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Designing the future

Times may be very tough, yet two woodworkers are growing, but they have a recipe for success. It includes very unique design abilities.

It has once again been a very busy month trying to keep abreast of the latest developments in your sector. The past few weeks were spent speaking to strategic participants in the supply chain that support this industry to spending a few hours walking the production lines of prominent participants in the woodworking industry.

Obviously, space limitations restrict me from sharing all the highlights of my month working the Wood Southern Africa & Timber Times beat, however, I do have enough space to choose my personal favourites of the month and reflect on the lessons learnt.

Two woodworkers stand out for me in this edition. I did not choose them because they are the biggest and the best, but because of their uniqueness. Their refusal to walk the beaten path and explore niche ideas is what made reporting on Sandown Furniture and Houtlander an absolute pleasure.

Houtlander may still be a very young company, but its focus on “pushing the envelope” when it comes to design is clearly paying off, as you will be able to read at length on p54 of this edition.

Meanwhile, Sandown Furniture has decided to continue to shun “box-like” designs that have become the norm in many retail outlets. Read on p56 of this edition of the title how this strategy has led to the company now having an order book that warrants yet another expansion.

Both companies also have something else in common. This is their cautious approach to growth and diversification. Expansion is calculated and controlled to avoid compromising on design and manufacturing quality, the very trait that has given them a competitive edge, to date.

These are clearly recipes for success considering that both are bucking the downward trend that has resulted in many casualties in not only the industry, but the larger South African economy.

Clearly, there is still a market for premium designs and workmanship, and those companies who have decided to focus on this niche are thriving.

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South Africa is developing its own national FSC forest management certification standard. This implies that we would no longer use the generic standards adapted and used by the certification bodies, making FSC certification more equitable through a standardised set of indicators, verifiers and guidelines that are relevant to South Africa.

However, if these new standards do not give equal attention to economic, social and environmental issues – the three pillars of FSC certification – we could end up with a standard that results in more problems during auditing than the generic standards being used, at present.

There has been criticism of the current draft in that it does not place as much emphasis on the economic pillar as the social and environmental pillars. Even though forestry in South Africa has successfully spent much time and effort integrating environmental and social aspects into their standard management practices, we still need to be mindful of the fact that without the financial bottom line being met, it is not possible to meet the environmental and social obligations satisfactorily either. It is therefore of critical importance that professional foresters review these draft standards and send their comments to the standards generating body for FSC in South Africa.

Once the standard is accepted, we will have to live with its contents for a very long time and we must therefore use this opportunity that we have to influence this very important document.

FABI researcher receives prestigious award

Prof Myburg holds the Chair in Forest Genomics and Biotechnology and directs the Forest Molecular Genetics (FMG) Programme, a highly successful research venture started by UP, Sappi and Mondi in 2003. Together with his team, Prof Myburg’s work has focused on the genomics and molecular genetics of wood development in forest trees and, in particular, the genetic regulation of cellulose biosynthesis in Eucalyptus trees.

Under his leadership, the FMG research team has pioneered the use of population genomics and systems genetics approaches to unravel the genetic control of wood formation in Eucalyptus trees. Prof Myburg is the coordinator of the international Eucalyptus Genome Network and was the lead investigator of the US Department of Energy Eucalyptus Genome project which last year resulted in the publication of the entire Eucalyptus genome sequence in the Nature journal. Currently, his work focus is on the genetic improvement and engineering of forest trees to increase biomass, growth and enhance cell wall biopolymer properties for bio-based products.

Prof Myburg won a Special Photonics (named in celebration of Unesco’s International Year of Light and Light-based Technologies) TW Kambule Award in recognition for his research and its outputs over the last five to 10 years.

Are these “interesting” times?

By Rob Thompson

I understand that there is an age old Chinese curse that damned the recipient to “stay in interesting times”.

Well, the first two months of 2016 have certainly been testing in many respects and events emanating therefrom provide the focus for my quick litmus test to determine the extent, if at all, of the current time being “interesting” in the Chinese sense.

The drought persists and by all accounts the tragic consequences are being felt further and further afield. In the KwaZulu-Natal forestry areas, it remains largely a green drought given intermittent and fairly regular low key rain events occurring. Key water reservoirs however, are facing depletion, with towns such as Vryheid receiving absolutely no municipal water feed at all. With reserves in the Midmar Dam around the 45% mark, the city of Pietermaritzburg and towns further downstream face dire straits in the near future, should adequate rain not fall, and the local authorities not wake up to the fact that restrictions should be implemented immediately, to change people’s water-usage consumption patterns.

Contrary to country wide dam levels, this year’s scheduled municipal elections has resulted in the political bantering, electioneering and rhetoric levels having reached epic heights. The tragic comedy that is SONA played out with spectacular associated national fiscal losses, party political posturing and dare I say it, huge time and resources wasted which we can ill afford. Politicians meanwhile tastefully expressed their concern and solidarity to the public, by appearing at the proceedings in top end luxury vehicles, festooned in lavish designer fashion garments. At our tertiary learning institutions, students appear to be hash-tagging anything that they deem...
needs falling and are applying social media technology to fuel protest momentum and support. Statues, buses, paintings, buildings, rugby matches and opposing factions have all been victims of recent violent student and supporter confrontation. Nothing appears sacred. Concerning and volatile racial undertones are starting to surface, which we trust do not ignite against untended political hot spots fuelled by copious hot air.

By putting aside the macro events of the day and lowering ones gaze to the more micro-personal level, there is actually an amazing transformation occurring and well worth the look. Unsung deeds and events are unfolding daily, without accolade or reward. Millions of litres of bottled water have been donated, packed and delivered to needy towns across the province. Citizens and businesses have donated and established water tanks at strategic centres in places such as Vryheid and I have witnessed timber and other farmers, corporate forestry companies and private individuals, regularly fill such with bakkie-sakkies and water-tankers. Water saving initiatives abound and are being shared widely. Feed is being donated to livestock farmers in dire need, with no call for recompense or acknowledgement.

At a recent meeting I attended at NMMU-George Campus (Saasveld) I encountered a low key and thankfully peaceful student protest about lack of student accommodation. Against this backdrop, and contrary to my initial protest influenced expectations, I met a number of under- and post-graduate forestry students and their lecturers and was really impressed at their energy and desire to pursue excellence.

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The institution itself is undergoing a metamorphosis, with more technology and social media-based teaching methodologies, greater course offerings and a post-graduate research component being developed. The student demographics is encouraging as is the overall demeanour prevailing: Protest might be in season currently, but I strongly sense that NMMU George Campus will pull through better and stronger. Perhaps, protests are part of a development process that institutions have to endure, overcome and prevail over to face a new South African context. If my experience is anything to go by, political posturing has had an unintended and positive consequence. At work and social interfaces, people who would not normally interact, are actually discussing daily news events and sharing their views, concerns and potential solutions.

Communication is easier now given social media and it knows no colour boundaries. Yes, some communication remains vindictive but there is certainly a growing trend to tackle the issue rather than the person. There is a growing realisation that we are on our own and an understanding that politics, crime and grime, are distinct realities which, while we would prefer to wish away, we are forced to deal with and overcome.

We have a long way to go, but once you start to tally signs of solidarity, you will be amazed at the progress being made. Farm labour conditions are improving, more inclusive management is growing and the forestry industry, in particular, is proactive in determining solutions to complicated social issues. All of these actions are under the radar, but are arguably more profound than any current political bluster.

Prof Josh Louw of NMMU George Campus left me with an idea for an ideal metaphor for the positives that I describe above. In the forests surrounding the campus, it is a proven fact that a group of leopards are surviving and breeding well. These beautiful animals are no doubt under immense pressure from humans, forestry and other agricultural type activities, road networks, restricted range to roam and a limited food resource. However, they remain largely undetected and go about their lives in a measured, supportive and target directed manner. They manage and counteract huge pressures from outside and yet remain viable and healthy.

We should do the same. Identify the noise and spam. Support the good and likeminded and survive within our pressured environment. We must prove the Chinese wrong. We live in “challenging” times and we will overcome.
Remote sensing detects wattle rust

Monitor and surveillance of forest pest and pathogens are essential parts of an effective forest protection management strategy. However, current capabilities are inadequate for the needs of the sector with conventional field-based methods being prohibitively expensive, labour intensive and time consuming, according to Muhammad Oumar.

During 2013 a new disease was observed in black wattle around the Natal Midlands area, now identified as Uromycladium acacia or wattle rust. The pathogen appears to be spreading fast and poses an enormous threat to the wattle growers in the region. He presented his research at an ICFR event that involved using new generation Landsat 8 multispectral imagery to detect the presence of wattle rust in forest plantations.

The study focused on the Enon and Etterby forest plantations located in Richmond, KwaZulu-Natal. This area is situated at an altitude range between 900 m and 1 400 m above sea level and experiences an annual rainfall ranging between 800 mm and 1 280 mm. The initial test was to identify if the satellite bands were able to predict whether a tree was infected with wattle rust. For this, Oumar used Partial Least Squares (PLS) regression, generalises and combines features of principal components and multiple regression. Using this method, the seven bands were correlated with the observed health of the trees.

The overall accuracy of the PLS regression to determine the presence or absence of wattle rust was 96%. Oumar therefore concluded that the model successfully mapped the presence of the pathogen at different levels of severity. The research therefore demonstrated the potential of multispectral imagery to accurately detect the presence of wattle rust.

From here Oumar took it a step further and decided to map the levels of severity. Based on the data collected, Oumar then developed a probability map, identifying the areas likely and unlikely to be affected by wattle rust.

The framework successfully mapped the presence of the pathogen at different levels of severity and demonstrated the potential of multispectral information to accurately detect the presence of wattle rust while developing an accurate monitoring framework.

