral Resources and Energy Minister, Mr Gwede Mantashe.

Bredenkamp concludes, "The national drive towards energy efficiency will unlock the wider value chain, as building owners look to implement more efficient systems. Economic activity will be stimulated, as building owners work towards achieving compliance in areas such as HVAC, lighting, building retrofit, energy monitoring and more energy-efficient appliances and equipment, to optimize and reduce energy usage. This will involve engineering firms and other Energy Service Companies (ESCos), who will typically be contracted to do these energy efficiency upgrades, thereby creating much-needed job opportunities in the energy sector."

Stellenbosch University Admin B building. Credit: Stefan Els.

New transformer monitoring technology gives speedy results

CONDITION monitoring specialists, WearCheck, recently invested several million Rand in four brand new laboratory instruments for their flourishing transformer division laboratories in Cape Town, Johannesburg and Durban.

Managing director Neil Robinson says the company's investment in the equipment has reduced turnaround times in line with customers' expectations, ensuring that transformer oil samples are processed and analysed even faster than before.

WearCheck's transformer division has added two new high-speed gas chromatographs (GCs) to the Joburg and Durban laboratories, and a new PCB (polychlorinated biphenyl) chromatograph, and a new HPLC (high performance liquid chromatography) in Cape Town and Durban.

Senior analytical chemist, Lynette Pillay, feeds samples into the new HPLC (high performance liquid chromatography) machine at WearCheck's transformer laboratory in Durban.

'Getting the analytical test results and diagnoses to our customers as fast as possible is high priority for us,' says Robinson. 'The new instruments have more than doubled our transformer sample testing capacity. Our Durban transformer division is now in a new, larger laboratory in Westville, where we conduct a wide range of specialist transformer monitoring techniques.'

The new Perkin Elmer GCs - designed and manufactured in The Netherlands - each have a carousel that can hold 120 prepared samples and standards. Added to the 80-sample capacity of the existing GCs in Durban, the sample turnaround time has been significantly reduced. The same instrument was bought for the Johannesburg lab, boosting their existing GCs.

'A great advantage of the new GCs is that they can be pre-loaded with samples before a weekend and they continue operating for 48 hours. Our older models require reloading every 24 hours,' says transformer division manager, Gert Nel.

'The primary function of the GC is to perform dissolved gas analysis (DGA) - a highly effective preventive maintenance tool which has formed part of WearCheck's condition monitoring programmes for more than 10 years,' says Nel.

Nel explains further: 'The new PCB instrument determines the presence of PCB in electrical equipment containing insulating oil, which must be tested at least once and after every maintenance event to determine the PCB level. According to the latest version of SANS 290:2016, the current maximum allowed PCB level in oil is 50 ppm (parts per million or mg/kg). If the PCB level exceeds this limit, the oil must be drained and disposed of in an approved manner. As PCB molecules are highly toxic, this is an important test in transformer maintenance and management for both health and environmental purposes.

'The additional HPLC,' continues Nel, 'separates mixtures of compounds in transformer oil to identify and quantify the individual furanic compound concentrations of the oil. The results enable our diagnosticians to predict the remaining useful life of the paper insulation of the transformer with high accuracy, giving a very good indication of the remaining useful life of the transformer itself.

'Our transformer customers in various business sectors such as mining, power generation, transport, manufacturing, industrial and marine maintenance are receiving their results at high speed, which enables them to make critical maintenance-related decisions in good time and reduce the risk of unplanned transformer failure,' says Nel.

For further information visit www.wearcheck.co.za or email support@wearcheck.co.za

UK Climate Investments delivers 254 MW of RE projects in SA

UK Climate Investments has marked the delivery of 254 MW of clean energy projects it has helped finance in South Africa following the March inauguration of Kruisvallei Hydro, a 4 MW run-of-river hydropower facility in the Free State.

Kruisvallei Hydro is the last of three renewable energy projects part-financed by the UK Government's International Climate Finance programme, UK Climate Investments, to have entered commercial operation. The milestone at Kruisvallei Hydro follows the successful delivery of the 110 MW Perdekraal East Wind Farm in the Western Cape province and the 140 MW Kangnas Wind Farm in the Northern Cape province in October and November last year.

UK Climate Investments' R253 million partnership with the majority black-owned and managed developer of renewable energy projects H1 Holdings has created around 385 jobs during construction phase and is expected to provide a further 195 jobs over the projects' 20-year lifecycle.

"In addition to supporting South Africa's low carbon transition by providing enough clean electricity to power nearly 200 000 homes per year, these projects have delivered opportunities for employment, skills development, and investment in rural communities across the region" said Richard Abel, Managing Director of UK Climate Investments

Nigel Casey, British High Commissioner to South Africa commented "As COP26 Presidency we are

Continued on P19

The Green Economy and Africa

The compelling case for hydrogen presented by Ian N Fraser, Chairman, African Hydrogen Partnership.

THERE have been several articles published recently that attack the burgeoning green energy economy. The tone and trajectory of these articles is reminiscent of those published during the 'fight back' by the tobacco industry in the seventies; when the seriously destructive effects of smoking became ever more apparent. Numerous articles were published that claimed that the medically demonstrated adverse effects of smoking were either untrue or exaggerated. It transpired that this was largely promoted and financed by the tobacco lobby.

It is also interesting to note that these anti green energy missives make little or no attempt to propose an alternative way forward, other than to imply that we should stay with our present destructive habit of burning of fossil fuels. In the case of an article by the founder of the Copenhagen Consensus, Bjorn Lomborg, Africa was included in a list of countries that cannot afford the cost of green energy.

The argument that is presented tends to be based on two issues. On the one hand, a totally spurious claim is made that green energy will be destructively expensive. Even if this were true, which it demonstrably is not, they seem to be arguing that we should carry on blithely to destruction – because it is too expensive to stop?

It also makes no sense to quote exaggerated numbers and attach these to green energies, without balancing this against the immense economic advantages that green energy will achieve. Using Africa as an example, the continent will benefit greatly from the economic benefits of generating, using and exporting green energy instead of importing fossil fuels at immense cost – both financial and environmental. Africa will become a net exporter of energy.

In a recent article by John Kane Berman, the benefits of green energy are brushed aside. He states that - *"sun energy and wind may come out of the sky, but the machinery to turn them into energy does not. That machinery requires mining, manufacture, and transport".* Well yes and the same is true of present energy sources and industries. The cost of the geological research, plus the tapping, processing and refining of fossil fuels is enormous. And will become more so as the resources dwindle. However, once the hydrogen economy is ubiquitous – the energy to mine materials, and to manufacture, provide, and transport the support equipment, will all also come from renewables via the green hydrogen economy. It should also be noted that virtually none of these materials will be consumed but will be mostly recyclable.

Another objection is raised based on the totally incorrect assumption that the green economy will depend on energy storage in chemical batteries. Kane Berman then seems to be under the impression that the green economy will be based on battery storage of energy to provide power when the sun is not shining or the wind blowing. This is certainly not the case. Yes, there is a rather inexplicable obsession with battery powered vehicles. This will be largely self-limiting for several reasons, including the fact that batteries deteriorate fairly quickly over their life span, eventually requiring expensive replacement. (A fact that is either denied or brushed aside by the battery lobby). In addition, apart from being useful for smaller local city run-around vehicles, batteries will never be able to provide viable power for heavy transport, aeroplanes, ships, etc. In addition, as Kane Berman rightly says, once batteries reach the end of their useful life we end up with masses of toxic un-recyclable chemicals.

The future is green hydrogen. This energy carrier can be generated anywhere, including in Europe. And when the sun or wind energy is not available, it can be augmented by green hydrogen that is generated in and exported from areas such as Africa – which has vast open spaces and abundant free energy in the form of sunlight and wind. The benefit to places such as Europe is that a fair amount of the energy required can indeed be generated locally by wind and sun, and the gaps in these energy resources can be filled by hydrogen delivered by tanker or pipeline from Africa. Is this a problem? Well, at present virtually ALL energy in the form of fossil fuel is imported from the Middle East or elsewhere. So the hydrogen economy represents a net gain for Europe – as it will only be importing a portion of the energy requirements. There is already a pipeline project under way to deliver hydrogen from Morocco to Europe.

And at what cost? It is reliably projected that within the next few years, as the economies of scale become apparent, the cost of green hydrogen for motor vehicle fuel, delivered at the dispenser, will be lower per energy unit than petrol or diesel.

The repeated claims that the green economy will be massively expensive are simply wrong. The technologies required to capture wind and sunlight, to generate hydrogen and then convert it into energy are all readily available and entirely re-cyclable. If we just consider the green economy in Africa, the continent will rapidly become one hundred percent independent of imported fossil fuels – saving the African economies billions in foreign exchange. As a further bonus, Africa will be able to export to Europe and other countries the large volumes of excess hydrogen generated – earning valuable foreign exchange revenues in the process.

Far from being destructively expensive – we cannot afford not to convert to the green hydrogen economy.

There are also issues raised around habitat loss from solar and wind installations. Yes, some areas will be covered by solar panels – with very little effect on habitat – either flora or fauna. Wind generators are not the prettiest objects on the landscape – but neither are the filthy oil wells, refineries etc. associated with fossil fuel. And, with the reduction in noxious and greenhouse gasses in the atmosphere there will still be a clear net gain for our planet.

Hydrogen is the future. This is recognized by the fact that virtually every motor manufacturer is already producing or developing hydrogen powered vehicles that have the performance and range equivalent to petrol or diesel vehicles. And, a hydrogen powered vehicle can be re-fueled in a couple of minutes; unlike the couple of hours required by a battery vehicle after a trip of only a few hundred kilometres maximum.

Design could enable longer lasting, more powerful lithium batteries

by David L. Chandler, Massachusetts Institute of Technology

LITHIUM-ion batteries have made possible the lightweight electronic devices whose portability we now take for granted, as well as the rapid expansion of electric vehicle production. But researchers around the world are continuing to push limits to achieve ever-greater energy densities—the amount of energy that can be stored in a given mass of material—in order to improve the performance of existing devices and potentially enable new applications such as long-range drones and robots.

One promising approach is the use of metal electrodes in place of the conventional graphite, with a higher charging voltage in the cathode. Those efforts have been hampered, however, by a variety of unwanted chemical reactions that take place with the electrolyte that separates the electrodes. Now, a team of researchers at MIT and elsewhere has found a novel electrolyte that overcomes these problems and could enable a significant leap in the power-per-weight of next-generation batteries, without sacrificing the cycle life.

The research is reported in the journal Nature Energy in a paper by MIT professors Ju Li, Yang Shao-Horn, and Jeremiah Johnson, postdoc Weijiang Xue, and 19 others at MIT, two national laboratories, and elsewhere. The researchers say the finding could make it possible for lithium-ion batteries, which now typically can store about 260 watt-hours per kilogram, to store about 420 watt-hours per kilogram. That would translate into longer ranges for electric cars and longer-lasting changes on portable devices.

The basic raw materials for this electrolyte are inexpensive (though one of the intermediate compounds is still costly because it's in limited use), and the process to make it is simple. So, this advance could be implemented relatively quickly, the researchers say.

The electrolyte itself is not new, explains Johnson, a professor of chemistry. It was developed a few years ago by some members of this research team, but for a different application. It was part of an effort to develop lithium-air batteries, which are seen as the ultimate long-term solution for maximizing battery energy density. But there are many obstacles still facing the development of such batteries, and that technology may still be years away. In the meantime, applying that electrolyte to lithium-ion batteries with metal electrodes turns out to be something that can be achieved much more quickly.

New electrolyte material could increase current Li energy density by 60%, giving EV's greater range, and perhaps faster charging.

The new application of this electrode material was found "somewhat serendipitously," after it had initially been developed a few years ago by Shao-Horn, Johnson, and others, in a collaborative venture aimed at lithium-air battery development.

"There's still really nothing that allows a good rechargeable lithium-air battery," Johnson says. However, "we designed these organic molecules that we hoped might confer stability, compared to the existing liquid electrolytes that are used." They developed three different sulfonamide-based formulations, which they found were quite resistant to oxidation and other degradation effects. Then, working with Li's group, postdoc Xue decided to try this material with more standard cathodes instead.