A useful addition to any fire-management team

The powerful STIHL BR 560 backpack blower with a high air throughput of 1 210 m³/h (maximum 1 729m³/h) can clear natural debris from previously constructed fire lines, create new fire lines by blowing away debris, and clears dry earth mineral firebreaks quickly and efficiently. While the BR 560 is not a total fire-fighting tool on its own, it can replace beaters on a fire line and be used in the management of cold lines and when control is needed while clearing a line for back burning. It can be used on hard-to-reach terrain and easily clears between racks and rows. With low fuel consumption and comfortable to use, the STIHL BR 560 is a fast, clean, cost-effective and user-friendly addition to any fire management repertoire.

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Managing pitch canker fungus in nurseries

The best way to manage pitch canker fungus is through hygiene, thereby reducing the occurrence of contact with the fungus.

The pitch canker fungus (PCF) *Fusarium circinatum* can cause post-planting mortality of *Pinus patula*. A decade ago this disease was causing severe economic losses in newly planted *P. patula* crops. An industry working group, funded through Forestry South Africa, was initiated in 2010 to address this problem. Today, post-planting survival is much improved as a result of applying research produced through this group.

A critical understanding provided by the research was the link between asymptotic planting stock infected in the nursery, and subsequent post-plant mortality.

Armed with this knowledge, a focus on nursery management interventions was possible. Improved hygiene measures were the interventions that have proved most useful in reducing asymptomatic infections.

Replacing *P. patula* with planting stock that is tolerant to PCF *P. patula* x *P. tecunumanii* hybrid root cuttings, has been another important industry response to this disease. However, this planting option has less frost tolerance and so cannot replace entirely the need for *P. patula*. Therefore, continued production of *P. patula* seedlings that have low frequency of asymptomatic PCF infections is an important requirement.

Dr Andrew Morris presented a summary of the current understanding of the infection mechanism and detailed the basic hygiene requirements to limit dispatch of asymptomatic infected planting stock at the ICFR Annual Research Meeting held in March.

Reducing losses

PCF was first found in South Africa in a nursery in Mpumalanga in 1990. Over the course of a decade, the disease had spread through virtually all of the country’s forest nurseries. The first recorded full-blown PCF outbreak in a plantation took place in 2007.

Between 1990 and 2000, nursery managers were able to reduce losses as a result of PCF to a low level. However, from 2000 onwards post-planting mortality became an increasing problem in *P. patula* plantations across the country, most likely from contamination in the nursery.

In 2010, the South African Pitch Canker Association was founded to undertake research to address this increasing problem. There has since been a decrease in post-planting mortalities. Operational experience would suggest that PCF is under control, but certainly not eradicated.

Reducing contact

Research has shown that root infection in the nursery is the common cause of PCF. Moreover, PCF frequently enters the seedlings through the roots as an asymptomatic infection. To manage PCF, it is essential to stop the fungus from getting into the root. The best way to do this is through hygiene, thereby reducing the occurrence of contact with the fungus.

There are a number of ways in which PCF can be introduced. Seed is the likely continental long-range vector for the spread of the fungus, with contaminated seed coming from PCF infected orchards. *P. patula* appears to be the exception with *P. patula* seed orchards currently being PCF free. According to Dr Morris, testing of all seed that enters the nursery is the best way to prevent infected seeds from spreading the fungus.

PCF can be transmitted through water. Where water is recycled via surface drainage from the nursery, irrigation is likely the source of the infection. Treatment with hydrogen peroxide or a hypochlorite can eliminate PCF in water. Nursery water sources in summer rainfall regions are typically free of PCF, however it is recommended that regular testing of irrigation water occurs.
Another culprit for the spread of the disease is seedling trays, making the sanitation of seedling containers essential. Sanitation methods for re-used seedling trays have been well studied, with preferred methods of sanitation being steam pasteurisation or the use of strong disinfectants, such as H2O2 and sodium metasulphite.

Hot water dipping and chlorine-based disinfectants are only partially effective.

Growing media is typically not contaminated, but must not be reused.

It is also important to cull diseased seedlings to avoid the spread of the disease. Infected seedlings can take up to a month to die, during which time they are a source of inoculum, providing ample time for the disease to spread to surrounding seedlings.

Culling as frequently as possible is therefore essential. A study has shown that culling monthly results in twice as many deaths as when weekly culling is done. If no culling is done, the mortality rate is four times that associated with weekly culling. This supports Mike Kruger’s long standing assertion "when in doubt, pull it out", emphasises Dr Morris.

### Boosting seedling defences

There has been a lot of work recently on treatments that could potentially boost seedlings’ defences against PCF. Several chemical and biological applications have been evaluated. Some improvements were measured when treatments were applied before plants were challenged by PCF, particularly in otherwise sterile growing media. However, there has been no reported successes using treatments as part of a commercial production operation.

Dr Morris believes that there is a lot of research to be done to determine methods of boosting defences that actually work. This research needs to address several questions. Firstly, how can we treat seedlings ahead of PCF infection? Secondly, do we need early and repetitive treatments? And lastly, will any nursery treatment translate into improved post-plant survival?

### Keeping inoculation levels low

Ultimately, it is important to keep inoculant levels as low as possible because it is the cause of primary infection of the root and culling must be done to avoid secondary infections as both of these lead to high levels of post-planting mortality. Hygiene is crucially important and processes to ensure inoculant levels remain low must always be in place.
Until parasitism is reached and maintained

Foresters need to inoculate an area until parasitism is reached and maintained.

When Sirex larvae and nematodes meet in a conductive fungus zone, the process of parasitism may occur. The word "may" is used deliberately because it contributes towards answering a question that has been asked many times, but has a complicated answer, explains Dr Philip Croft. That question is: "how many times must I inoculate an area?" The simple answer is: "Until parasitism is reached and maintained", says Philip Croft. But when is that step achieved? The parasitism verification process is conducted through dissections which results in a parasitism percentage.

Starting point
The life cycle of the wasp is the starting point of this approach with the introduction of nematodes either by artificial inoculation or natural distribution through parasitised female *Sirex noctilio* wasps. The nematode, *Deladenus siricidicola*, has a two-phase life cycle which must be maintained for it to be effective. There are four scenarios which can impact this:

- The nematode is effective in entering the larvae of the *S. noctilio* but fails to enter the ovaries and eggs, resulting in *S. noctilio* viable eggs being produced.
- The tree environment is not conducive to good growth of the fungus placed in the tree by the female *S. noctilio* due to either resin, temperature, moisture conditions, or other factors. Poor fungal growth results in small wasps being produced which do not fly far and are likely to be poorly parasitised, lazy to oviposit and create a poor nematode transport system.
- Artificial inoculations are effective but can introduce too many nematodes into the tree which impacts on the fungus supply. Each *S. noctilio* larvae may be too heavily parasitised and die prematurely in the tree. Under these conditions, while the highly virulent nematodes die in the larvae, the virulent poor nematodes may be successful in spreading through successfully pupated and emerged wasps.
- The *D. siricidicola* within the tree can remain feeders and not enter the parasitic phase. These nematodes will not parasitise the *S. noctilio* males and females and will eventually die in the tree.

Over the last 10 to 15 years, damage to pine timber plantation by baboons has become an ever-increasing problem, particularly in the Mpumalanga region. Unfortunately there is very little data available on the real extent of the damage or the economic impact.

One ICFR trial, originally established as a *Pinus elliottii* re-establishment silviculture trial, has experienced repeated baboon damage, making it unsuitable for its original aim. However the trial is now being evaluated on a more regular basis to associated productivity loses. Together with a larger network of monitoring plots that are currently being established, this trial provides some very useful data towards supporting the development of a sustainable integrated management strategy.

Dr Marnie Light presented the findings of this trial to date at the recent ICFR Annual Research Meeting.

Background
The trial area is located just outside of Sabie in Mpumalanga and is planted with *Pinus elliottii* and consists of 36 trees on

Scenario 1, 3 and 4 can be prevented from occurring while scenario 2 is climate and tree dependant.

To address these, the South African Sirex Control Programme has a system in place which depends on industry assistance in supplying sample logs for the emergence cages, where the following interventions are undertaken:

- emergence cage test for virulence and parasitism,
- log collection sites and parasitism data collection are sent to FABI annually to select the best parasitising nematodes, and
- for sites where high parasitism occurs, nematodes are stored and used in new cultures to breed new nematode stock for inoculation.

Ultimately, inoculation must be done until parasitism in the egg is reached and maintained within the plantation. This is verified by the dissections of *S. noctilio* caught in emergence cages.
36 plots, totalling 1296 trees. The initial survival in the trial was approximately 90%.

Baboon damage was first noticed in 2012 when the trees were three years old. Since then the research team has been back once a year to measure the baboon damage. In the last two years the team has increased its number of visits to three times per year to measure the pattern of development and the effects on growth. This follows assessment in 2014 when the trees were pruned and a large increase in baboon damage was observed.

General observations
It was found that there was no obvious preference for any of the particular silvicultural treatments in the trial. Fairly uniform damage was observed across the trial and all the replicates within the trial have been fairly evenly affected.

“We are quite confident that this is a useful trial in terms of being able to use the data that we have collected,” says Dr Light.

It has previously been suggested that areas that have not been weeded and are full of weeds as a result may deter baboons. Dr Light however found no particular preference for weed-covered or weed-free areas, with equal damage recorded across all areas.

Methods and results
In 2014 the team adopted a scoring system where they noted whether the tops of the baboon damaged trees were green or brown, which Dr Light considers an important factor. They also noted whether the damage was new or old, the radial damage (the degree of ring-barking) and the lesion length to the nearest 10 cm.

According to Dr Light, the ultimate question that needed answering was ‘how much damage is there and how does it affect growth?’

Dr Light mapped out the trees in terms of the colour of their tops. The number of brown tops came to roughly 10%. However, another 15% had green tops but had experienced severe baboon damage. “What you see from a distance is not always what is really going on inside the compartment,” says Dr Light.

The results show an increase from 25% of trees damaged in 2014 to almost double that in 2015 – a huge increase in the amount of damage. It is worth noting that the majority of these are not brown tops, but greens tops. In 2016 only around 40% of the trees in the trial were healthy with the smaller trees appearing to experience less damage than the larger trees.

The trees that are undamaged were found to have a higher basal area increase (BAI) while the trees that have been damaged have a lower BAI. Baboon damage therefore has a direct correlation with the growth of the trees.

Conclusions
“There really are many more damaged trees than would be visible from aerial or remote survey,” says Light. Despite severe damage the trees take a long time to die, but growth is reduced, and while some healing occurs the wood is damaged and often unusable.

By Danielle Petterson
For several of the temperate eucalypts in South Africa, production of sufficient seed from improved orchards is a major constraint to deploying genetic gain.

Eucalypt plantations in South Africa are predominantly based on planting stock raised from superior seed. The annual eucalypt seed requirement in the industry is approximately 100 kg clean seed.

The realised benefit of tree improvement is dependent on seedling planting stock delivering the genetic gain available into commercial plantations as soon as possible. To achieve this, new seed orchards must be established as new levels of genetic improvement are available for deployment. However, most of the current commercial eucalypts, particularly the temperate species, are neither precocious nor prolific flowerers. This retards the onset of flowering and seed production in young orchards, and hampers outcrossing. Low levels of outcrossing within orchards can negatively affect the quantity and genetic quality of seed produced.

Grafting has traditionally been applied in Eucalyptus species for the purpose of cloning superior genotypes for inclusion in breeding and seed orchards. Grafting scions from reproductively mature seedling trees onto seedling rootstocks has alleviated the problem associated with rooting of the scion, but in most cases, it has resulted in a delayed onset of flowering in scions. Scion/rootstock incompatibility is also problematic in some of the commercial eucalypts.

Potential benefits of rootstocks
The use of precocious, prolific flowering, low-chill-requiring rootstocks could offer the following advantages to eucalypt breeders and seed producers:

- a reduction in time to first flowering in shy-flowering species and genotypes,
- improved compatibility between scion and rootstock,
- a reduction in vegetative growth,
- more compact and manageable trees,
- alleviating the need for potentially environmentally harmful and expensive plant growth regulators such as paclobutrazol to achieve the same effects,
- increased flower and seed production in shy-flowering species and genotypes,
- a reduction in required chilling (for floral induction) of scions from high-chill-requiring species,
- improved consistency of annual flower and seed crops, and
- increasing seed yield per unit orchard surface area.

Good compatibility
Dr Robin Gardner (ICFR) started investigating potential application of rootstocks for commercial temperate Eucalyptus species in 2009, focusing on *E. nitens*. In this preliminary work, it was found that time to first flowering in *E. nitens* could be reduced from 51 months to 27 months (53% reduction) by grafting onto *E. nitens* × *E. grandis* hybrid rootstocks, compared to grafting onto *E. nitens* commercial seedlings (conventional method). Good compatibility was achieved when grafting onto inter-specific hybrid rootstocks where one of the hybrid parents was the same as the scion species.

The increase in floral crop production of *E. nitens* scions grafted onto prolific flowering inter-specific hybrid rootstocks was as high as 400%. Both the above appeared to be rootstock x scion combination dependent.

The results suggested that rootstocks need to be phenotyped for good overall compatibility with scions and flowering ability.

Enabling technologies
In 2015, ICFR’s Dr Sascha Beck-Pay began working on a project that involved the identification of rootstocks that will improve clonal seed orchard seed production in shy-flowering eucalypt species.

The rootstocks that are needed must be prolific and early flowerers and have good compatibility. One of the criteria was that the rootstocks must contain a scion species as hybrid partner. Eucalyptus grandis was chosen as the other hybrid parent to enable improved rooting for future clonal rootstock production and to improve flowering and help to lower chill requirements.

The scion species decided on were *E. nitens* and *E. smithii* – both shy flowering species – and the first grafting will be done this year.

In 2015 rootstocks were selected from hybrid clonal trials based on flowering ability. For the *E. nitens* scion parent the research team selected 19 *E. grandis* × *E. nitens* which will be grafted onto the rootstocks. For the *E. smithii* scion parent they 8th *E. grandis* × *E. smithii* rootstocks were identified. Scion selections within *E. smithii* will be grafted onto these rootstocks.

Dr Beck-Pay and her team will assess grafting compatibility and survival will be scored in the nursery and continually monitor when grafts are established in field trials. In 2017 and 2018, more rootstocks will be identified and tested to ensure a good base amount of rootstocks.
Surviving the freeze

To date, no artificial freezing methods have been developed for frost tolerance in black wattle in South Africa. There is also very little emphasis placed on understanding the quantitative biochemistry of frost tolerance in black wattle.

PhD candidate Mayuri Jugmohan hopes to develop an artificial method to screen for frost tolerance in black wattle in South Africa and identify the protein markers for frost tolerance.

66% of the global landmass frequently experiences temperatures below 0°C, with 50% of landmass experiences temperatures below -20°C. While animals can migrate or hibernate, trees are exposed to these extreme temperatures, responding in one of two ways: dying as a result of freeze injury or frost damage, or developing mechanisms for survival. In order to understand and increase survival, we need to first understand freeze injury and how trees in cold climates such as Canada and Russia survive.

Freeze injury results in visible damage, namely splitting of tree trunks, blackheart, tip die-back and sunscald. On the cellular level, there are also changes taking place. These include accumulation of reactive oxygen species, cell membrane leakage, dehydration, a reduction in photosynthesis, enzyme activity and metabolic reactions and changes in proteins and RNS structures.

Surviving cold temperatures

There are three main mechanisms that trees employ to survive cold temperatures. One of the most visible, as seen in deciduous trees, is the loss of leaves during late autumn and early winter, which prevents transpiration.

Trees also regulate their growth cycles according to the seasonal cycle, where they enter a dormant period during winter. Trees are also able to undergo a process known as cold acclimation where they develop an enhanced tolerance to sub-zero temperatures. This process involves changes at the physiological and biochemical level, and is brought out by alterations to the transcriptome, lipidome, proteome and metabolome. It is both a polygenic and quantitative trait.

To date, no artificial freezing methods have been developed for frost tolerance in black wattle in South Africa. There is also very little emphasis placed on understanding the quantitative biochemistry of frost tolerance in black wattle.
Cold acclimation is initiated by exposure to low, non-freezing temperatures, shortened photo periods and a change in the cellular membrane structure. The cell membrane loses its fluidity and becomes more rigid. Thereafter, within the cell, there is a reorganisation of the active microfilament, an induction of calcium channels, as well as an influx of calcium into the cell. This results in the expression of cold responsive genes.

There are many factors that contribute to the cold acclimation process. The first is osmoregulation, or the accumulation of osmolytes, such as proline and sugars. This leads to the formation of glassed solutions which are highly viscous and full of solutes which protect the cell against freeze damage. The cell is also able to undergo a process of supercooling where intra-cellular water remains liquid close to -40°C. This is important because it prevents intra-cellular freezing. There is also an accumulation of reactive oxygen species defence proteins and scavenging enzymes which help to combat oxygen distress.

The lipid composition within the cell membrane also experiences an increase in phospholipids. This also helps protect cell membranes against freeze damage. Antifreeze proteins are also synthesised and secreted and these proteins help to inhibit ice crystal growth. In addition, both heat shock and cryoprotectant proteins are synthesised and secreted and serve to protect the structure of other proteins against damage. There is an active relocation of water from the intracellular environment to the extracellular environment to prevent intracellular freezing. Lately, photosynthesis is enhanced.

Screening for frost tolerance
For her project, Jugmohan will adopt a proteomics approach to understand frost tolerance in black wattle.

Genetic transformation has improved the understanding of tolerance to many abiotic stresses, such as frost and drought. But such traits are polygenic and quantitative, therefore genomic markers are insufficient. Proteomics allows researchers to study the product of induced polygenic activity. It allows them to quantitatively assess active physiological processes and study and characterise preformed and induced proteins.

Artificial screening
For her PhD project, Jugmohan has two main objectives. The first is to develop an artificial method to screen for frost tolerance in black wattle in South Africa. The second is to identify the proteins that are involved in frost tolerance. For the development of an artificial screening method, Jugmohan will be using a refrigerated container. Using this container, she will optimise the temperature, duration and frequency in order to simulate frost causing conditions. This will enable her to measure frost damage using physical indicators and, once this is established, isolate the frost tolerance proteins that are induced. This will be done using the following method:

### Identification of proteins involved in frost tolerance of black wattle

**Optimise protein isolation method**
- Time
- Bulk analysis
- Separate proteins
- Mass spectra
- Biochemical marker selection
- Optimise protein isolation method
- Cost
- Two-dimensional electrophoresis
- Mass spectrometry
- Bioinformatics for protein identification
- Marker validation
- Time
- Bulk analysis
- Separate proteins electrophoresis
- Mass spectra
- Marker validation

**During cold acclimation in woody plants, several proteins are upregulated. These include the following:**

<table>
<thead>
<tr>
<th>Protein</th>
<th>Species</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dehydrin proteins</td>
<td>Poplar, Peach, Siberian Spruce, Blueberry</td>
<td>Responsive to water stress, stabilisation of proteins in membranes and cellular matrix</td>
</tr>
<tr>
<td>Heat shock proteins</td>
<td>Poplar, Peach, Siberian Spruce, Sweet Chestnut, Mulberry</td>
<td>Prevents irreversible protein inactivation and aggregation</td>
</tr>
<tr>
<td>ROS defence proteins</td>
<td>Poplar, Peach, Siberian Spruce, Scots Pine, Red Spruce</td>
<td>Combat oxidative stress</td>
</tr>
<tr>
<td>Carbohydrate metabolic enzymes</td>
<td>Peach</td>
<td>Metabolism of carbohydrates</td>
</tr>
<tr>
<td>Cellular metabolic enzymes</td>
<td>Peach</td>
<td>Control of cellular metabolic reactions</td>
</tr>
<tr>
<td>Pathogenesis-related proteins</td>
<td>Western White Pine</td>
<td>Defence against pathogens</td>
</tr>
</tbody>
</table>
Suitable alternative to eucalypt?