The type of battery electrode they have now used with this electrolyte, a nickel oxide containing some cobalt and manganese, "is the workhorse of today's electric vehicle industry," says Li, who is a professor of nuclear science and engineering and materials science and engineering.

Because the electrode material expands and contracts anisotropically as it gets charged and discharged, this can lead to cracking and a breakdown in performance when used with conventional electrolytes. But in experiments in collaboration with Brookhaven National Laboratory, the researchers found that using the new electrolyte drastically reduced these stress-corrosion cracking degradations.

"There's no expensive elements, it's just carbon and fluorine. So it's not limited by resources, it's just the process," he says.

This article has been edited for length. To read the full article, visit https://techxplore.com/news/2021-03-enable-longer-powerful-lithium-batteries.html?utm_source=nwletter&utm_medium=email&utm_campaign=daily-nwletter

UK Climate Investments delivery

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pressing for greater ambition globally to meet the Paris Agreement's goals. This needs us to accelerate the global transition to clean power, benefitting from low cost and sustainable energy sources such as the Kruisvallei Hydro plant.

The UK is committed to supporting green, resilient and inclusive recovery from the COVID-19 pandemic and I am delighted that this innovative UK programme, run through UK Climate Investments and Macquarie, has supported job creation, localisation and black ownership in this sector."

The CEO of H1 Holdings, Reyburn Hendricks remarked "Much needed funding is required to transform South Africa's energy mix and promote cleaner, greener energy systems. Our partnership with UK Climate Investments has been critical to the delivery of these projects, which will play a role in supporting South Africa to build back better and greener from the COVID-19 pandemic."

The three projects will help avoid approximately 844 000 tons of greenhouse gas emissions per annum over their lifetime, which is equivalent to taking 182 000 cars off the road for a year. In addition to supporting South Africa's low carbon transition, each project has also committed a percentage of its annual revenue to community initiatives supporting education, housing and sustainable enterprise development in surrounding areas.

Through the UK International Climate Finance, UK Climate Investments has committed approximately £70 million over three years to support the development of clean energy and green finance markets in sub-Saharan Africa. UK Climate Investments is a cornerstone investor in Revego African Energy Limited, a first of a kind dedicated renewable energy public yieldco in sub-Saharan Africa which intends to list on the Johannesburg Stock Exchange. UK Climate Investments is also helping to finance the construction of affordable green housing in Kenya.

Young Engineers Motor Development Programme

By Zintle Maliwa, Marketing Assistant

The College of Cape Town's YEMDP modified and re-built race car. Images supplied by Reuben Mokotedi.

The student modified and re-built racing car by the College of Cape Town's Athlone Campus Automotive Motor Mechanic students, under the Young Engineers Motor Development Programme (YEMDP) has thus far participated in four competitive Clubman's saloon events/races (entry class X). The vehicle is currently being raced (driven) by Mr Lucin Downes, Facilitator at Athlone Campus for Automotive Motor Mechanic. After each race, the team made up of the students, educators/lecturers and facilitators, assemble for a strategic and tactical debriefing session to discuss the car's performance, explore opportunities for increasing output and remedial action for imperfections.

Mr Reuben Mokotedi, Senior Lecturer for Automotive Motor Mechanic said, "The vehicle recently underwent Dyno Testing and Turning with RBT performance. A dynamometer is a device for simultaneously measuring the torque and rotational speed (RPM) of an engine, to calculate its instantaneous power and usually displayed by the dynamometer as kilowatts (kW) or brake horsepower (bhp). With the Dyno results, significant adjustments are already made to get more output from the car. Modification to increase the output of the car within the guidelines and specifications is all part of racing. With each race, there are new challenges and opportunities, a different adjustment, an addition in the engine bay, a modification here and there, creating a whole new dynamic work environment for the students ".

The College wants to extend the YEMDP, a second car is already fitted with a race standard roll cage, the built-up of this car is scheduled for later on in the year, with entry proceeding in the new academic and race calendar year. The additional vehicle means that more students can participate in the YEMDP and receive exposure. There is good camaraderie among the other Clubman's participants at the track, and some teams have offered to host students as pit crew on their vehicles. We also have students that are marshalling race events at the track, giving our candidates a wider range of duties and coverage while at the track.

"I would like to encourage students to study Automotive Motor Mechanic. Motor mechanics is our game, if you are a petrol head and love working on cars, this is the program for you. There are different career streams to be followed within the field, and the field is always expanding, with consistent new technological advances, making for growth opportunities and expansion within the field, even expanding into other engineering fields" said Mr Mokotedi.

College of Cape Town; First TVET Trade Test Chef and Accredited Centre in SA

Marsha Solomon, former Program Manager of Hospitality and Catering who is currently a Curriculum Adviser at the College of Cape Town, formed part of the Trade Test Work Group (TWG) in 2015 who developed the first Trade Test for the Chef industry in South Africa. She worked alongside eight other members from industry and private culinary schools to realise this dream

for many Chefs in South Africa whose culinary skills were previously not recognized as an official trade. The development of the Chef Trade Test took a persevering four years to develop. Once completed, the developers were the first to be trade tested. As one of the developers, Mrs Solomon completed her trade test in February 2019 and successfully achieved the outcome of the skill.

"it is important to keep abreast of what is current and lead by example," says Mrs Solomon. She has been registered at the College of Cape Town as the first TVET Trade Test Assessor for the new QCTO Chef qualification and looks forward to assisting many skilled chefs in the industry to also achieve their "Red Seal" certificate. All Chefs should aspire to complete their Trade Test. This will open the door to many positive work prospects in South Africa and abroad."

Mrs Solomon has since managed to receive Trade Test Centre accreditation for the College, making the College of Cape Town the first TVET college in South Africa to be a Trade Test Centre for Chefs in the culinary industry.

higher education & training
Department: Higher Education and Training
REPUBLIC OF SOUTH AFRICA

COLLEGE OF CAPE TOWN
Inspiring minds

College of Cape Town's Plumbing Apprentices participate in a World Plumbing Day CSI initiative to refurbish the Holy Cross Children's home

Sharmila Cloete, who is currently an apprentice plumber at the College of Cape Town, Thornton Campus, was the only female who formed part of a team that took part in the Corporate Social Investment (CSI) initiative to refurbish the Holy Cross Children's home in Parow Valley. Sharmila Cloete worked along with her fellow apprentice plumber students and professional plumbers. The areas that needed attention in the Children's Home were identified and groups were formed to focus on the different areas identified.

The plumbing initiative included the replacement of sinks, taps, showers, cleaning pipes and maintenance in the main buildings in the old age home. South Africa is faced with a shortage of skills, and those skills include plumbing.

College of Cape Town, Thornton Apprentice

Shamiela Cloete fixing a leaking basin

"Most people tend to think that plumbing is a male's job. I am working so hard to change that mindset. Whatever a person desires to be, he/she can be. In my community (Bishop Lavis), we have a lot of dropouts and I want to be an inspiration to my community, make those dropouts and gangsters see that they can still change their lives. It is not about where a person comes from but it is about where a person is going. I love sharing my knowledge" Said Shamiela

Plumbing is recognised as one of the scarce skills in South Africa. The Department of Higher Education and Training is developing a strategy to support the Economic Reconstruction and Recovery plan. Plumbing is one of the skills needed in infrastructure investment and delivery. The department has also made funds available to fund the plumbing apprentice as a means of addressing the shortage of skills.

College of Cape Town for TVET

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Concrete training opportunities now for W Cape students

WESTERN Cape members of the construction and ancillary industries now have unprecedented opportunities to expand their concrete knowledge. The School of Concrete Technology's offering of online training this year covers 10 courses, aimed at diverse levels of competency in the industry.

SCT, which has over many years evolved into South Africa's oldest and most respected concrete technology training facility, is now part of the newly-established Cement & Concrete SA (CCSA). CCSA, a non-profit entity, was established through the consolidation of The Concrete Institute (TCI), Concrete Society of Southern Africa (CSSA) and the Association of Cementitious Material Producers (ACMP).

John Roxburgh, senior lecturer at the School of Concrete Technology, says whereas in the past potential students in the Western Cape were offered only a handful of live courses in Cape Town every year, the introduction of online training by the SCT now means hundreds of Western Cape students could register and receive such essential training.

"The time involved in attending the courses has also now been drastically reduced. The courses normally presented live stretched over one to five days but, in the online environment, the training can be stretched over a few more days to cater for students who need to do most of their studies after work. SCT is also offering substantial discounted costs this year," Roxburgh explained.

The courses for which "flexitime" online training is now nationally available are:

- SCT10 "Introduction to concrete": A course recommended for small-, medium- and micro-enterprises, junior technical and sales staff or any individual seeking a short introduction to concrete.
- SCT12 "Mortars, plasters, screeds and masonry": Originally developed to assist NHBRC inspectors, the course explains best practices for sand-cement mixes, what can go wrong with it, and how to prevent such problems. It is ideal for masons, those managing projects, and people who will be assessing the finished work.
- SCT13 "Making concrete bricks and blocks": A course that provides rudimentary understanding of how to manufacture masonry units that could become the cornerstone of a new business.
- SCT15 "Concrete for batchers and batch plant staff": This course covers important training on how to produce quality readymix concrete.
- SCT20 "Concrete practice": Recommended for foremen, clerks-of-work, technicians, supervisors, sales and technical staff in the construction as well as mining industries.
- SCT21 "Concrete industrial floors on the ground": Aimed at helping engineers and contractors by giving a broad, detailed and practical overview of all facets of industrial floor construction.
- SCT30 "Concrete technology": An intensive course for civil and structural engineers, experienced technicians and technologists, providing detailed knowledge of how cement and concrete works. Recommended for electrical, mechanical and mining engineers to meet their mining qualification requirements.
- SCT36 "Properties of concrete for the structural designer and constructor": A special course for engineers with experience or training in concrete technology to refresh their knowledge on important concrete concepts.
- SCT41 and SCT42 "Concrete technology and construction (Stage 2 and 3)", offered by the Institute of Concrete Technology (ICT) of London: These are ideal bridging courses for potential candidates for the intensive SCT50 "Advanced Concrete Technology" diploma, the world's leading qualification in concrete technology, run at the School of Concrete Technology every two years.

Roxburgh says the online versions of the training courses have been enthusiastically welcomed by Western Cape students. "The lockdown has given people more time to study, they have learnt how to use online meeting platforms such as Zoom and Teams, and the discounted tariffs now offered by the School has also been a major incentive. The fact that we can offer training for a specific company's personnel - at a suitable time for the client - also means that staff productivity can be maximised as there is no travel or lecture room time involved. Furthermore, as the lecture sessions are recorded, a delegate who misses it can view it later," he adds.

John Roxburgh.

For more details about the courses, email sct@cemcon-sa.org.za or phone 011 315 0300 or visit www.cemcon-sa.org.za

Self-belief: The final hurdle for learnerships

Five reasons that learnerships deserve more recognition from learners and employers alike.

RAJAN Naidoo, the Managing Director of EduPower Skills Academy, says that he does not understand why learnerships continue to be undervalued and undermined by South Africans: "Learners and sponsors alike must come to the realisation that learnerships have the greatest potential for closing the experience gap in South Africa."

Rajan says that for unemployed individuals, learnerships provide valuable work experience and a formal qualification; while employers sponsoring learnerships gain concomitant SARS tax benefits and B-BBEE value, as well as a talent pool of individuals with relevant, quality skills.

"What more proof do we need that learnerships are an instrument of compounded value for all stakeholders?" he asks.

Rajan shares five reasons why learnerships should be considered as South Africa's most powerful catalysts for employment:

1. Meaningful training

Learnerships promote access to education and training as they allow unemployed South Africans, specially those with disabilities, to get started on their careers while studying a formal qualification.