Are Corymbia hybrids a viable alternative to the pest-plagued eucalypt hybrid clones?

The Zululand region is one of the most important plantation forestry areas in South Africa, contributing 22% of the country’s hardwood pulpwood. Dr Robin Gardner of the ICFR sought to answer the question of whether Corymbia hybrids are a viable alternative to the pest-plagued eucalypt hybrid clones in this region.

Approximately 20% of the total managed coastal Zululand timber production area of 76 000 ha can be classed as dry. With a mean annual precipitation (MAP) of less than 900 mm and low productivity potential, operational planting choices for these sites are limited. Moreover, it is not only periodic drought, but the arrival of new insect pests and diseases in the region which continue to challenge foresters.

The ICFR has carried out considerable site-taxa interaction research in Zululand over the past three decades, aimed at identifying alternative eucalypts for pulpwood production on the coastal sites in the region. Highly promising taxa emerged from these trials, including Corymbia henryi (CH), C. citriodora subsp citriodora (CCC), C. citriodora subsp variegata (CCV), E. longirostrata and E. argophloia. Mainly due to its excellent pulping properties and fibre yield, the genetic improvement of CH has been pursued to date. More recently, CH’s non-susceptibility to Leptocybe invasa (Bluegum chalcid) and Glycaspis brimblecombei (Red gum lerp psyllid), pests causing damage to commercial Eucalyptus hybrids in the region, increased its appeal as a viable planting option. However, two substantial problems persist with CH, namely high basic wood density and low rooting percentage of cuttings, the latter trait rendering clonal forestry non-viable.

Recently, an opportunity arose to test a range of Corymbia hybrid material (seedlots), together with relevant industry controls, in Zululand in collaboration with Australia’s Queensland DAFF.

Corymbia hybrids in Australia

The Corymbia hybrid material has demonstrated excellent commercial forestry potential in drought-prone areas of tropical and sub-tropical south-eastern Queensland. In site-taxa trials carried out in Queensland and New South Wales during the late 1990s, much of CH, CCC, and CCV material showed high susceptibility to Quambalaria shoot blight. However, it was observed that C. torelliana (CT), certain provenances of CCV and the hybrids between CT and CH, CCC and CCV showed high resistance to Quambalaria. A Corymbia hybrid breeding programme was initiated in Queensland in 1999 and by the late 2000s the Corymbia hybrids were generally outperforming all four parent species.

In 2009, Dr Gardner paid a visit to Queensland Hardwoods Project (DAFF) and numerous extensive site-taxa interaction trials across the south east of Queensland.

Corymbia hybrids in South Africa

In 2011 and 2012, the ICFR established three CT provenance or progeny trials on the coastal plain. In total, there were 32 families and two provenances.

The appeal of the CT-based Corymbia hybrids is significant. Firstly, they offer improved root strike over parent species which offers potential for clonal forestry. They also offer low susceptibility to Leptocybe and Glycaspis. There is lower basic wood densities over parent species in CH, CCC and CCV. Increased environmental plasticity results in tolerance to heat, cold and drought, as well as tolerance to hydromorphic soil conditions or water logging and resistance to fire. Finally, Corymbia hybrids offer decreased Quambalaria susceptibility. However, CT associated hybrids were not found to be immune to all pests and diseases, and therefore breeding and selection for resistance could be required down the line.

In August 2013 the ICFR established two new generation site x eucalypt taxa interaction trials in northern coastal Zululand on two sites contrasting strongly in MAP and productivity potential. The Corymbia hybrid material was based on hybrids between CT, CH, CCC, and CCV. A limited number of novel, locally developed Eucalyptus clones, namely hybrids between E.
FAO launches new forest and water programme

Eight West African countries are exploring ways of leveraging the contribution of forests to water security.

FAO has launched a new programme aiming to enhance the critical role of forests in improving water quality and water supplies, on the occasion of the UN’s International Day of Forests.

The programme, focused specifically on the close relationship between forests and water, will start by looking at ways to improve water security in eight West African countries: Gambia, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Senegal and Sierra-Leone. The agency will work with local communities to raise their awareness of the interactions between forests and water and help them to integrate forest management in their agricultural practices to improve water supplies. FAO used this year’s International Day of Forests celebration to shine a spotlight on how forests can contribute to improving water availability, especially in countries facing scarcities of this

from page 13
Suitable alternative to eucalypt?

longirostrata, E. grandis and E. urophylla, were included in the trials. The latter material remains largely untested within the Zululand coastal plantation forestry environment.

Measured and assessed

The trials were measured and assessed comprehensively in September 2015. Since establishment, both sites have recorded annual total rainfall figures well below MAP. Regardless of the tough growing conditions, several Corymbia hybrid seedlots, are performing exceptionally well, reports Dr Gardner. To date, all Corymbia treatments, including the locally improved C. henryi seedlots are free from any major insect problems. No drought stress symptoms are evident in any of the Queensland CT, CT x CCV and CT x CCC families, nor in the South African CH material.

Based on two years’ results of the Zululand trials, relative to the performance of the controls, the majority of the Corymbia hybrid seedlots are looking extremely promising. Moreover, based on the performance of Corymbia hybrids in frost-prone, inland areas of south–eastern Queensland, the same hybrids may have good potential for similar dry inland areas of South Africa. While the data from the first 24 months is being compiled for upcoming publication, the next measurement or assessment is planned for August 2016, which will mark the three year point. Dr Gardner believes that Corymbia hybrid vegetative propagation protocols need investigating locally.

Finally, based on the excellent performance of the South African CH seedlots in the two trials, Dr Gardner believes that hybrids between C. torelliana and locally improved C. henryi would be worthwhile pursuing.
precious resource which is becoming increasingly important in the face of climate change.

“The challenges are many, but the goal is very clear: to ensure the sustainable management of forest and water resources on the planet,” said FAO director-general Jose Graziano da Silva in his remarks at the IDF ceremony in Rome.

“Promoting forest restoration and avoiding forest loss will require a significantly increased level of funding and innovative financing, including from private funds and traditional investors, in the coming years.”

“FAO is committed to providing a neutral platform for negotiations and dialogue, to encourage greater interaction among all the parties working to achieve sustainably managed forests,” he added.

Improved monitoring
The programme kicks-off with a first focus on setting up a forest-water monitoring framework to help countries assess potential forest benefits, in terms of water resources. This will involve developing a set of standardised monitoring indicators and field methods to identify which forest management interventions result in improved water quality and enhanced supplies. This data will be in turn used to develop better-informed practices and policies to unleash the full potential of forests in improving water supply.

The monitoring framework will be piloted in West Africa’s Fouta Djallon Highlands, with field activities having kicked off this month. The project, funded by the Global Environmental Facility, is being jointly implemented by FAO, the United Nations Environment Programme (UNEP) and the African Union (AU).

The water cycle
The water security of eight out of 10 people in the world is under threat. Forests have an important role in providing and regulating water at the local and regional levels in a number of ways, from groundwater recharge and erosion control to promoting precipitation through evapotranspiration.

Forested watersheds and wetlands provide about 75% of the planet’s freshwater resources, while over one third of the world’s largest urban centres depend on protected forests for a significant proportion of their water.

In addition to boosting supplies, forests also maintain water quality: it is estimated that every US$1 spent on sustainable forest watershed management can save $7.5 to $200 in water treatment costs.

“The role of forests for water is becoming even more important in the face of climate change, with increased incidences of extreme climate events such as flooding and drought, and increased water insecurity,” said FAO assistant director general of forestry, René Castro.

“The new programme that we’ve launched today aims to showcase that forestry is not always in competition with agriculture and urban development for water, but on the contrary can address water and food security issues and produce more resilient landscapes.”

The International Day of Forests celebrates and raises awareness of the importance of all types of forests, and trees outside forests, for the benefit of current and future generations.

FAO also used the occasion of the day to highlight the major contribution of forests to achieving Sustainable Development Goals (SDGs).

While SDG 15 addresses the need to sustainably manage forests and trees, forests also play a vital role in achieving those goals related to ending poverty, achieving food security, and ensuring sustainable energy, and in particular SDG 6 on providing clean water and sanitation.
Drilling down safety standards

IML-RESI technology is being used worldwide for identifying decay in trees and construction timber.

Resistance drilling is suited to identifying decay and cavities in trees and construction timber, considering that measured drilling resistance correlates with wood density. This is according to representatives of Instrumenta Mechanik Labor (IML), which has been developing robust and precise resistance drilling technologies for assessing wood quality since the early 1990s. The company’s IML-RESI technology is being used worldwide for identifying decay in trees and construction timber.

A 3mm diameter drilling needle is driven into the wood and its resistance properties measured against the needle head. Intact wood has higher resistance characteristics than decayed wood, which has a lower amplitude. Resistances are recorded by drilling curves encountered over the drilling depths.

Wood items are exposed to humidity and soils and are therefore prone to decay. For safety reasons, timber structures have to be inspected as internal decay is often not seen visually from the outside and may result in wood failure and physical injury.

Wooden utility poles mainly decay below ground level. Using resistance drilling, measurement decay and damages to wooden structures due to insect infestation can be detected reliably.

Precision instruments for wood quality analysis made in Germany

The company name IML (Instrumenta Mechanik Labor GmbH) is linked since 1990 with robust and precise resistance drilling technique for wood quality assessment. The IML-RESI resistance drilling devices are worldwide used for identifying decay in trees and construction timber.

IML was founded in 1985 to develop, produce and distribute innovative precision measurement instruments. Since more than 20 years it is leading in the area of resistance drilling technique for wood diagnosis.

Resistance drilling is highly appropriate to identify decay and cavities in trees and construction timber because measured drilling resistance is strongly correlated with wood density. A three Millimeter thin drilling needle is driven into the wood and wood resistance measured that encounters the needle head. Intact wood has a higher resistance (higher amplitude) than decayed wood (lower amplitude). Resistances are recorded in resistance drilling curves over drilling depth.