2. Relevance to business needs

Learnerships are developed by the industry for the industry in consultation with all related stakeholders, making the learning programmes and qualifications relevant to the skills required for an occupation. In addition, businesses sponsoring learnerships have the opportunity to collaborate with training providers in customising learning programmes to meet specific workplace needs.

Rajan Naidoo.

3. Improved skills and work performance

With 70% of a learnership being focussed on work experience, learnerships are more effective in delivering the practical application of learning than most other formal qualifications. Learners acquire new knowledge and skills which are immediately applied and tested in the workplace, giving companies sponsoring employee learnerships the opportunity to raise skills levels and improve work performance.

4. Recruitment pool of trained employees

A learnership is a tool for multi-skilling as it develops the competence of learners in every component of the work processes of an occupation. An example of this is the fact that many companies will not hire graduates from university until they gain experience and can demonstrate a work history.

5. Return on investment for training

Learnerships are of no cost to the learners and with SETA's, B-BBEE sponsors, government and SARS providing a financial framework including learner remuneration, individuals can earn while they learn. For companies, the costs of learnerships can be recouped in many ways including higher returns from the Skills Levy, increased grant disbursements, tax rebates and points for Skills Development on their B-BBEE scorecards. So learnerships really are a win for business and a win for learners.

Rajan concludes: "The learnership route is by far South Africa's most exciting employment enabler. They offer actionable opportunities through with individuals and companies can address our nation's chronic skills shortage in order to build a capable labour force. As such, learnerships deserve more recognition on the education spectrum. History will record whether or not we seized this as an opportunity."

Skills registration – time running out

The WSP and ATR form part of Skills Development, which is a priority pillar on the BEE Scorecard.

THE World Economic Forum has prioritised the reskilling and upskilling of a billion people within the next decade. They have invited nations like South Africa to join the movement by reviewing its education, training, and development plans with the intention on reskilling or upskilling the workforce.

President Cyril Ramaphosa echoed this vision in his State of the Nation Address (SONA2021), where he advised that government would be releasing the long-awaited critical skills list for South Africa. "Skills Development plays a vital role in the growth of any country's economy, service delivery industries and technological improvements. This is imperative in the wake of the current pandemic so the President's commitment to this sector is crucial for skills, and social development," says Daniel Gibhard, CEO at SDC (Skills Development Corporation).

To effectively reskill a team or group of people requires funding. Fortunately, in South Africa, our skills development sector is governed by the Skills Development Act that aims to improve the quality of life for workers, their prospects of work and labour mobility. This provision allows for South African businesses that meet the necessary legislative requirements, to claim up to 60% of their skills development levy back from their specific SETA (Skills Education Training Authorities) provided the required skills development submissions are made.

One of which is the Workplace Skills Plan (WSP) which is a plan intended to document and address the skills needed within an organisation. This is significant in a tough economic climate as businesses are afforded the privileged opportunity for companies to focus and develop specific skillset shortages that can help both the business itself, and its most valued asset - the people, grow.

The governance around skills development and the applications thereof is strictly controlled. An Annual Training Report (ATR) needs to be included with the WSP submission, and this has to be done by a Skills Development Facilitator or qualified individual. "Amidst a sea of corruption uncertainty, the idea of government prioritising education for our people is reassuring, especially as the process is so strictly controlled," says Melissa van Aswegen, ETQA Manager at The Skills Development Corporation.

The submission of the WSP is made by way of a proposal or skills development plan that complies with the Skills Development Act's legislative obligations. Any company that has a total annual staff payroll of more than R500k is required to pay a skills levy.

Failure to submit will result in the following;

- No points for the Skills Development Element on your BEE Scorecard
- Mandatory Grants cannot be claimed back from your SETA
- A drop in your BEE Level as Skills Development is a Priority Element

The deadline to submit WSP's and ATR's is 30 April 2021.

Year past a good one for cranes

2020 will be remembered as a difficult year, particularly by many in South African engineering manufacturing. But there were companies that came through it strongly.

One of these was Condra, which reported steady sales of overhead cranes, hoists, end-carriages and other components throughout the year into central Africa, South America, North America and Europe.

As 2020 kicked off, the company delivered its first fully automated crane to Lonmin's Marikana mine. The complete automation of this 16-ton, 16 metre-span double-girder electric overhead travelling grabbing crane represented a significant technological step forward for Condra, which now offers automation across its product range as an alternative to traditional pendant and remote control.

The automated Marikana crane features remotely programmable variable speed drives fitted throughout, delivering maximum speeds of 10 m/min on the lift, and 20 and 40 m/min on the cross-travel and long-travel respectively. Pre-programmable control of the four long-travel motors enables precise crane positioning accurate to within 5 mm.

Condra telescopic crane under test.

The Marikana crane delivered, intermittent refurbishment work materialised as a result of customers wanting immediate cost savings over buying new, and needing production to continue with an as-new machine already familiar to operators without need for retraining.

Besides its own machines, Condra refurbished competitors' cranes and a small number of overhead units originally made by companies now closed. All quotes for refurbishment included the option of technical upgrade.

Despite the advantages offered by refurbishment, orders for new cranes remained significantly high. Although prices are higher than refurbished equivalents, new cranes promise lower operating costs, reduced projected overall lifetime costs and more efficient operation resulting from increased speeds, lower weights and lower electricity consumption. Modern hoists are as much as 50% lighter than they were 30 years ago, and the consequent reduction in crane weight reduces the rate of wear on the overall factory structure.

In April, Condra began manufacture of a technically complex maintenance crane for a dragline excavator house, where working space is severely constrained by dragline motors, gearboxes and large hydraulic cylinders.

Overcoming these restrictions, the crane's 12,5-ton hoist was designed as a beam-changing machine with an interlock to prevent the hoist from leaving it unless the crane is securely connected to the selected beam. An anti-derailment limit switch prevents hoist movement until beams are locked together.

The result of this arrangement is that the hoist can physically separate from the crane to move away along individual roof beams as an independently operated underslung hoist, servicing areas both inside and outside the house away from the central working space.

Other orders of equal technical challenge were received for telescopic cranes capable of delivery and retrieval beyond the supporting gantry. Multiple double-girder telescopic machines were last year installed at a chemicals plant and refinery furnace.

There were also high-lift cranes and hoists manufactured throughout 2020. The record for the year was a lift height of 41 metres, though the installed base has for many years included lift heights as high as 150 metres. Condra is widely recognised as the leader in high-lift expertise in central and southern Africa.

Management at Condra is quietly confident about prospects for the year ahead, though they consider it likely to be as challenging as the one recently ended.

Cranes for "green" power generation at biomass power plant

DEMAG, Germany, will supply Green Steam Hürth GmbH, a subsidiary of E.ON, with three process cranes equipped with grabs for a heat and power plant project. The project comprises the build of a biomass power plant with an output of 20 MW of electricity and 87 MW of heat energy at the site of the UPM paper plant in Hürth near Cologne, Germany. This project will be the first to make use of Demag Remote Operating Stations (ROS), which enable the remote control of crane systems.

The power plant, where E.ON is investing some EUR110 million (R1,54bn) is due to go online in mid-2022 and will provide heat for the Hürth paper factory whilst at the same time, feed renewable energy into the grid. UPM produces more than 300 000 tons of high-quality newspaper made from recycled paper at the factory every year.

The paper production operation needs a lot of heat (in the form of steam) and the combined heat and power generation is particularly efficient. In this case, it is also particularly sustainable, since the power plant is fueled by wood residues, which E.ON procures in the region. According to E.ON, this will provide an efficient and reliable supply of virtually CO2-neutral energy to an industrial operation that requires a lot of energy.

Demag will deliver two process cranes for the automated continuous supply of wood to fire the boiler in the power plant. Some 45 tons of wood need to be fed around the clock every hour. The two double-girder cranes, which have a load capacity of 14 tons and a span of 20.6 metres, will travel on a crane runway measuring almost 100 metres in length. All of the crane travel drives feature variable speeds; energy recovery when braking and lowering loads enhances the energy efficiency of the cranes. Hydraulic multi-jaw grabs with a capacity of 12 m³ will be used as load handling attachments.

Cranes continuously feeding fuel

The crane systems will largely operate in automatic mode. The Demag Warehouse Management System (WMS) software will ensure, for example, that the bunkers are cleared, that the boiler is continuously fed with the required quantities of wood and that both cranes complete their coordinated tasks.

Not only the fuel, but also the ash as a residual material is handled by a Demag crane. The Demag engineers have specified a smaller double-girder process crane with a 5.4t load capacity and a hydraulic grab for this task.

The three crane systems will operate under challenging conditions with high humidity (up to 100%) and high dust levels. They are ideally suited to meet these requirements, as Demag has already designed and delivered many cranes for refuse recycling installations and biomass power plants all over the world.

Since it is very difficult to view the entire very long fuel bunker from a conventional crane cab, the project engineers at E.ON decided in favour of a special Demag option. If the cranes need to be operated under classic manual control, this can be done via a ROS, which also serves as a monitoring station when the cranes are running in automatic mode.

ROS is a remote control station that includes all operating functions of a process crane with a crane operator seat – except that the operator does not view the crane and its operating environment direct, but via a widescreen monitor that shows images from several cameras in real time. The screen layout can be configured to meet process requirements, with information relevant to the process being automatically displayed.

E-commerce spike leads to major investment in warehouse space

E-commerce requires three times the logistics space of traditional storefronts.

A massive spike in online sales during the Covid-19 crisis is expected to fuel unparalleled growth in e-commerce operations in South Africa. The general rule of thumb is that e-commerce requires three times the logistics space of traditional storefronts. "Therefore it is reasonable to assume that we will see a much greater investment in warehouse space to support local e-commerce. In addition to this, warehousing demand might be accelerated by the growth of e-commerce in the rest of Africa," comments Paragon Group Director Estelle Meiring.

Improvements in racking, logistics and building technology have seen an increase in warehouse clear eave heights, often as high as 15 m, as well as an increase in yard depths, sometimes in excess of 45 m. "We have also noticed more requests for cross-docking and an increase in the number of warehouse doors required, as inputs and outputs are maximised," reveals Meiring. There is a strong move towards sustainability, specifically the installation of photovoltaic panels to reduce reliance on external power supply and cut costs over time. Other key sustainability features include natural light, better building insulation and water conservation. Security remains a major concern.

Another emerging trend is on-demand warehousing, dubbed the 'Uberisation' or 'WeWork' of warehousing, which sees services and space acquired on a 'pay-per-use' basis. This method of warehousing gives customers more choice and flexibility over location, cost and supplier, either as a complete substitute to owning warehouses, or as a partial replacement when a new warehousing location becomes necessary.

"The emergence of on-demand warehousing serves as a response to the increasing number of supply chain challenges that businesses are up against," points out Meiring. Many users of warehouse space do not want long-term leases in a period of inventory fluctuation and uncertainty. Predictions are that even South Africa's larger retailers will need immediate space for both slow and fast-moving goods while they assess their long-term distribution plans.

The Cape Town market remains unique in that it still has prime vacant land for the development of large distribution warehouses in close proximity to Cape Town International Airport. These sites are centrally situated to consumers, and are an ideal location for online sales related warehousing, distribution and fulfilment. Additional Western Cape areas that show a lot of promise are the Belville South and Brackenfell and Western Coast nodes. Other parts of the country expecting a major uptake in recently developed industrial areas are Midrand and Pomona in Gauteng and Riverhorse Valley in KwaZulu-Natal.

An interesting trend in the US is that e-commerce and omni-channel retailers are expanding their distribution networks, working from multiple, smaller distribution warehouses closer to customers, rather than from a centralised distribution centre, due to changing demand. Where five-day delivery times were once considered standard, consumers now routinely expect next-day or even same-day delivery. In line with this, Amazon has now started acquiring some failed malls, using the land to develop online fulfilment centres.

"This makes a lot of sense, as these malls are perfectly located close to consumers and major transport routes," argues Meiring.

"Although our e-commerce industry is a lot less mature than that of the United States, it would be interesting to see if we will follow the same trend in years to come, which might change the way we see distribution centre nodes in future," concludes Meiring.