Areas of application are tree inspection for assessing road safety and construction timber quality assessment f.e. timber bridges and wooden utility poles.
Areas of application:

Inspection of timber constructions and wooden utility poles

Timber constructions such as timber bridges or wooden utility poles are exposed to environmental conditions.

Wood members submitted to humidity and soils are prone to decay. For safety reasons timber constructions have to be inspected since internal decay is often not seen visually from the outside and may result in wood failure and physical injury.

Wooden utility poles mainly decay little below ground level. With resistance drilling measurement decay and insect damages on wooden constructions can be detected reliably.

Timber bridge constructions – testing timber beams for wood decay with the IML-RESI Power Drill®

Wooden utility poles with central decay and cavity – testing a wooden utility pole for decay with the IML-RESI F series on ground level

Urban tree inspection

When assessing the road safety of urban trees, decay localization and information about remaining intact shell wall thickness are of importance. Resistance drilling technique can

IML Wood Inspection Drills

Detect and analyze decay and cavity in Trees, Utility Poles or Timber Construction - Add valuable measurement data and factual evidence to your wood inspection process!

IML Instrumente Mechanik Labor System GmbH | Parkstraße 33 | 69168 Wiesloch | Germany | Phone: +49 6227 67970 | E-Mail: info@iml.de
determine decay and tree compartmentalization. In combination with a visual inspection tree road safety can be assessed.

**Is this urban tree still safe?**

Resistance drilling information reveals the internal condition of the tree. In this example resistance curves are visualized over a stem cross section. The resistance curves drop down at 11 cm drilling depth due to presence of decay.

**IML RESI resistance drilling devices**

Identifying decay in trees and construction timber

IML-RESI F series:

- Cordless drill device, handy and flexible
- Direct on-site drilling resistance results
- IML RESI Power Drill®
- High performance with minimum power consumption
- Digital data collection
- Automatic curve evaluation for wooden utility poles

Contact: email: info@iml.de Internet: www.iml.de
Start-off from stand-still

The ability to start-off from standstill and transport a gross combination weight of up to 325 tonnes can be easy.

Volvo Trucks has introduced a new member to the I-Shift family: I-Shift with crawler gears. The new gears, which are added to the vehicle’s automated transmission, provide specialised start capability for trucks carrying heavy loads in demanding situations.

The system is entirely unique for series-produced extra heavy trucks. Volvo Trucks’ new version of I-Shift makes it possible to add up to two new crawler gears, resulting, among other things, the ability start-off from standstill and transport a gross combination weight of up to 325 tonnes.

“I-Shift with crawler gears offers an entirely new scope for extra heavy trucks with automated transmission to regulate their speed when crawling slowly and even reversing. The driver can haul a heavy load without worrying about getting into situations that may lead to costly standstills,” said Malcolm Gush, sales director at Volvo Trucks South Africa. “This new technology will also be available in South Africa where extreme road and weather conditions often have a big impact on a fleet’s productivity, safety and profitability.”

With the new crawler gears, the truck can drive at speeds as low as 0.5 to 2 km/h. This helps immensely during precision manoeuvres such as in construction and maintenance tasks.

“The vastly improved driveability and starting capability with the new crawler gears makes the driver’s job far easier when operating in difficult terrain on slippery surfaces with heavy loads, such as in forests. The heavier the transport operation and the poorer the surface or the terrain, the more the driver gains from a truck with crawler gears,” explained Gush. For haulage firms carrying out heavy transport operations...
on demanding surfaces as well as regular highway driving, crawler gears also offer considerable flexibility and the possibility of improved fuel economy.

“I-Shift with crawler gears makes it possible to start-off from standstill in extreme situations. Combining them with a suitable rear axle ratio that optimises engine revs at high speeds results in lower fuel consumption on the highway. This is a significant benefit to haulage firms operating in these scenarios,” said Gush.

Depending on application area, I-Shift is available with one or two forward crawler gears, and with or without two reverse crawler gears. Reverse crawler gears make it possible to reverse extremely slowly, which is a major advantage when reversing manoeuvres require immense precision.

I-Shift with Crawler Gears

- I-Shift with crawler gears is a further development of Volvo Trucks’ I-Shift automated transmission.
- The new version of I-Shift has been specially developed for excellent starting capability and for driving at particularly low speeds.
- I-Shift with crawler gears can allow driving as slowly as 0.5-2 km/h and can handle starts from a standstill with a gross combination weight of up to 325 tonnes, which is unique for series-produced trucks with automated gearboxes.
- The transmission is available as either a direct-drive or overdrive gearbox with one or two crawler ratios. It is also possible to specify two reversing crawler ratios.
- The low crawler gears are integrated into the I-Shift transmission. In order to handle the high loads involved, several components are made of high-strength materials. The gearbox is 12 cm longer than a conventional I-Shift unit. I-Shift with crawler gears is available for Volvo Trucks’ 13- and 16-litre engines in the Volvo FM, Volvo FMX, Volvo FH and Volvo FH16.

Ratios, I-Shift with crawler gears

- In a gearbox with one crawler gear the ratio is 19:1 in a direct-drive gearbox, or 17:1 in an overdrive gearbox. (The ratio of the lowest gear in a regular I-Shift direct-drive gearbox is 15:1.) In a direct-drive or an overdrive gearbox with two crawler gears the lowest ratio is 32:1.
- The ratio of the lowest reverse gear is 37:1 in a direct-drive gearbox.
New from Cargo Floor: The Bulkmover!

An alternative development of the moving floor from Cargo Floor reduces weight in a safe and reliable way. In this execution, 15 wider floor profiles are used instead of the usual 21 moving profiles. This new 15-profile version is ideal for transporters that are involved in moving bulk goods only, and suitable for products such as: Wood chippings, Sawdust, Bark, Potting soil, Straw, Maize, Grain, Manure, Fertilizer, Domestic waste, etc.

Advantages over the standard 21-profile system (which is also suitable for palletized goods) are:

- Weight reduction of between 50kg and 300 kg, depending on trailer design and execution
- 30% less seams between profiles means less wear
- 30% less profiles means less assembly time
- Increased stability
- All hydraulic components are identical between the two executions. (Common drive unit)

BPW Axles is the Sole Distributor of Cargo Floor horizontal loading / unloading System.
Terminal tractors coupled with trailers move heavy weight trailered cargo.

New to BLT SA’s range of materials handling equipment are Capacity Sabre 9 terminal tractors which are coupled with trailers to safely move heavy weight trailered cargo throughout container terminals and across docks.

These modular terminal tractors, which can be customised for every specific handling task they need to perform, are ideally suited to demanding operations in distribution and logistics centres, warehouses, container and intermodal facilities, as well as for light industrial handling.

“Critical challenges facing the logistics sector include efficient cargo handling solutions that reduce operating costs, improve productivity and enhance safety of operations,” says Charity Gumede, marketing director of BLT SA. “Capacity terminal tractors ensure faster handling times, reduce on-site congestion and minimise demurrage costs for trucks waiting to be loaded and unloaded. By positioning trailers at discharge ramps, the road truck is able to transport further loads, instead of having to wait for a trailer or container to be discharged.

“In port operations, terminal tractors move trailers to and from vessels and storage areas to speed up operations, thus increasing operational efficiency.

Capacity Sabre 9 terminal tractors have a robust frame construction and precise manufacturing tolerances, ideally suited to handle rigorous operations. This series has been designed with a 30% faster actuation of the boom than previous models.

The advantage of this is reduced coupling times which enables quicker drive-aways. A lower, tapered skid ramp minimises trip outs of the cab and for increased operator safety, there is a lower step height and new sight line designs for improved visibility.

Other features include torque ratings of 990 Nm @ 1 500 r/min. The latest technology in fuel savings significantly decreases operational and maintenance costs. Components are easily accessible for efficient ground level serviceability. Built-in onboard diagnostics enable operators to easily monitor the
The synchronised seat and cab suspension tuning for smooth operation, an efficient HVAC airflow and a newly designed dashboard with elevated instrumentation, reduce driver fatigue and optimise productivity.

The synchronised seat and cab suspension tuning for smooth operation, an efficient HVAC airflow and a newly designed dashboard with elevated instrumentation, reduce driver fatigue and optimise productivity, particularly in hot, harsh local conditions.

Capacity tractors enhance BLT SA’s extensive range of equipment that includes Taylor container handlers and reach stackers, Meclift variable reach trucks and Mobicong mobile container handling systems.

The company is also the exclusive distributor in Africa for the Samson range of bulk handling equipment, which encompasses material and boom feeders for loading and high capacity stockpiling, link conveyors and grab hoppers, as well as mobile shiploaders.

The machines are suited to handling rigorous jobs.
Wood-Mizer’s thin-kerf narrow-band technology, patents and designs have spearheaded a next round of wood processing solutions with the release of its primary and secondary processing tooling range.

Since 1982, Wood-Mizer’s thin-kerf, narrow-band technology, series of patents and designs have added value to the sawmilling and forestry sectors.

A world-wide dealership network including new and after sales service delivery to its global customer base together with its design and capacity manufacturing across all its product ranges, has made Wood-Mizer a trusted name in the wood processing sector.

This performance has now inspired a next round of innovation with the release of Wood-Mizer’s tooling range.

The range consists of circular, frame and wideband blades together with planer and profiling knives.

Circular saw blades
The circular saw blade range includes blades that can be used in different applications and materials at both the sawmilling and manufacturing ends of the timber processing spectrum. Multirip blades for hard and softwoods, rip saw blades, crosscut blades and swing sawmill blades are among the key products offerings that are available in the circular blade range.

Precise customisation across a range of processing parameters to allow for specific solutions that suit individual requirements adds more value.

Parameters that can be tooled to suit end-user specifications precisely include:

A full range of knives in High Speed Steel and Tungsten Carbide grades for a range of applications.
Frame Saw Blades

Wood-Mizer customers also now have access to frame saw blades for use in high production sawmilling environments.