Futureproofing warehousing and logistics

THE fundamental shift in shopping habits – the explosion in online shopping and the subsequent impact this has had on warehousing – is forcing many businesses to rethink their commercial strategies and future-proof their enterprises.

Navigating Panic-Buying

There's no denying that both online and offline retailers have had to navigate the problem of panic buying. The pressure on retailers to have available stock all year round has never been greater – and this extends beyond busy festive periods.

In March of last year in the UK, supermarkets found themselves in an unprecedented situation. The sheer volume of home deliveries prompted businesses to actively seek anywhere from 4 500 to 14 000m² of additional storage space. At the height of panic buying, established supermarkets needed to find 90 000m² of space to cope with consumer demand and that's just for essential supermarket produce, like pasta, tinned goods, and toilet rolls.

This bucked a decades-long trend where customers moved away from the large weekly shop towards small convenience store shopping, forcing warehousing and logistics to adapt quickly to make sure that retail outlets had consistently stocked shelves.

One way that the logistics sector can future-proof operations in times of panic buying is by implementing AI to predict consumer trends. The ability for suppliers to predict items that are likely to be in high demand early will allow them to prioritise supply, thus lorries can be proactively despatched, preventing supply chain bottlenecks, making sure that retail outlets have enough stock to cope with consumer demand at any one time.

Space Saving Solutions

In the first half of 2020 alone, demand for warehouse space in the UK increased by 51%. This highlighted a short and long-term sustainability issue that had to be addressed – something that can be solved with environmental technology.

Technologies like automatic channel baling presses can compress packing materials, such as plastic, compressing large amounts of waste into bales which can be easily recycled, promoting both sustainability, and freeing up much-needed space.

Logistics Sustainability

One such solution that Amazon has already implemented is the use of Assisted Guided Vehicles (AGVs) or robots that transport inventory around a warehouse. Using sensor technology and a programmed track direction, AGVs can locate product towers and transport products to manpower for shipping.

Yet another technological evolution is forklift automation. Using artificial intelligence and edge computing, forklifts can be automated so that no human interaction is required for operation.

Mobile docking ramps

Mobile docking ramps with adjustable height settings will likely become a staple in warehouse facilities across the UK because they will be able to provide loading bay solutions to vans of all sizes, allowing goods of all descriptions to be loaded and unloaded with ease and safety.

Smart Packaging

In recent years, sustainability has become a key aspect of business models. The pandemic hasn't changed this – if anything it has accelerated decision-makers ambitions to develop smart packaging solutions.

A benefit to smart packaging is that it has the technology to sense changes in the environment which can put the contents at risk. Think anti-counterfeiting measures and the monitoring of microorganism growth.

Then there's branding. Consumer trust is paramount. Smart packaging allows businesses to display marketing and branding to reinforce messages and values.

Future proofing is the key to sustained solutions

If the pandemic has taught the warehousing and logistics sectors anything it's the importance of futureproofing and that the sectors need to be proactive instead of reactive in their operations.

By implementing technological solutions now, businesses can safeguard their operations, prompting, not only a seamless transition for when operations resume normalcy but, a clear direction in the years to come.

Original article appeared in https://warehousenews.co.uk/ has been edited for length.

10 best practices for managing cold chain logistics

By M Keshavdas.

IN recent years, cold chain logistics has become an increasingly complex process, thanks to stringent regulatory requirements and rapidly evolving demand in the food, medical and pharmaceutical sectors.

Increased disposable income has led to a worldwide increase in demand for fresh fruits, fish and meat and a preference for farm-to-table rather than frozen.

In the Pharmaceuticals/ Medical sector, a movement towards structurally complex, biotechnology and specialty formulations, as well as complex clinical trials has raised the stakes exponentially for cold chain logistics.

1. Shipment preparation

Most cold chain equipment is designed to maintain temperature at a specified level, not to bring the shipment to the required temperature. Hence cooling systems needs to be employed.

The demand for fresh produce is conditional- a single slip could affect the freshness and impact demand. Hence along with temperature, checking humidity and hygiene is also critical.

2. Ensuring the 'Cold' in the Cold Chain

Today, Cold chain technology offers temperature standards that can cater to a wide variety of products – from cryogenic (-135°C) to deep frozen, frozen, chilled and various controlled room temperatures (CRTs).

It is also a versatile unit that can carry 20-25 tons of temperature sensitive cargo; hence it can be effectively used as an intermodal transport system for global markets.

To prevent or control the ripening of fruits in-transit, atmospheric control is imperative. This can be achieved by wrapping the shipments in polyethylene bags, which will prevent gas from permeating.

Minimizing handling as well as unloading time is also the key to maintaining the integrity of the shipment.

3. Choice of packaging

Packaging can be active or passive in terms of its approach and efficacy. Active packaging involves an energy source and thermostatic control (e.g., in the case of a reefer), plus monitoring mechanisms such as GPS and telematics.

Passive packaging involves conventional packages that use water/ ice/ dry ice to keep the product at required temperature. These shipments may be vulnerable to changes in ambient temperature, and to delays and disruptions in transportation.

4. Specialized cold chain networks

In the case of temperature sensitive pharmaceutical products, all equipment and facilities at the logistics end must be highly specialized to handle these products, and actually serve as an extended arm of the manufacturer.

E.g., DHL has a Life Sciences and Healthcare division, which maintains certified stations near major airports, that operate on global GDP (Good Distribution Practices) standards.

5. Maintaining SOP's globally

Transporting high value goods globally through the cold chain requires well thought out policies and procedures.

The foundation for this is an assessment of in-transit / storage requirements and risk factors across the supply chain.

This could include what to do if there is a flight delay or if a container gets ruptured and product starts leaking etc.

6. Smarter cost management

While transporting pharmaceuticals, rather than managing costs on a purchase price basis, it is smarter to look at TCO (Total cost of Ownership).

This incorporates direct as well indirect costs such as risk of penalties, patient safety, loss of business/ market share/ brand value, investor sentiment etc. The hidden costs are the real risks facing the business, should the cold chain fail.

7. Investing in technology

In the US, nearly a third of all food produced ends up being wasted. Out of this, about 12% occurs during the distribution process.

To avoid spoilage, it is absolutely critical to ensure that food stuff is maintained at a specified temperature during transportation.

8. Building skilled teams

Physical assets and technology can create a cold chain, but it is people with right skills that actually make it run. Be it food products or pharmaceuticals, logistics partners need to build teams that have knowledge and experience on the respective categories – product needs, handling of shipments and maintaining SOP's.

9. Continuous compliance

With the introduction of the Food Safety Modernization Act (FSMA), the FDA has started to take a proactive approach towards food safety, and preventing food contamination.

10. Leveraging AI

The power of Big Data can be leveraged to better manage the cold chain. By working with data generated across thousands of shipments, it is possible to identify risk trends and devise ways to mitigate those risks.

Conclusion

The times are changing fast – as the global markets open up for food and pharmaceutical products, distribution processes and regulatory requirements will get more and more complex.

After all, when it comes to cold chain logistics management, can you really afford to have any weak links?

Tasty returns predicted for firms that invest in cold chain technology

By Ian Putzger, Americas correspondent for www.theloadstar.com

COMPANIES in the cold chain logistics sector are facing mounting pressure to invest in automation and digitisation.

And the possible returns look tempting: the global smart food logistics market is projected to more than double by 2025.

Pressure comes from a convergence of market and regulatory dynamics and the rising importance of technology in cold chains.

According to a recent study from Research and Markets, rapid changes in consumption habits and tighter regulations for packaging and storage have shifted the balance in the food supply chain from producers and packers to retailers.

They are pushing for zero contamination, improved storage and faster retrieval operations, thus increasing the need for more automation and technology.

For example, FreezPak Logistics is building a 13 000m² facility near Port Elizabeth in New Jersey (USA) that will be equipped with an automated storage and retrieval system, the company's first, using 12 robots to store and retrieve products.

Sensors are popping up along food supply chains to attain real-time visibility of shipment locations and ambient conditions. This is receiving additional impetus from grocery brands and restaurants that have embraced food delivery apps to keep going in lockdowns, and they look set to keep using these beyond the pandemic.

And they are expected to leverage artificial intelligence to a larger extent, to go beyond predictive

planning to identify trends that impact supply chains and food quality.

A key objective of such initiatives is to reduce the amount of food wasted between producer and consumer. By one estimate, as much as 14% of produce loads is deemed unusable on arrival at retailers and thrown away.

Much of this is down to cold chain failure. Over the past three years, freight transport and logistics insurer TT Club found that incidents related to temperature control issues were the third-largest category of problems. Nearly 30% were due to some miscommunication of operational instructions, while 23% were down to temperature setting errors and another 25% by reefer equipment failure or damage.

Compliance and regulatory factors are also fuelling the need for better control of perishable supply chains. Official standards for processing and packaging have been rising, a trend that is expected to continue.

In November, the US Food and Drug Administration unveiled its New Era of Smarter Food Safety blueprint, which marks a new approach of the agency to "create a safer and more digital, traceable food system".

Covid-19 has added to the pressure in terms of compliance. While no traces of the virus have been found on food, it was identified on packaging of seafood products shipped to China last year, causing extensive inspection of food imports that have resulted in serious delays.

While many of these issues are beyond the control of individual players in the cold chain, everybody needs to be on the same page to ensure successful collaborative action, says Mike Yarwood, MD of loss prevention at TT Club.

"As the demand for unitised transport of perishables continues its upward trend, it is vital that the transport links in the chain become more informed about all the relevant processes to improve the collaborative efforts of all stakeholders," he stressed.

This all points to a greater emphasis on digitisation for enhanced traceability of perishables and improved data flow between all parties involved in cold chains.

Inevitably, this is also leading to a rising call for digital platforms.

One recent entrant is Hwy Haul, created by two former Walmart veterans. It connects shippers of fresh produce directly with truckers and its founders claim the platform reduces the number of food shipments rejected by retailers to just 3-4%, thanks to route optimisation, real-time load tracking and monitoring of ambient conditions.

More providers are bound to enter this space, as the cold chain arena promises plenty of growth. The Research and Markets study predicts the global smart food logistics market will surge from a value of $7.3bn in 2019 to $14.8bn by 2025, which translates into a CAGR of 12.7%.

Campaign to promote more recycling of food and beverage cartons

FIBRE Circle, the producer responsibility organisation (PRO) for the South African paper and paper packaging sector, is calling on South African food producers to help drive awareness that food and beverage cartons are recyclable.

This initiative forms part of the Super Cartons campaign, being run in partnership with Nampak Liquid Cartons, SIG Combibloc and Tetra Pak South Africa.

"While 68.4% of paper is recovered for recycling in South Africa, food and beverage cartons make up a small portion of this," says Francois Marais, manager of Fibre Circle. "We want to raise awareness among South African consumers that cartons – in all shapes and sizes – can and are being recycled in the country."

These cartons are used to package liquids such as milk, mahewu / mageu, juice, wine and custard, and in some cases, dry foods such as cereals, sugar, rice, bird seed and pet food. They can have up to five layers, which are formed on a multi-ply machine, and are composed mainly of sustainably sourced, bleached or unbleached chemical pulp, also known as paperboard. The remaining layers are made up of polyethylene and for long shelf-life products, a foil layer is added.

However, once the carton has been used, it can be recycled. The cartons go through a pulping process, where the paperboard reduces into a pulp and separates from the other layers. The pulp is then used to make new paper-based products and the plastic or plastic-and-foil (polyalu) components can be extruded or injection-moulded into plastic-like products.

"Paper fibre is made into packaging paper, bags and cardboard boxes," says Marais, "while the plastic and foil can be used for composite materials such as planks, pallets, furniture, desks, and even roof tiles." Even the plastic caps can be repurposed, he adds: they're used to make many other plastic products.

The Super Cartons campaign is also being rolled out to consumers via three endearing characters – Captain Infinity, Dr Renewable and Super Transformer. There is an in-store roll-out at 40 Checkers stores, 10 Checkers Hypers, 24 Pick n Pays and 25 Spars in Gauteng, using 'shelf eye catcher' and product showcases encouraging consumers to enter the online competition for cash prizes. The campaign will be amplified with a digital marketing component via the Facebook page of the Paper Manufacturers Association of South Africa (PAMSA), a close ally of Fibre Circle.

The thrust of the campaign is to raise awareness among South African consumers that when they recycle cartons, they unlock their true value. The superhero theme personifies this value as a superpower.

Call to industry to extend their reach and responsibility

However consumer education campaigns like this one will not drive a significant increase in beverage carton recycling on their own, which is why Fibre Circle is calling on brand owners and retailers of beverage cartons to join in making their customers and networks aware of these cartons' recyclability on an ongoing basis.

"Fibre Circle has been established and mandated by the majority of South African paper manufacturers and importers as the recognised PRO for the paper and paper packaging industry, which means we are here to drive extended producer responsibility (EPR) programmes on the industry's behalf," says Marais.

"EPR will become mandatory as of 5 May 2021, however a number of industry players have been contributing financially on a voluntary basis as part of their sustainability commitments to ensuring that the end-of-life of their products is taken care of."

This means businesses will soon be obligated to reduce the environmental impact of their products and packaging – not just in their production processes, but once they're in the hands of consumers, and beyond. In other words, packaging manufacturers and brand owners will ultimately have to take responsibility for the end-of-life management of their used products.

"That's why it's vital to start putting these campaigns in place now and work together to educate consumers on responsible use of packaging," says Marais. "And that requires the co-operation of the vital link in the chain between packaging manufacturers and consumers – the beverage and food producers. Adding prominent recycling information to their packaging will go a long way towards assisting national efforts to recover and recycle as much paper as possible."

> "While 68.4% of paper is recovered for recycling in South Africa, food and beverage cartons make up a small portion of this..."

Good recycling practices go beyond reducing the quantity of paper or other recyclables going to landfill – they can also contribute to economic growth and job creation, and reduce social and environmental costs. This, in turn, has a positive impact on the circular economy: where waste items are reused or recycled into something new. It ensures those items continue to contribute valuably to society rather than being abandoned to the landfills, where they become useless or pollute rivers and oceans.

Marais says South Africans recycle about 1.2 million tons of paper per year (PAMSA, 2020), which equates to about 219 soccer pitches' worth of paper that doesn't end up in the landfills, and instead is recycled into a variety of paper and packaging products. "Imagine if we could add beverage cartons to that number."

Courier service launches sustainable packaging

ACCORDING to a recent survey by smart logistics company, Pargo, 90% of South African consumers prefer sustainable paper packing over plastic. It is clear that consumers care about preserving the environment and many companies have echoed this concern by adopting environmentally sustainable business practices. Pargo seeks to strengthen these initiatives through the introduction of their newly developed eco-friendly packaging, which allows online retailers to minimise the environmental impact of last-mile deliveries.

As a company firmly committed to environmental sustainability, Pargo has decided to challenge the reign of single-use plastics by making the switch to eco-friendly paper packaging. By proving that order fulfilment strategies can use paper packaging instead of plastic, the leading logistics company aims to set a new sustainable precedent for the industry.

"Businesses are in a privileged position to stage interventions that can bring about profound change to our habits of consumption. With Pargo's adoption of eco-friendly paper packaging, we aim to bring about that change and stimulate conversation concerning the ecological footprint of sending and receiving parcels," says Michaela Gabriel, Head of Marketing at Pargo, the mastermind behind Pargo's green switch.

The entire range of packaging is made from ethically sourced paper and is fully biodegradable, ensuring that nothing gets left behind when it's discarded. The range currently includes a mailing bag, C4 envelope and packaging tape.

Pargo's new mailing bag, which was developed in collaboration with popular packaging company Detpak, features superior tensile strength and flexibility when compared to other paper alternatives. In fact, it has the same wet strength properties as the paper bags used in the cement industry. The durability and security of the bags were tested during an extensive pilot, which allowed both consumers and retailers to share their experience of the new mailing bags.

For more information, contact: Pargo sustainability@pargo.co.za Tel: 021 447 3636

Flexo responds to growing challenge of digital in corrugated and carton print

THE Future of Flexo Printing to 2025 shows that in 2020 global value reached $167.7 billion; with only a marginal increase compared to 2019, due to the economic slowdown caused by the pandemic.

While not especially positive, this outlook is much better than for many competing analogue processes. It is largely due to flexo's widespread use in packaging and labels work.

As markets recover, flexo printing is forecast to grow at 1.6% year-on-year to reach 181.1 billion in 2025, with packaging increasing its market share. Innovation in production to respond to the threat of high-throughput inkjet is a major stimulus; and one that presents opportunities for print service providers, OEMs, consumables and substrate suppliers.

Packaging

The top four end-use applications for flexo are all in packaging and make heavy use of paper and board substrates.

Corrugated was clearly the leading end-use with a 57% share by value, worth $95.9 billion, in 2020. It is set to break the $100 billion mark before 2025. Flexible packaging accounts for a fifth of flexo print by value, and labels 8.6%. Folding cartons are 5.1% of the market by value, and will see an acceleration in growth over the five years to 2025.

The main recommendation for flexo is that it is the most cost-effective solution for mid- to long-runs of packaging. This will continue to be true, but the wider availability of digital presses will take more short run work from flexo presses; and is challenging OEMs to innovate to improve responsiveness and turnaround.

Corrugated board

Despite being the largest segment, in corrugated flexo faces the most direct competition from digital print. Single-pass inkjet machines specifically designed for corrugated packaging have now been in operation for several years. These have has shifted the digital versus analogue crossover point significantly in inkjet's favour.

Innovation to counter this has included more hybrid presses; with an inkjet station adding some variable data print. Furthermore flexo plate and equipment improvements is allowing some corrugated print to reach the quality seen with offset and gravure and take work from these print lines.

This aligns with buyers placing more short run and shelf-ready packaging orders. Many of these are high-colour commissions – using three or more colours – which command a higher price. In 2020, lockdowns caused by the coronavirus also caused a surge in demand for lower quality e-commerce corrugated packs to ship direct to the consumer.

Folding cartons

Flexo print will continue to be a significant market in folding cartons, but again has to react to new market conditions. Overall growth is highest in developing regions, where western style retailing is driving new demand for cartonboard packs.

In developed and premium segments, there is a demand for more print embellishments, from equipment fitted in-line with flexo presses. These allow brand owners and retailers to differentiate themselves on more crowded shelves; and create a direct connection with consumers buying through e-commerce. There is also interest in more coated cartonboards – especially water-based coatings – as brands look to move away from rigid plastic packaging.

The main advantage for flexo in carton packaging again depends on its low cost for longer run lengths; while progressive improvements in automation and computer-to-plate (CTP) technology are lowering production, make-ready, and turnaround times.

Flexible packaging

The majority of flexible packaging is plastic-based. Gravure and flexo are the leading processes. Many brands have made commitments to minimise their use of plastics in packaging, or invest in more recyclable flexible formats, however. This is seeing more interest in simpler and mono-material polymer constructions, and some brands are also looking to use more coated paper pouches.

Labels

Labelling is the sector where digital has made the greatest inroads, and experience gained here is supporting its wider use for other packaging substrates. In 2020 around 43% of labels were printed on flexo. There is pressure for more embellishment, mass customisation, and shorter runs, which are threats. The obvious solution for label converters is to move to digital printing; but the digitisation of flexo equipment will see it remain a lower-cost alternative in the mid- to long-run market.

Equipment

For equipment sales continued growth in corrugated and carton production will support more wide-web installations over the 2020–25 periods and a corresponding growth of sheetfed folder gluer installations to handle finishing. Flexible packaging growth will support the use of more medium-web presses; but competition from inkjet and toner will see a decline in demand for narrow-web flexo machines.

Historic and future developments in this market, including the impact of the Covid-19 pandemic, are examined in depth and quantified in the new Smithers report – The Future of Flexo Printing to 2025.

Reprinted from The GAPP Online Newsletter.

Food Packaging Ink – The Conclusion

By Shubhankar Chakraborty, Technical Director, Sprint Chemie.

FOOD Grade Inks or Safe Inks are generally abbreviated or stipulated by the brand owners as a requirement which does not allow the contaminant to migrate to the food stuff which could possibly impact the food safety of the packed food. However, in the absence of a standard definition of food safe inks, it has been synonymic as non-toluene inks, non-toluene and non-ketone inks, mineral oil free inks, heavy metal free inks, cobalt drier free inks, benzophenone free inks etc, although one really does not know whether these can be referred to as food safe inks.

To further understand this we need have a detailed understanding of safe packaging inks or migration optimised inks.

Safe Packaging Ink

This is the term used in the general market as NT (Non-Toluene), NTNK (Non-Toluene & Non Ketone), mineral oil free, heavy metal free, cobalt drier free, benzophenone free etc. Merely by removing one or a couple of raw materials from the formulation does not make it a safe packaging ink. All raw material used in the ink needs to be properly risk assessed to ensure the safety of food in the packed product. For instance, let us take an example of NTNK inks, where NTNK refers to non-toluene and non-ketone, this only assures the ink is free from two different types of solvents i.e. toluene and ketone, whereas it can still have heavy metals, formaldehydes, carcinogens, mutagens, be toxic to reproduction and there can be many other different items in the formulation that are hazardous and yet it is still known as NTNK inks. To avoid any discrepancies the regulators or brand owners need to define their terminology of Safe Packaging Inks. It further needs to be ensured by all concerned stakeholders that the same terminology be followed.

Migration Optimised Ink

This is referred to as the inks which are being manufactured by taking into consideration the legal requirement of the regulator of the specific country or countries. The main and important role thereby lies with the brand owner to confirm the legal and statutory requirements be followed by all the vendors i.e. substrate manufacturer, solvent manufacturer, ink manufacturer, adhesive manufacturer and printer. Further, for ink prospective, the raw materials are to be chosen in such a way that the migration from ink particles need to be in the limits as prescribed by the regulator or brand owner. The migration test results are to be shared with brand owners. This further validates the worst-case scenario for risk assessment of the packaging material.

Selection of Migration Optimised inks – Inks must be compliant to the regulators requirements

- Selection of raw material i.e pigments, resins, additives and solvents are to be done in such a way that they adhere to the prescribed limits of the regulators and brand owners.
- Ink manufacturers must always follow good manufacturing practice.
- Inks must be compliant with EUPIA, US FDA, Swiss Regulations.

Responsibilities and Legal requirements

The intent of food packaging only leads to protection of packed food. The packet is being printed on for presentation and advertising and also to provide the details of the content to the consumer. It further needs to satisfy the EUPIA, US FDA, Swiss Regulations etc, which is dependent on the regional regulator. Although some inks are used for direct food contact, these are negligible, so we are mainly concerned with migration of the non-food contact inks.

All ink manufacturers need to mitigate all possible risks associated with the packed food that can be adversely affected due to the ink. This leads to many quality checks and controls to ensure supply of a migration optimised ink. This in turn ensures consumer safety which is of utmost importance.

Ocean-going overhead travelling crane

CONDRA is to manufacture its first seagoing crane, an overhead maintenance machine with power-to-motion conversion achieved through rack-and-pinion instead of pure friction.

The order has been received and work has begun. Delivery will take place soon after completion mid-year, well ahead of shipboard installation and commissioning scheduled for November-December.

The crane will be used for maintenance work on helicopters and other equipment within a deck-level workshop, where the 2ton, 4 metre-span, double-girder electric overhead travelling machine will carry out its duties at sea as well as in port. Notably, maintenance work will often be executed while the vessel is negotiating the Atlantic Ocean, notorious for its storms.

It was because of the customer's need to be able to use the crane in moderately rough seas that Condra's engineers proposed drive through rack-and-pinion.

The machine has to be able to work while the ship is rolling or pitching through arcs of up to 30 degrees, or 15 degrees either side of the vertical, an oscillation that would pose a challenge to conventionally designed long-travel and cross-travel movement, in which motor power is applied to steel wheels and the friction between wheel and girder produces motion. Oscillation of the ship would cause the wheels of such a design to slip, and the crane would run away.