The frame saw blades will be supplied in a number of variants to suit end-user requirements.

Blade bodies from Uddeholm or Krupp steel with a high Nickel or Chromium content and Stellite tipping, provide for uncompromising cutting quality in demanding sawing environments.

Supplied in various lengths, widths and pitches, the frame saw blade also offer various strip options to mount the blade (single or double row) and the option for spring setting or swaging.

Planer and knives

Knives for planing machines and cutter heads also form part of Wood-Mizer’s tooling range.

Available in high speed steel and TCT grades, the knife-blanks in straight and serrated back formats are available in a variety of lengths, widths and thicknesses that can be customised for use in a range of machining platforms including planers, moulders, spindles and other profiling platforms.
All the blades are also pre-stressed, but not sharpened and not mounted.

**Wood-Mizer introduces wide bandsaw blade range**

Wood-Mizer is the only sawmill manufacturer that also manufactures its own range of thin-kerf narrow bandsaw blades and blade maintenance equipment. This gives sawmillers access to state-of-the-art blading at competitive pricing with the added advantage of in-house blade maintenance capacity to reduce costs and minimise downtime further.

Initially available in 33 to 38 mm blade widths, the range was then expanded to also include wider bandsaw blade widths that vary in size from 50 mm, 63 mm and 76 mm.

Wood-Mizer has now launched the third tier of its blade range expansion programme that will see bandsaw blade widths of between 101 mm and 152 mm becoming available to the market in Africa.

Sawmillers now have access to a full range of blade width sizes (33 – 152 mm) from Wood-Mizer irrespective of the brand of sawmill that they use with the guaranteed assurance of quality, precise cutting capacity and best prices.
Doctoring the heart

Enterprising sawmillers are enhancing the performance of their operations by focusing on the heart of it all - the saw-shop. By David Poggiolini

There is no point investing in state-of-the-art production gear, if your blades are not suited to the high-production task in the first place.

As the late Butch James used to remind sawmillers on an ongoing basis, “the saw-shop is the heart of the operation”.

Clearly, this piece of advice from the well-known doyen of the industry has been accepted by astute sawmillers who are increasingly opting for the latest cutting-edge saw-sharpening technology.

These sawmillers are enhancing the performance of their primary equipment with blades that are being sharpened by state-of-the-art technology from Vollmer. They include units such as the CA 210, CAF 310, CAG 200, CP 650 and CPF 650, all of which Nukor has chosen as ideal solutions for the South African sawmilling industry from a comprehensive range manufactured by its German principal.

Nukor’s Peet van Staden, a long understudy of James, tells Wood Southern Africa & Timber Times that he is seeing a gradual shift in the industry from earlier mechanical sharpening technology to computer-numerical controlled (CNC) machines for a number of reasons.

As Van Staden points out, the biggest advantage of the technology is the extreme accuracy the CNC technology offers. This plays a role in the overall sharpness of the tooth tips and, just as importantly, results in a clean grinding quality of the complete tooth shape, improving maintenance, as well as the life of the blade.

He points to a feature built into Vollmer’s machines, namely automatic dressing of the grinding stone. This allows the grinding stone to remain the same shape throughout its grinding life. “The effect it has on the sharpening process is game-changing to say the least. By having the profile constant, every time the blades come back to the sawshop, less material needs to be removed to sharpen the tips,” says Van Staden.

“The blade life is dramatically increased. This also allows for clients to experiment with very small changes in their tooth profile to optimise the shape for their application - something that was very hard to control with the crude grinding techniques of the past.”

The 350mm diameter 45m/s grinding stone, combined with wet grinding, prolongs the saw-blade’s life-span.

Horses for courses

Among Vollmer’s range of bandsaw machines is the mid-range CA 210 profile grinder, and the CAF 310 side grinder.

The CA 210 and CAF 310 are automatic profile sharpening machines for blade widths ranging from 25 mm to 270 mm and lengths from six metres to 11 m.
The launch of Vollmer’s new CAG 200 frame saw sharpener has been successful in South Africa.

The CAG 200 features two CNC controlled axis, which move the grinding head, while the saw blade is held in place along the entire surface area by pneumatic clamps. This reduces vibration on the body, and any movement during sharpening, ensuring maximum precision from the first to the last tooth.

The CP 650 and CPF 650 are suited to the machining of carbide-tipped circular saw blades with varying tooth geometries on the hook angle and side angle up to a diameter of 650 mm.

“There are many advantages offered by the new CNC technology from our principal. Firstly, is the extreme accuracy the technology provides the saw doctor. These machines operate within an accuracy of a $1 000^{th}$ of a millimetre,” says Van Staden.
In addition, Vollmer CNC machines do not have many wear items, minimising total operating costs. “There is a lot less that can go wrong mechanically than earlier saw-sharpening machines,” says Van Staden.

What is more, certain machine ranges from Vollmer share 60% to 70% of the same parts. The mass manufacture of these components also drives down their costs significantly for the end-user. And are thus more affordable when compared to competitor machines, says Van Staden.

One of the misconceptions of CNC technology is that it may be too advanced for some operating environments and, perhaps, one of the reasons why some local sawmillers have shied away from more advanced offerings from the original equipment manufacturer.

Van Staden says Vollmer’s machines contradict this viewpoint. “Their computer interfaces are very easy to understand. Operators with basic sawdoctoring knowledge can be taught to use and maintain the machines in as little as three days,” he says.

While the Vollmer units of today may differ significantly to their mechanical counterparts of yesteryear, in terms of their technology, they remain just as durable. It is not uncommon to see 30 to 40-year-old Vollmer units that were supplied by Nukor still in sound working order in mills. And, according to Van Staden, this will also be the case with the more-advanced offerings from the OEM, which is known for making “robust and stable” machines.

“Vollmer has decided to stick to its over 100 year old philosophies. It has stuck to high standards, shying away from inferior quality products,” says Van Staden.

Van Staden expects the migration to more advanced technologies from the Nukor and Vollmer stable to continue, as focus shifts to the saw-shop where it all begins!
Choice cuts

One of the most important areas of running a swing blade saw that you need to know is setting the machine correctly to run true and cut straight, writes Mike Harris.

Adjustments make up about 70% of training on all new swingblade mills. Perfect adjustments make it simple to cut large quantities of timber, while poor adjustments results in struggling to cut, constant blade retensioning and scrap timber. The adjustments are simple to learn and only take a few minutes to tweak. Once a mill is adjusted correctly provided nothing gets bent or jarred while moving or operating the mill new adjustments will hardly ever have to happen again.

Good manufacturers will test the mill and set the adjustments at the factory prior. However, rough shipping can throw things out. When you first set up your mill, saw a few boards to get the feel of things first. If the blade adjustments are out for a couple days, you probably won’t damage anything because you’ll only be pushing it slowly and carefully being a ‘newbie’.

Blade not aligned

But when you are comfortable with how the mills works and saws, start looking at the sawing patterns and taking note of the board results.

There are four individual blade adjustments to learn. Simple bolts or spacers on your mill will be able to adjust these. Be sure to test for, and adjust, each one separately. Don’t do two at once; you will just confuse yourself.

One of the most important things you are looking for on a swingblade mill, is a criss-cross pattern on the cut surfaces. Saw marks in both directions, means a blade is adjusted true and parallel to the tracks. Cut marks in only one direction means the blade is slightly out of align; ie only one edge (the front or the back) is doing all the work.

Blade adjustments

I Horizontal criss-cross

This front-and-back alignment prevents your blade from either nose-diving or rising as it

I Perfect alignment – good criss-cross

The blade travels forward in horizontal (flat) position. Look at the sawing pattern on the face of the log. You should see
sawing lines in both directions. If you see lines in only one direction, only the front or the back is cutting, and it’s probably diving or rising a bit, jamming, and even making tapered boards.

Your swing mill will have adjustments to tilt the blade, or the unit it is contained in, up or down. Once you’ve done a little adjustment, cut another board to recheck. Inspect your crisscross pattern.

**I Lean-in**

Lean-in makes sure the right side of the blade is ever-so-slightly lower than the left side – 5mm or 1/32nd inch only. This is so that only the right side of the blade cuts into the timber as it moves across the log. You don’t want the back of the blade re-sawing; this will cause the blade to ‘climb-cut’ which besides being very dangerous, is hard to push forward and throws sawdust back at the operator. You need to see Good lean-in lines means just a teeny little line on the log face between each wide board. If there’s no line, or it’s quite a noticeable step, you will need to adjust the right side of the horizontal blade up or down a smidgen. Your swing mill will have a bolt that is adjustable to control the blade’s locked horizontal position.

Saw another wide board to test before moving on.

Intersection or vertical depth is set to ensure the vertical and horizontal cuts meet in just the right place. A tiny ‘step’ on the corner of the sawn log where the last board just came off, shows a perfect intersect. However, if your boards don’t come off at all, the vertical blade is too high and needs to be lowered. If there are grooves left in the log, the vertical blade is too low and needs to be raised.

Turn the mill off and measure the distance between the bottom-most blade tip and the surface of the sawn log under it. This gap should be around 3mm or 1/8th of an inch.

Re-measure with a ruler after adjusting.

**I Vertical criss-cross**

This left-and-right alignment prevents your vertical blade from veering off to the left or tracking to the right as you pull it back through the log to complete the return cut. Out-of-alignment symptoms will include being hard to pull, heavy cut lines in one direction only, tapered boards, and even a ‘zinging’ sound as the blade exits the log.

Firstly, get the feel of pulling the mill when sawing, to establish your pull-points. Find the most comfortable method of pulling. Some people use the bar only. Some use the bar and the pull handle. Some use the bar and the frame upright (for box frame mills). Different pull-points will twist the mill slightly differently, changing the vertical blade direction a bit. So whatever you choose, stick to it for the majority of your milling.