To meet the design specification, Condra therefore replaced all wheels on the long-travel and cross-travel with rack-and-pinion arrangements that will deliver both traction and stability as the ship moves about.

440-volt three-phase motors will be used to drive the pinions along their racks, maintaining a constant speed and countering the varying gravitational component while the vessel rolls and pitches. When stormy seas force a deviation greater than a 30-degree arc, work in the workshop will stop and the crane will be secured via its bottom-block (hook) to a structural girder on the workshop's walls to make accidental movement impossible.

Condra has made use of rack-and-pinion drives before, in cranes designed to operate in high winds.

Commenting on the order, Condra managing director Marc Kleiner said that the design of the crane had proved interesting not only because of the need to use rack-and-pinion drives, but also because of the very tight installation parameters within the vessel's workshop, where ventilation pipes impose limits on the available space, and where careful design of the crane's structure was needed to allow the hoist to be situated almost touching the workshop roof, thereby providing maximum lifting height.

"The resulting design is an underslung crane attached to the gantry beam rather than to the gantry columns. With the hoist sitting astride the underslung girders, we are able to give the customer the lifting height that he wants," Kleiner said.

"It will be a compact but very effective arrangement."

After delivery of the seagoing crane a few months from now, Condra technicians will carry out installation and commissioning in Durban at a much later date convenient to the customer, probably towards the end of the year when the vessel returns to harbour.

Typical Condra double-girder electric overhead travelling crane, similar in arrangement to the seagoing crane, but with the motor drive delivered to steel wheels instead of rack-and-pinion.

Weighing system lifts port productivity

MARITIME regulations are becoming increasingly stringent to mitigate any potential risk to cargo ships, as well as their freights and crew members - out at sea and in port. In line with new amendments to the Safety of Life at Sea (SOLAS) regulations, the shipping and freight industry are now required to provide carriers with a Verified Gross Mass (VGM) for each loaded container before it can be placed onto any ship.

Konecranes, as a manufacturer and supplier of cranes and heavy lifting equipment, and supplied by EIE Group in South Africa, has launched its first-ever digital static Weighing Systems Solutions for use in South African ports. While already proving effective in reducing weighing times, the system is currently being reviewed for accreditation by the South African National Accreditation System (SANAS).

Key Accounts Sales Manager at EIE Group's Heavy Lift division, Lenny Naidoo, says the Konecranes Static Weighing System offers reliability and increased productivity for port operations.

"The Static Weighing System allows reach stackers to hydraulically measure the weight of lifted containers, with 1% full-scale accuracy achieved in less than five-seconds."

Naidoo adds that the system is simple to operate, with the operator initiating the weighing process from a multi-touch control display inside the cabin once the container is lifted into its transport position.

"The VGM container data is then sent to the in-cab modem which, in turn, shares the data specific to that container. This data is then automatically transferred and stored in the a KONECRANES.com customer portal cloud-based service, allowing for seamless integration between the weighing systems and users' Terminal Operating System (TOS), Transport Management System (TMS) or Enterprise Resource Planning (ERP) systems. Finally, a report is created through the TRUCONNECT system."

The weighing system reports on detailed information such as gross container mass, exact container ID, time and date stamps on each container, operator details and lift truck data. In addition, the system detects the location of the container, making for easier container picking and loading.

"Importantly, utilising the system will allow customers to comply with SOLAS regulations, while also reaping the benefits of improved operational efficiency and productivity. As the industrial revolution impacts all sectors, the seamless and technologically-advanced Konecranes Static Weighing System is just another way we see our industry solutions benefiting our customers' operations, making their lives easier and their businesses more profitable," concludes Naidoo.

MARITIME & HARBOUR SERVICES

R21bn investment progress for Saldanha Bay IDZ

THE Saldanha Bay Industrial Development Zone has to date attracted more than R21 billion worth of private investments. The Zone's CEO Kaashifah Beukes provides updates on the progress so far of this long-term initiative.

Background

THE Saldanha Bay Industrial Development Zone Licencing Company SOC Ltd (SBIDZ-LC), South Africa's first and only Special Economic Zone (SEZ) located within a port, is a new, open 356ha space catering specifically to the oil and gas, maritime fabrication, marine repair, logistics and related support services.

Situated in the largest and deepest natural port in the southern hemisphere, it operates as a Freeport offering streamlined customs processes and bespoke facilities and services to its tenants and operators.

The SBIDZ, is designated as a Customs Controlled Area (CCA) and Freeport, allows for duty and VAT-free entry of any foreign goods intended for re-export. This means we can ensure ease of operations for zone users and enable them to import, store and manufacture goods (including processing, cleaning and repair) without being bound by various time and economic restrictions.

The SBIDZ is the single largest project the government has embarked upon in the Western Cape and is the "most significant area of spatial development potential within the West Coast district".

Our aim over the next 25 years is to create a vibrant hub of opportunity, job creation and sustainable growth utilising the special economic zone (SEZ) legislation as a catalyst.

Cooperation with major stakeholders

We work with many organisations, businesses and institutions operationally and strategically.

We are immensely appreciative of the support given over the years by the Department of Trade, Industry and Competition and the Department of Economic Development and Tourism in the Western Cape. Their support in the establishment of the zone has really been part of our success in turning around an undeveloped area into a world-class operation.

The Saldanha Bay Municipality (SBM) and Transnet National Ports Authority (TNPA) are also quite critical to the zone's investment attraction potential and sustainable regional economic development impact.

The SBM and SBIDZ-LC have launched several new developments recently, which included the SME Co-Lab Centre. A shared workspace for the Saldanha Bay business community, the Centre provides offices, meeting rooms, free Wi-Fi, printing facilities and access to laptops. The Centre also offers access to networking sessions with relevant public and private sector stakeholders and partners. The Co-Lab has attracted more than 1 500 SMME visits and engagements since it opened.

Also, our SBIDZ skills programmes have created over 1 800 individual training opportunities over the last four years. Enterprise development has completed a first-of-its-kind Oil & Gas SMME Readiness Assessment.

Various projects to upgrade bulk and transportation infrastructure were completed over the last few years.

As the port is TNPA's responsibility and domain, the SBIDZ symbiotic relationship ensure that what is offered to investors and stakeholders is aligned with the plans and projects of the TNPA.

Attractions and benefits of the SBIDZ

There are several Western Cape is an established hub for boat and shipbuilding. More than 80% of the country's total ships, boats and other floating structures come from here, and approximately 70% of boat building companies are located in the region. The region is the petroleum trading node for the country. The ports in the Western Cape handle 59% of SA's total petroleum product exports and 47% of SA's total petroleum product imports.

It is ideally situated to service East and West African sea traffic and provide a linkage point for African and international markets. It is perfectly placed to accommodate and service a wide range of vessels.

We have a solid maritime regulatory and policy framework in place to drive the development and efficient management of the industry. The African Continental Free Trade Area (AfCFTA) agreement makes this increasingly important.

Then there is our Innovation Campus. We asked ourselves: "How do we create a thriving, inclusive and resilient maritime and energy industry?"

Our research showed that the successful oil, gas and maritime SEZs encouraged research, development, and innovation (RD&I) capabilities. Clusters that drive innovation have cutting-edge knowledge centres that create and seize opportunities and do so with sustainability and inclusivity in mind always.

These thriving SEZs are able to rapidly respond to shifting global trends and continue to find new ways to solve industry problems and remain globally competitive.

Economic growth and job creation is only sustainable if it is competitive, and although innovation increases competitiveness, it is only sustainable and effective when it is collaborative. So, the SBIDZ Innovation Campus is a substantial value add to the SBIDZ, our stakeholders, and the energy and maritime industry at large.

To make it work, we shall need active involvement from government, industry, academia and the community in an ongoing collaboration and co-creation approach.

Investor response

To date, we have attracted more than R21 billion worth of private investments into the zone, with a total of 2 900 jobs created over the past five years.

During the 2020/21 financial year, we completed construction on the first investment project—a specialised corrosion protection facility. We are currently in the process of constructing an additional two investment projects involving specialised manufacturing and fabrication, as well as partial assembly and manufacturing of components which are currently being imported into South Africa.

In addition, we completed construction on the Access Complex Building—a 5ha state-of-the-art commercial office facility that started taking in tenants in September 2020.

The SBIDZ has a robust investor pipeline that continues to grow in manufacturing and export facilities, and new-build port infrastructure. Several private investors have undertaken, at their own cost, bankable feasibility studies that demonstrate demand for vessel fabrication, maintenance, recycling and equipment servicing.

For example, the Saldehco Offshore Supply Base in the Port of Saldanha Bay is an investment that has made good progress. Construction of the facility is currently underway. The facility will offer internationally competitive services to vessels passing along our coastline, and projects looking to undertake surveys, exploration and production activity on the West African Coastal Area.

The common-user Project Leasing Facility (PLF) is another development by the SBIDZ that already delivers value in assisting with strategic government energy projects and meeting a business need. The 12ha facility accommodates projects with a duration shorter than 24 months and assists logistics companies and project managers with an easy-to-access facility near the port infrastructure when handling equipment and goods in or out of the port and zone.

The PLF currently provides temporary storage to tenants for wind blades, nacelles and tower sections to support the national Renewable Energy IPP Programme (REIPPP). We expect more projects related to REIPPP to be rolled out in 2021.

Both facilities support investment in the SBIDZ and have received significant backing from the Department of Trade, Industry and Competition (DTIC).

Future plans.

For the immediate future our focus will be:

- achieving commercial self-sustainability to increase the value it will create for shareholders and stakeholders of the Zone;
- investing in and establish catalytic infrastructure and facilities that will unlock local and regional productivity and employment;
- improving the readiness of the local community and industry to leverage Zone-related opportunities that will result in competitive local and regional value chains for the marine and energy services industry being built; and
- deepening and expanding our partnerships with business, government and society that ensures the SBIDZ remains the definition of an inclusive and transformative strategic initiative.

Two strategic projects to actively de-risk, enable and create the conditions for continued and increased investment into the Zone have commenced.

First, in partnership with the Transnet National Ports Authority (TNPA), we have embarked on a Marine Infrastructure Cost-Benefit Analysis (CBA) as the pre-feasibility study to bring in additional quaysides into the Port. This is to be completed soon. The study will assess the various options available in terms of marine infrastructure development at the Port of Saldanha against cost, technical demands, and market demand from the marine services sector. This infrastructure will provide sorely needed capacity for vessel builders, repairers, recyclers, equipment manufacturers, and many more - essentially all activities in the marine manufacturing and maintenance space.

Concurrently, and as a complementary initiative to the CBA, the SBIDZ-LC has initiated the Environmental Impact Assessment (EIA) for the marine infrastructure, which aims to be completed by the second quarter of 2022. This EIA aims to secure the relevant environmental authorisations required to de-risk investment into the marine infrastructure when it goes out to market eventually.

New generation cure coating

PPG has unveiled a next-generation, ambient-cure coating engineered for challenging corrosion-under-insulation (CUI) conditions.

A high-build product that offers dry film thickness of 10 to 12 micron in a one-coat application, PPG HI-TEMP 1027HD coating provides excellent protection against corrosion on pipes, vessels and construction parts when plants are in operation, PPG said, adding the durable coating is formulated to withstand severe temperature cycles ranging from -196 C to 540 C and resists dry exposure with intermittent temperature peaks of up to 650 C.

PPG HI-TEMP 1027HD coating also protects coated pipes, parts and assemblies in changing ambient temperature conditions. According to PPG, this is critical during shipping, as these materials are commonly transported between continents and exposed to months of rain, snow, ultraviolet (UV) light and other environmental hazards. The coating protects those same components from damage and wear before and during new construction, when they are stored, handled and erected on the building site.

"Oil and gas, chemical processing, power generation and industries such as paper mills and steel mills rely on insulated pipelines, which are always vulnerable to corrosion-related leaks and pipe failure," said Bart Martens, PPG global product manager, protective and marine coatings.

"Because of its hardness and resistance to thermal shock and cycling, PPG HI-TEMP 1027HD coating more effectively protects these critical assets against corrosion. This can extend maintenance intervals and minimize the risk of unexpected shutdowns."

For more information visit: https://ppgpmc.com/

Online coatings training to be offered in three phases

FOLLOWING an increasing call for training, the South African Paint Manufacturing Association (SAPMA) is gearing to launch a range of specially-developed training videos in a user-friendly form, accessible to all SAPMA members.

Tara Benn, executive director of SAPMA, says the concise videos, around 35 minutes in length, cover a broad range of subjects and are all aimed at sharing knowledge and educating the coatings industry.

The training videos will be available via links to the SAPMA membership in return for a small, annual licence fee. There will be no assessments and certification available in standard form but this can be arranged should a SAPMA member require it. The first phase of the video training will cover tuition on:

- Interior Tiles
- New Metal Roofs
- Painting Exterior Walls
- Gutters and Downpipes
- Painting Interior Plaster Board Ceilings
- Painting Walls with Minor Defects
- Palisade Fencing
- Roof Tiles
- Steel Window Frames
- Varnishing Wood

SAPMA will then, as part of the second phase of the training initiative, provide video tuition focussed on colour to provide the industry with more in-depth knowledge about the important role of colour in coatings. To be launched around mid-2021, this training will be particularly useful for industry members involved in colour tinting.

'Finally, in the third phase of the training programme, the target audience is broad and includes virtually all individuals in the coatings sector. For this phase, SAPMA has adapted its existing training course for administrative staff to make it more interactive and easily accessible online. The training offered provides a basic understanding of surface coatings, their components, and what makes one paint different to others.

Tara Benn.

'Many members of the coatings industry have appealed for more emphasis on online training. We hope this video tuition facility will help to answer this call and look forward to strong support,' Benn added.

For more information, email tara@sapma.org.za or visit www.sapma.org.za.

Ultrasonic NDT identifies wear and corrosion

MINING equipment is under constant operational stress due to the harsh working environments present in mines and quarries and the weight of the materials involved. This can cause wear and corrosion which can become dangerous, resulting in loss of productivity and even injury or potential death of operators.

The mining industry also has to adhere to various industry standards and regulations which requires regular testing of equipment. In order to accomplish the necessary testing with minimal downtime and without causing any damage to the area under test, ultrasonic NDT testing is carried out.

Ultrasonic NDT testing provides crucial information about the equipment's condition

Capable of non-destructively measuring a wide variety of materials - including metals, rubber and plastics, ultrasonic thickness gauges are ideal for monitoring corrosion and erosion, or checking for defects in complex, manufactured components.

Testing mining equipment using ultrasonic thickness gauges allows operators to quickly and easily determine whether the equipment is fit for purpose or what action needs to be taken if corrosion has occurred.

Ultrasonic material thickness gauges

The Elcometer MTG range of ultrasonic material thickness gauges can measure both uncoated materials up to 500mm thick, and coated materials up to 25mm thick, whilst ignoring the coating, using a dual element transducer.

Dual element transducers consist of two independent crystals, separated by an acoustic barrier. The two elements are angled so that when one crystal emits an ultrasonic pulse, the energy path creates a "V" shape, entering the material via ultrasonic couplant, hitting the back-wall of the material, and echoing towards the other crystal, where it is detected.

The gauge then uses the speed of the pulse and the time taken to travel from one crystal to another (from pulse to echo), to calculate the thickness of the material - with the acoustic barrier preventing any sound from reaching the receiver directly from the emitter, before the pulse has completed its path.

Choosing a material thickness gauge

Ultrasonic thickness gauges come in many forms, each with different features. In the Elcometer MTG range, the standard gauge, the Elcometer MTG2, is simple and low cost. It is ideal for taking thickness measurements on steel and can take four readings per second.

The MTG4 gauge also takes four readings per second whereas the MTG6 and MTG8 gauges are faster, and are able to take four, eight or 16 readings per second whilst displaying the thickness value.

The MTG6 and MTG8 feature a high speed 'scan' feature which allows the user to "scrub" the probe over the surface, continuously displaying the thickness values at a rate of 16 readings per second. When the probe is removed from the surface, the thinnest thickness value that was measured is displayed, showing the most potential point for failure.

The top of the range gauge, the MTG8 features 'Differential Mode' and 'Limits'. In Differential Mode, a target thickness can be entered into the gauge and when measuring, the gauge will display the variance from that value. Similarly, the 'Limits' mode also allows a target value to be entered into the gauge. If a reading is taken below this value, an alarm will sound and the red LED on the keyboard will light.

Data logging

The MTG6 and MTG8 gauges both have data logging capabilities, allowing readings to be saved in the gauge memory and then downloaded via USB or Bluetooth® to PC, iOS or Android™ devices for further analysis and reporting. The MTG6 gauge can store up to 1 500 readings and the MTG8 can store up to 100 000 readings in up to 1 000 batches.

A batch is a group of readings, which can be saved sequentially or into a grid format, the Elcometer MTG8 can store multiple batches which can represent multiple locations around the asset being inspected.

To help undertake and report grid-based corrosion inspections quickly and easily; the Elcometer MTG8 comes with a 'Grid Batching' feature, which allows readings to be saved instantly into a grid making it easy to complete and report the inspection.

Using a grid is ideal when inspecting large areas as it clearly marks and identifies areas of concern, and helps to identify exactly where the corrosion is occurring. By repeating grid-based inspections in the same location over time, corrosion rates are able to be predicted and preventative maintenance can be performed to avoid a breakdown.

Inspection reporting

When it comes to inspection reporting, typically a report would be created manually, either by hand or using word processing or spreadsheet software, which can be both time consuming and open to human-error.

However, if when the Elcometer MTG6 or MTG8 is connected, via USB or Bluetooth, to ElcoMaster®, Elcometer's free software application, readings can be transferred, with full statistics, calibration information and limits, to a smart phone, tablet or PC. Once the data and any additional notes and photographs have been uploaded, the software is able to instantly create a professional inspection report that can be exported to PDF, printed or sent elsewhere via email.

ElcoMaster® software can also be used during the inspection process. The software's 'Collects' feature allows the inspector to follow a template live from an Android or Apple mobile device showing exactly where to inspect. To do this, a picture of the inspection area should be uploaded to the ElcoMaster® mobile app and specific locations that need to be inspected are added. Once the area is inspected, the app will instantly show, on the image, exactly where the corrosion is occurring, which can be used in the final inspection report.

For more information about Elcometer's range of ultrasonic NDT gauges, visit www.bamr.co.za or email your request to sales@bamr.co.za

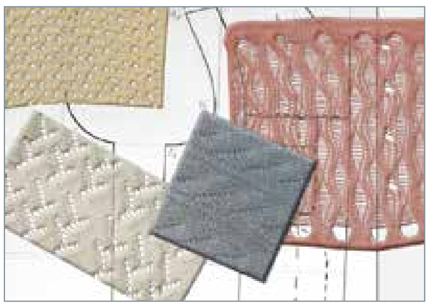
Could we recycle plastic bags into fabrics of the future?

By Jennifer Chu, Massachusetts Institute of Technology Fist published in the Science X Newsletter.

IN considering materials that could become the fabrics of the future, scientists have largely dismissed one widely available option: polyethylene.

The stuff of plastic wrap and grocery bags, polyethylene is thin and lightweight, and could keep you cooler than most textiles because it lets heat through rather than trapping it in. But polyethylene would also lock in water and sweat, as it's unable to draw away and evaporate moisture. This antiwicking property has been a major deterrent to polyethylene's adoption as a wearable textile.

Now, MIT engineers have spun polyethylene into fibres and yarns designed to wick away moisture. They wove the yarns into silky, lightweight fabrics that absorb and evaporate water more quickly than common textiles such as cotton, nylon, and polyester.



MIT engineers have developed self-cooling fabrics from polyethylene, commonly used in plastic bags. They estimate that the new fabric may be more sustainable than cotton and other common textiles. Credit: Svetlana Boriskina

They have also calculated the ecological footprint that polyethylene would have if it were produced and used as a textile. Counter to most assumptions, they estimate that polyethylene fabrics may have a smaller environmental impact over their life cycle than cotton and nylon textiles.

The researchers hope that fabrics made from polyethylene could provide an incentive to recycle plastic bags and other polyethylene products into wearable textiles, adding to the material's sustainability.

"Once someone throws a plastic bag in the ocean, that's a problem. But those bags could easily be recycled, and if you can make polyethylene into a sneaker or a hoodie, it would make economic sense to pick up these bags and recycle them," says Svetlana Boriskina, a research scientist in MIT's Department of Mechanical Engineering.

Boriskina and her colleagues have published their findings in Nature Sustainability.

Jet fuel from food waste has the potential to massively reduce carbon emissions from flying

From BBC News, by Matt McGrath. Environment correspondent.

CURRENTLY, most of the food scraps that are used for energy around the world are converted into methane gas.

But researchers in the US have found a way of turning this waste into a type of paraffin that works in jet engines.

The authors of the new study say the fuel cuts greenhouse gas emissions by 165% compared to fossil energy.

This figure comes from the reduction in carbon emitted from airplanes plus the emissions that are avoided when food waste is diverted from landfill.

The aviation industry worldwide is facing some difficult decisions about how to combine increased demand for flying with the need to rapidly cut emissions from the sector.

In the US, airlines currently use around 21 billion gallons of jet fuel every year, with demand expected to double by the middle of the century. At the same time, they have committed to cutting CO2 by 50%.

With the development of battery-powered airplanes for long haul flights a distant prospect at this point, much attention has focussed on replacing existing jet fuel with a sustainable alternative.

Current methods of making green jet fuel are based on a similar approach to making biodiesel for cars and heavy goods vehicles.

It normally requires the use of virgin vegetable oils as well as waste fats, oil and grease to make the synthetic fuel.

At present, it is more economical to convert these oils and wastes into diesel as opposed to jet fuel - which requires an extra step in the process, driving up costs.

Now, researchers say that they have developed an alternative method able to turn food waste, animal manure and waste water into a competitive jet hydrocarbon.

Much of this material, termed wet-waste, is at present is turned into methane gas. However, the authors found a way of interrupting this process so it produced volatile fatty acids (VFA) instead of CH4.

The researchers were then able to use a form of catalytic conversion to upgrade the VFA to two different forms of sustainable paraffin.

When the two forms were combined they were able to blend 70% of the mixture with regular jet fuel, while still meeting the extremely strict quality criteria that Federal authorities impose on aircraft fuels.

"There's exciting jet fuels that rely on burning trash and dry waste but this actually works for those wastes that have high water content, which we normally dispose of in landfill," said Derek Vardon, a senior research engineer at the US National Renewable Energy Laboratory and the lead author on the study.

"Being able to show that you can take these volatile fatty acids, and that there's a really elegant, simple way to turn it into jet fuel - that's where I see the broader applicability of this one, and folks can continue to develop and refine it."

The new fuel has a potentially significant impact on emissions as it not only limits the CO2 that comes from fossil sources used by the airlines, but it also gets rid of the methane that would bubble up from landfill if the waste food was just dumped.

Another major advantage is that this new fuel produces around 34% less soot than current standards. This is important because soot plays a key role in the formation of contrails from airplanes which adds a powerful warming effect to CO2 coming from the engines.

"That's where we see the most potential for this technology is that you're preventing methane emissions, and dramatically lowering the carbon footprint of jet fuel. And you just can't do that with fossil fuels without getting into things like offsets," said Derek Vardon.

The research team say they are planning to scale up the production of the new fuel and aim to have test flights with Southwest Airlines in 2023.

Many environmental groups are sceptical about attempts to develop sustainable aviation fuels, believing that it amounts to green-washing. They argue that people should just fly less.

"Sustainable aviation fuel is not a silver bullet," Derek Vardon says.