Now set your vertical blade adjustments to match your most common pulling style. Basically the vertical blade needs to be parallel to the tracks while and considering you may be pulling a slight twist into the frame.

The adjustment for this one may be on one of the corners of the sawing unit, where you will ‘twist’ the unit within it’s frame, and hence the direction of the blade.
Yes you can change your pull locations later as needed (eg for larger or smaller logs). The blade might just resist a bit more when the frame is pulled at a slightly different angle.

Exceptions to the rule

When your saw is just not cutting right, look for other obvious things first, before rushing in to 'adjust' your blade. Eg; Are all the rollers on the same groove? Are the tracks square and parallel? Is the locking handle loose, allowing the head to move? Has one of the chains been stretched when transporting?

And sometimes, log tension can make it still look like your blade adjustments are out, when they aren't. Logs with a lot of tension in them, will pinch and twist your blade as it travels through a cut, giving you false sawing indicator patterns on the log. If it comes and goes, it could just be tension.

Cutting tensioned timber is one of the most fantastic features of the swingblade type of mill. The easiest way to tackle tension is to take small bites at a time. If you are wanting an 8” wide board, just cut 3-4” at a time, backing up and then moving over for the next bite. Double bladed mills and bandsaw mills just can’t do this. On the return vertical cut in extremely tensioned timber, have your tail-out person tap some wooden wedges into the sawn path after the blade has moved along, following the blade as it finishes the cut.

And when you have removed one board, you may even find the log has twisted or bowed a bit. If you go straight into the next board, you may find the blade bogs down. So before you size for the next cut, go back down the log in horizontal again, skimming the surface to plane it level again. Your next board will now be easier.
There are many causes for faults in a gullet, the area of a saw tooth that moves chips or sawdust out of the cut.

Tirhani Skills Training’s Abel Banda details that these could include the incorrect dressing and setting of the grinding wheel. The grinding wheel could also be too thin to sharpen the pitch of the saw, or the sharpening machine has been poorly maintained with worn slides on the grinding head and an unstable feed pawl.

In some instances, it could be that the incorrect grinding wheel grade is being used or there is a burr on the gullet as a result of hard grinding.

Banda says some of the common problems he has seen include gullets that need gumming, tooth faces that reveal eroded gums in the gullet, as well as nicked and rough gullets.

Then there are sharp gullets, or gum edges that are not at right angles to the blade body. He says the latter is as a result of the blade being off-centre to the grinding wheel during sharpening or deburring with a hand-held pencil grinder.

Banda offers some sound advice on how to avoid these errors. “Determine the gullet area and gullet depth required for your feeding and cutting speeds,” he says.

“Take into account the fact that gullets that are too deep will affect the stability of the teeth during cutting. Meanwhile, gullets that are too shallow may increase tooth stability, but will affect the effective removal of the sawdust from the cut.”

Banda also notes the need to use the correct grinding wheel for the job at hand, and the importance of understanding the type of equipment that is being used to sharpen the blades. Good, scheduled maintenance of grinding equipment is necessary, he says, adding that grinding wheels need to be dressed correctly, using gullet templates.

Banda adds that accurate centering of the blade in relation to the grinding wheel will eliminate bevelled gullets.

It all starts with the blade and, as such Wood Southern African & Timber Times believes Banda’s advice will be welcomed by many an enterprising sawmill in the country.
Devil’s in the detail

Attitude makes all the difference when it comes to safety, and a thorough SWP means your house is in order.

By David Poggiolini

Injuries or fatalities in the sawmill are never welcome, but when they do occur, they can be traced back to a number of factors. These include a lack-lustre attitude towards safety by employees and management, limited safety awareness by the operation, poor house keeping, inadequate personal protection equipment, use of alcohol and drugs at the workplace and poorly maintained production equipment that is also difficult to operate.

As Tirhani Skills Training’s Abel Banda points out, an accident can be extremely costly for an operation. When an incident occurs, a sawmill loses valuable production hours and incurs unwanted expenditures, including those associated with medical care, repairing damaged machinery and investigating the cause of the incident.

Add to this the time and effort needed to manage low morale among personnel when an accident occurs. Banda reminds that, in some cultures, cleansing rituals may be necessary to boost the morale of workers to regain production times.

Meanwhile, time is also lost recruiting and training new workers.

He notes that legislation requires that safe working procedures or operating instructions should be posted on all equipment.

These safe working procedures (SWP) are “simply a set of prescribed procedures of operating any equipment that promotes safety and efficiency in the workplace, while prolonging the life of the equipment”.

Banda says there are two important steps involved in drafting a comprehensive SWP - research and identifying hazards. It is only after these have been done properly, that the third step can be taken, namely formulating a clear and understandable document.

He says that research can be undertaken by reading the manuals that are supplied with the machinery. This can be complemented with valuable information from staff members, while acquainting oneself with the relevant safety regulations and acts.

In addition, he encourages observing how workers go about their business to identify any unsafe acts and then scrutinise any accident records which may be relevant to that type of equipment.

Drafting a SWP involves identifying a host of factors. As Banda explains, these include the specific tasks for which the SWPs are to be drafted and the critical steps within the tasks, as well as possible hazards related to each step and the counter measures needed to avoid an incident.

For example, a task such as mounting a grinding wheel on a saw sharpening wheel would ideally comprise six steps with each reporting the related hazards and the counter measures that need to be implemented.

Here, the first step would detail the need to check the grinding wheel for safety, while the corresponding hazard is that should the grinding wheel malfunction, workers could incur an injury to the eyes. The counter-measure is to undertake a ring-test before mounting the sharpening wheel, and this needs to be detailed clearly in the SWP.

The second step involves inserting spacers into the wheel and the related hazard is the fact that incorrect spacings will cause the wheel to vibrate and eventually fail. The counter measure is to insert the spaces correctly so that they are a tight fit.

The third step detailed in the SWP for this task is inserting the inner collar onto the shaft, while the risk is that dirty collars may damage the blotter and cause the wheel to break. Banda points out that the SWP must remind the operator that the counter measure is to clean and check the collars for damage.

The fourth step detailed in the SWP is to insert the grinding wheel onto the shaft. In addition, it will highlight that careless handling may damage the grinding wheel. The counter-measure is to handle this process with care.
In the jungles, on the hills

A New Zealand-based sawmiller is using an all terrain sawmill on 30 degree slopes.

Peterson’s All Terrain Sawmill (ATS) is designed for sawing on the more remote farm, forest or jungle. It can also cut one of the largest diameter logs possible. The ATS is able to be set up around logs on undulating terrain. It does not need flat ground, as the tracks are raised. The components can also be disassembled into smaller segments, for easier carrying onto the site. It is ideal for remote locations where one cannot take a vehicle or other logging equipment.

New Zealander Peter van Essen is using a 2002 model that can cut eight inches and features a 13hp Honda engine. He is cutting Eucalyptus on a 30 degree hillside. “I chose the ATS because of its portability, easy blade maintenance, and the ability to be set up on any terrain and operated by one person. I set the mill up where I fell trees, including some steep slopes. With a bit of ingenuity, the ATS can set be up nearly anywhere. I dug a slot on the uphill side for the ends of the skids. Then I made some adjustable stays to bolt on the downhill ends to support the mill. It worked well. The hardest part was getting the mill head up and down the slope, so I used a block and tackle for that. I set it up by myself except for a helper to lower the mill head to the site. I used stumps to hold the logs in place on the slope.

“The trees are Eucalyptus nitens thinnings, which would otherwise have been waste or firewood. This way I have been able to tap into a valuable resource. And milling on-site and leaving the sawdust and waste in the forest is far more efficient than carting out whole logs,” he says.

He says the fifth step involves inserting the outer-collar onto the shaft and to tighten the bolt. There are no hazards involved in this step of the process and therefore no counter measures need to be highlighted.

The sixth step that needs to be highlighted in the SWP is tightening the bolt using the correct size spanner and to replace the safety cover. A hazard is that tightening may damage the grinding wheel. Another risk that needs to be detailed in the SWP here is the fact that operating the machine without safety covers is dangerous. As a counter measure, the SWP would need to highlight the importance of avoiding over-tightening the bolt as rotation will also tighten it.

The seventh step in mounting a grinding wheel on a saw sharpening wheel involves rotating the grinding wheel by hand to ensure that it does not catch inside the machine. Banda reminds that if the grinding wheel is switched on prior to being checked, it may break if it is not rotating freely. This needs to be identified and detailed in the SWP, as well as the counter measure which is to wear protective eye-wear to avoid an injury.

Productivity is important, but never at the expense of safety, and implementing Banda’s advice will make all the difference in the saw-shop!
Petersons recommends a safe slope of between 10 and 15 degrees to use the ATS, however this experienced farm forester has proven it can be done on quite a steep slope by being creative, but also very carefully. Scott Postle of the United States is using a 2005 model that can cut eight inches, and features a 27hp Kohler engine.

He operates on various farms and forests.

“When hurricane Ike blew through Ohio last summer he provided more than enough downed trees and motivation to finally start sawing and building my projects around the farm. I need to do a new shed, some picnic tables, and the kid’s playhouse. Only being able to saw and build during my spare time makes the project take a long time but it’s very rewarding working with my family. Scraping snow and ice off of everything this time of year takes even longer. But we saved a lot of money on lumber and labour doing it ourselves. This playhouse project will provide many years of priceless memories and good times with the reunions, birthday parties, school and church parties as well as time to relax and fish with kids.”

Wale Tobata of the Solomon Islands is using a 2004 model that is able to cut 10 inches and features a 20hp Honda ATS.

He cuts oversize natives in deep jungle conditions.

The operations is based on selective and sustainable milling. These trees have been inaccessible until now, deep in the
Sawmilling

In the jungles, on the hills

Jungle where there are no roads. First the tree is selected and felled. Next the log is cut to length and the ATS tracks are set up around it.

Compared to the felling and de-limbing, the sawmilling is relatively easy and very productive on these larger logs. The sawdust and offcuts are left in the forest, and just the timber is carried out.