"So we do want to definitely emphasise that reduction is the most important and most significant change you can make. But there's also pragmatism and need for aviation solutions now, so that's where we want to strike a balance as we need a basket of measures, to really start getting our carbon footprint down in a variety of sectors, including aviation."

The study has been published in the Proceedings of the National Academy of Sciences (PNAS).

Top 5 tech billionaires worth more than 80 poorest countries combined

ACCORDING to data presented by AksjeBloggen.com, the combined net worth of the five wealthiest people in the US tech industry hit $567bn in February, more than the gross domestic product (GDP) of the 80 poorest countries combined.

According to the Forbes billionaire list, the COVID-19 has helped Amazon founder and CEO Jeff Bezos to grow his wealth by $74bn in the last year, with his net worth reaching $187bn this month. The International Monetary Fund data show this figure is closest to New Zealand and Iraq's GDP, which ranked 52nd and 53rd globally with $193.5bn and $178.1bn, respectively.

As the fifth-largest tech company globally, Facebook has also witnessed impressive growth in 2020. The Facebook shares rose by 26% in the last year, pushing its CEO's fortune up by $39bn billion to $93.7bn.

This figure means that Mark Zuckerberg's wealth is $700 million above Puerto Rico's GDP, which stands at $93.9bn.

The chairman, chief technology officer, and co-founder of software giant Oracle, Larry Ellison, and co-founder of Google, Larry Page, ranked as the fourth and fifth tech billionaires globally, with $84.9bn and $80.4bn in net worth as of this month. Their wealth is the closest to Sri Lanka and Dominican Republic's GDP, which ranked 66th and 67th globally, with $81.1bn and $77.8bn, respectively.

Top five tech billionaires worth more than GDP of Sweden, Thailand or Belgium

Statistics show that the five tech billionaires' wealth is the closest to Poland and Sweden's GDP, as 23rd and 24th economies globally. The two countries' gross domestic product stood at $580.9bn and $529bn in 2020.

(As this release was posted at the beginning of February, the wealth gradient has increased substantially by the time you read this! And putting the cat amongst the pigeons is poor old ex-South African, Elon Musk, who doesn't even get a mention. He only cracked $183bn as Tesla's shares slide stripped him of R27bn, relegating him to second paltry place behind Bezos. Ed.)

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Cape Business News is always on the lookout for stories of companies that are shaping the Cape business landscape. If your company has a story to share, in these, or any other business sector, send your story to editor@cbn.co.za for consideration.

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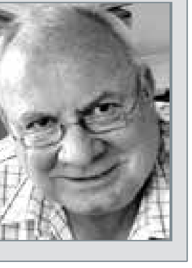
OPINION

ON THE CONTRARY



Pieter Schoombee

April Fool's Day then and now

"WELL well well and cheers all!" jollied Luke the Dude as he lifted his glass, "so who got suckered on April Fool's Day?"

The congregation of curious comrades (in the good sense of the word) were charging their glasses in the shade of the giant Wit Stinkhout dominating the local Grill & Garden (cold beer on tap).

Big Ben was staring suspiciously at Luke the Dude. "What kind of innocent question is that," enquired he, "no political insults today?"

"Not so fast, Boyo," sniggered Colin the Golfer, "you are guaranteed to put your No. 13 into your mouth about your glorious government, aren't you?"

"Hmmm," grumbled Big Ben, refusing to share the levity. "It's your government too. Don't answer that! What's this about April Fool's Day Luke? It's like Guy Fawkes, isn't it? Not an indigenous tradition?"

"Well, you've got a bit of the point there," enlightened the Bearded Biker, who drinks beer and knows things. "If you're asking whether the Khoi and the San – at the time of season when the days were getting shorter and wetter – were sneaking around putting 'Kick me' signs on each other's backs, no legend has it that they were.

"However, unlike Guy Fawkes migrating from London, April Fool's Day has a much larger heritage. Some sources place it in Rome, others in Chaucer's Canterbury Tales and elsewhere on the two islands. Holland is a strong contender and so is France – when they changed calendars. The Germans have known it for centuries.

"Given the origins of millions of South Africans who brought their talents here through those centuries, April Fool's Day deserves more respect. It was half-forgotten in South Africa until the newspapers started fooling their readers with tall tales (and clues) on April 1. Do you know how that came about, Doc?"

I am not a doc: I was promoted to the nickname when it became unfashionable to be called Master. Hence, my response to any status Nazi who insists on being called not Mister, but 'Doctor Tonteldoos' (for instance): Smile widely to dispel aggression (you never know with these Ph.D. types) and respond thus: "I'll call you Doctor if you call me Master." That solves the problem.

"Yes, I believe I do," I responded to The Beard. "It happened in the mid-seventies while I was writing politics at the Pretoria News – the newspaper had a solid reputation and readership then – when Jonathan Hobday, as I recall, had the bright idea to set a world record for suckering the largest number of April Fools with a single prank, ever.

"So he gained the collusion of the editor and proceeded to write what turned out to be, in hindsight, a brilliant story. First to be fooled were the news editor and subs, then the setters and proof readers, before the final target: the readers. Overall, the joke caused quite a sensation, much to the delight of the editor. So, the next year other Argus Group dailies followed suit, soon to be joined by the Afrikaans dailies. Today April Fool's Day has, indeed, become something of an indigenous tradition."

"You're not serious! Surely people don't fall for that rubbish!" remonstrated Bob the Book in an attempt to place himself above the frivolous classes.

"In fact they do," I pointed out civilly, "better and brighter people than you would know."

A snigger ran through the company except for Bob, who snarled, "I don't believe you."

"Give us an example," winked Stevie the Poet.

"Okay," I agreed, "the silly business had me in a tight spot once. Some years after the Pretoria News I was news editor at Rapport, when the editor – a man I respect and admire – walked into my door with that day's The Star. 'Have you seen this?' he asked, indicating half a broadsheet page with a scoop about a magical mystery development on the scale of a Ramaphosa dream city, due to arise just slightly to the east of our then location.

" 'Yes I have," I smiled.

" 'Have you got a team on it?' he double-checked.

"I lost my smile and realising my dilemma, I provided a clue: 'I read it all the way to the end …'

" 'Well get someone on it then," he interrupted with only a hint of impatience.

"Having been at the original scene of the crime, I had already realised we were dealing with that year's version of the printed April Fool's joke. But not everybody was so favoured by chance.

" 'Sir," I announced seriously, "please look at the date at the top of the page."

"It took him a moment to laugh. Newspapermen of his calibre were not accustomed to deliberate misrepresentation in the press, for whatever humorous purpose. You must realise, that was long before the phenomenon of Fox TV and 'newspaper' by Survé.

"Consider that the current editor of Survé's Pretoria News (albeit with almost no readers) is Piet Rampedi of the Sunday Times's 'SARS Rogue Unit' scam."

The Governor took the gap: "Order please, time to refill those glasses! Look at all these thirsty ladies and gentlemen! Same again for everybody?" Same again it was.

"I think," mused The Prof, slowly and legally drawing on his pipe in the fresh air, "someone has tried to beat the newspapers at their own game. Joking to fool the entire South Africa in one go …"

"Thank you," said Luke the Dude, "I'll bet the joker is none other than our dear leader Cyril Ramaphosa taking time off from boiling frogs to celebrate All Fools' Day!"

"I do not agree!" declared Big Ben at large.

"Very astute, young Luke, very astute," complimented The Prof. "It was indeed our president, announcing to the nation that there's light at the end of the long, dark tunnel the ANC dug Eskom into. The day is coming, enthused he, 'when the power will go on and stay on'. He did not say when.

"But don't get yourself all upset now, Ben. The joke didn't work. Nobody laughed."

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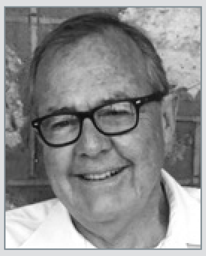
THE OTHER SIDE OF THE COIN



Keith Bryer

Public fear of all nuclear radiation is founded on ignorance

FUTURE historians will have fun documenting the nuclear paranoia that has infected the world. A prime example is a silliness of fearing all kinds of nuclear radiation, however small. Some say this fear prevented nuclear war. That may be, but it is now taken to ridiculous levels.

My personal experience of radiation nuttiness was during the choreographed uproar over a plan to open up an old uranium mine in the Karoo.

The public protests came not from the local unemployed who would have welcomed the jobs, but from European expatriates living in Beaufort West– the nearest town to the proposed mining. They turned up to a public meeting in full street-theatre fig, complete with ghost masks and dangerous radiation signs, determined to stop this "potential horror" so close to their African retirement paradise, where a Euro pension goes a very long way.

Accompanying these euro-protesters was a German professor, invited by the local anti-nuclear group. He was a doctor of something other than medicine but used the title nonetheless, as they do in some countries.

He led tours of the old mine site armed with a Geiger counter that obligingly beeped whenever he pointed it at a stone on the ground, producing gasps of alarm from his audience.

Now the thing with Geiger counters is that they are very sensitive. So sensitive that even a banana will register, as will a concrete pillar, a granite outcrop, and even beach sand in many parts of the world – particularly in Brazil where covering yourself with it is supposed to cure arthritis. A Geiger counter will also measure radiation off Dutch beaches but a smaller amount.

The big bugaboo uranium is a naturally-occurring mineral. Uranium oxide even occurs as yellow dust in some parts of the Karoo. Karoo sheep fail to glow in the dark, enjoy the fodder that grows in uranium-rich soil, and live healthy lives before winding up on our braais. No doubt the German academic was unaware of this since mutton is not a German delicacy.

Also, a fact most of the Greens and anti-nuclear brigade will never admit, nuclear radiation bombards the planet and everything on it every day.

It is called sunshine.

Anyone who wants to get the facts on nuclear radiation can do so. But year after year the media, politicians, and ordinary people repeat sheer nonsense propagated by the Green Lobby and those who earn their livings persuading governments around the world to buy into the other fantasy that wind and solar power can power modern industry like steel furnaces.

Ironically, the great fear of carbon dioxide emissions would be eliminated at a stroke by nuclear-generated electricity but to suggest this is to be bombarded by more craziness and lies.

Consider the facts:

The Three Mile Island nuclear power station incident in the US was no danger to anyone. There was no increase in the number of cancer sufferers because of it. The core of the power station did not melt through the earth to China, as some stories would have had it.

Fukushima was a Tsunami accident, not a nuclear one. No one died at the time except those drowned by the tsunami and forced to leave their homes in a panic.

Even adding the handful of minor incidents at nuclear power stations in the last 70 years reveals a death and illness rate of precisely zero.

So we are left with Chernobyl for the one accident that can truly be described as nuclear – but even then its cause was human. The deaths of the firefighters who attempted to dowse the fire were terrible. So was the Chernobyl power station's design.

The radioactive dust spewed from the Chernobyl fire was scattered far and wide across Europe but despite all the allegations, there has been no evidence of long-term ill health effects.

The Russian design of Chernobyl was crude compared to Western nuclear power stations. It was originally conceived to produce weapons-grade uranium and later modified to generate electricity. It was, as they say, an accident waiting to happen.

Modern nuclear power stations, such as those in France that produce 80% of the country's power requirements, have been operating safely for decades. Newer designs are even safer, produce no carbon dioxide emissions once built, last for 30 years or more, and produce less danger to the environment during construction than either wind generators or solar panels with their accompanying batteries.

The final stupidity in the anti-nuclear tirade is the alleged appalling problem of disposal of nuclear waste. That gets the best headlines and the most misleading ones. "It takes millions of years for nuclear waste to stop radiating," they say, implying that it will then still kill.

It may well register on a Geiger counter but would be as safe as sunbathing on Paarl Rock or covering yourself with radioactive sand on a Brazilian beach. Not that there is that much of the dangerous stuff being produced, our own Koeberg produces about a bakkie-load a year. Yes, it has to be carefully stored for some time but it can be done.

One day we will be able to send it into the sun. One day, too, historians will look back on the radiation phobia of the last 70 years and equate us with those misguided souls who flagellated their backs with whips to ensure they got to heaven when the calendar reached 1000 AD.