The rest of the plantation is left untouched to grow for another 100 years.

Often the best boards are selected for export or commercial sale, and the seconds are used as valuable building materials for family, local housing and sales within the community.

Blair Rynearson in Ecuador uses a 2008 model that cuts eight inches and is powered by a 27hp Kohler engine.

It is used in very steep terrain and in the jungle.

“We are using our Peterson ATS mill in Ecuador for the Ecomadera Forestry Project, which is exporting tropical timbers to US markets. We have established a cable extraction system to gain access to forests that are five to eight kilometres from the nearest navigable river or road. We transport the ATS in pieces by the cable system up into the forest, and haul out the timber the same way. It’s very steep and we sometimes work on slopes of up to 45 degrees. For our application the ATS is perfect. Our favourite feature has to be the portability – we greatly appreciate the ease of breaking in down, hauling it in by pieces, and establishing a new site. I really love the simplicity of sharpening and all-round durability as well. And in spite of the distance, the service by Petersons has been excellent. Blair.”

In-house grading of structural timber on the horizon for sawmills
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Revolution Four

The next industrial revolution is well under way as local woodworkers turn to automation, information technology and the internet to improve efficiencies. By David Poggiolino

The South African woodworking industry is maximising its efficiencies, while lowering its total operating costs.

This is a trend that continues to grow, and to which Austro is responding, says the woodworking machinery specialist’s chief operating officer, Trevor Williams.

"Costs, such as electricity, raw materials, rent and staff, are either increasing or they remain constant in an already very challenging operating environment. The only control that professional woodworkers have over the situation is the ability to bolster their production efficiencies on the shop floor," he says.

Williams says while many of the company’s customers have always strived to be as efficient as possible, he says the economic downturn has seen many more woodworkers turn to Austro for a number of reasons.

"We have the expertise to advise our customers on the correct solution for the job, positioning ourselves as a partner as opposed to merely vendor to the industry. Austro has 18 field technicians countrywide to keep our premium, but well-priced, range of woodworking machines running, thus reducing downtime," he says.

However, it is also innovation that has kept the JSE-listed company miles ahead of its competitors, and Wood Southern Africa & Timber Times learns that the company will be launching a host of new state-of-the-art developments at its annual open day in June.

Of QR codes and the cloud

These range from QR-coded blades all the way through to the latest range of Biesse computer-numerical controlled (CNC) machining stations.
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Austro Woodworking
www.austro.co.za
As Williams explains, these are all in line with this year’s theme of the event, namely automation, as well as the important role that information technology and the larger “Internet Of Things” is playing in improving efficiencies.

“We’ve given a lot of thought to improving on our abilities to maximise productivity for our customers, since our last open day. And, we are ready to reveal these ideas at this event,” says Williams.

The QR-coded blades are expected to be a major highlight at the event, and are sound examples of just how sophisticated South African woodworkers have become in their quest to boost their performances.

Williams reports that QR codes will allow Austro to monitor the performance of customers’ blades and, therefore, advise on how to greatly extend their lives.

“We will be able to track whether the blade is being overridden, which shortens its life significantly, and a practice that I see all too often. At the same time, the information collected about these blades are stored in a database here will help us identify important trends and patterns in blade use. As such, we will be able to share important sharpening techniques with our customers to help them lower their operating costs,” divulges Williams.

Meanwhile, these patterns and trends can be used by the company to further streamline its sharpening line. Austro will be able to pre-empt arrivals and sequence its sharpening line accordingly to avoid bottlenecks. An additional benefit is their ability to allow Austro to keep a close eye on the theft of these valuable consumables. “All information relating to a specific blade is captured and stored here at our premises. We will be able to alert both our customers and the authorities when a stolen blade arrives here for sharpening. This is just another value-added service that we will now be able to supply our customers,” says Williams.

**In the cloud**

He points to automation and the growing acceptance of information technology (IT) in the South African woodworking market, especially its role in facilitating the compatibility of different ranges of Biesse CNC machining centres. Williams foresees an increased uptake of automation on the factory floor as professional South African woodworkers increase
KLEIBERIT Adhesives –
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efficiencies and economic conditions tighten. “Automation is absolutely essential on any factory floor. And, just like other industries in the country, makers of value-added wood products are embracing this technology because they realise the gains that are achievable using such systems,” says Williams.

Just as importantly, Austro is harnessing the power of the Internet to launch Austro Cloud to complement its range of Biesse CNC machining centres, a common site on most South African shop floors.

This is an automated system that will back-up all data for CNC machining centres in the country in the cloud. Valuable data can later be retrieved by the user and transferred back to an existing or new machine using a Dongle-type device.

The countdown has started for yet another reputable annual event that continues to attract serious woodworkers to 1125 Leader Avenue, Roodepoort, and this year’s event will again point the astute woodworker to the future!

Super high-gloss

By David Poggiolini

While Austro will be focusing on super high-gloss finishes at its open day in June, the company will also be giving this mega-trend attention at the up-and-coming Woodex exhibition.
Partnering PG Bison at the event, it will be exhibiting a mid-range edge-bander that has been set-up specifically to undertake edging of the leading board producer’s highly-anticipated line of high-gloss melamine products.

As Austro’s chief operating officer, Trevor Williams, explains, working this high-end product calls for much better pre-milling of the edges of the board, state-of-the-art polyurethane glues, such as those made by Kleiberet, as well as high-quality machines that are well-maintained. “These are all attributes that Austro is able to supply its customers, again reinforcing our position as a leading technology partner to the industry,” he says.

Panotec unveiled

Austro will be showcasing its Panotec range of packaging machines at its 2016 open day that will take place in June. By David Poggiolini

Trevor Williams, Austro’s chief operating officer, tells Wood Southern Africa & Timber Times that the technology provides the best volumetric packaging to save transport costs, while protecting valuable goods.

He says that the technology was launched in response to incidences regarding the transport of customers’ products, especially en route to export markets. “Using this technology, our customers can take protective actions to ensure that their products are successfully delivered and installed,” says Williams.
WoodEX for Africa WoodEX for Africa 2016 2016

The wait is nearly over for one of the highlights on the international timber industry diary.

WoodEX for Africa, which will be held at Gallagher Convention Centre in Midrand from 9 to 11 June 2016, and it is now time to register to attend the show for free!

WoodEX is Africa’s only trade exhibition dedicated to the timber industry and presents a wide range of machinery, tools, fits and finishes, components, equipment, new technology and materials.

Stephan Jooste, Director of WoodEX, says industry members should not miss out on this event. “WoodEX 2016 is an event where visitors will get the best deals on machinery, catch up on the latest industry trends and secure new business contacts. This year we received a lot of interest from European countries such as Germany, the Czech Republic and Turkey and also from eastern African countries such as Kenya and Uganda. We expect an increased number from international visitors and exhibitors.”

WoodEX for Africa 2016 is supported by the major industry associations, including the Wood Foundation, The South African Wood Preservers Association (SAWPA), The Institute for Timber Construction in South Africa (ITC-SA), The Institute of Timber Frame Builders (ITFB), Sawmilling South Africa (SSA), the Forestry Association and the Thatchers Association of South Africa (TASA).

“The event demonstrates the value of wood as a sustainable, renewable and versatile product, and is a showcase for introducing international trends into the African marketplace. Through WoodEX exhibitors, project partners and visitors can connect with specialised dealers and compare deals. It is definitely the show to visit if you are involved in the timber industry,” says Jooste.

To register for free and for more information about WoodEX for Africa visit www.woodexforafrica.com.
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That competitive edge

Processing high-gloss board products calls for high-quality equipment, which has been immaculately maintained, and equipped with premium tooling. By David Poggiolini

High-gloss finishes are definitely one of the biggest international trends, at present. As such, local demand for these semi-finished board products has also been growing at a rapid pace over the past three to four years, following trends in the global market which took to high-gloss finished boards one to two years earlier.

At present, it constitutes about 2% of the colour melamine board market.

In South Africa, high-gloss finished board products are being imported from countries such as China, Turkey and Brazil, as well as areas of the European Union, mainly for vertical applications - kitchens and cupboards - and to a smaller extent shop-fitting.

However, this year will see these board products being produced in the country by at least two producers - a development that is expected to drive its consumption even further.

And, while this trend continues to grow, enterprising woodworkers are upgrading their equipment to ensure that they maximise the end quality of the product that they produce.

This can only be done by using state-of-the-art capital equipment that has been adequately maintained and, just as importantly, equipped with the best tooling.

Radii scraper with anti-stress whitening bevel

Application:
For scraping edges with radii or bevels.

Machine:
Single or double sided edge bending machines.

Workpiece material:
Plastic edge bandings.

Technical information:
Prevention of stress whitening and rework through special cutting geometry and -quality. Scraper tumblerades with different radii for adaption in scraper holder.

Turnblade knife - scrapers

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Spare parts:
- BEZ: Torx® key
- ABM: Torx® 15
- mm: M4x6
- ID: 005465
- RL: 006225
Our Leitz’s approved service centres are equipped to handle a variety of specialised tasks, these include enlarging the bore on saw blades and cutter heads, altering tooth configurations for special applications such as cutting acrylcs or aluminium and added key ways, pinholes to saw blades and cutter heads.
This is why Austro will dedicate an entire section of its up-and-coming in-house show at its head-office in Johannesburg, Gauteng, South Africa, to high-gloss finishing, says Warren Harrison, national manager of supplies for Austro Woodworking Machinery.

It has also invited a leading local board producer to exhibit its offering at the event, where machines will be set up to cut and edge these high-end board products.

Just as importantly, they will all feature Leitz tooling that will be launched for the first time in the country, Wood Southern Africa & Timber Times can report.

This includes the Diamaster PRO EdgeExpert router cutter, which is used for cutting edges on both sides of boards that have sensitive laminations, foils and veneers.

Harrison says the tools feature an increased shear angle to completely eliminate tears on cut edges on both sides of the boards.

This is complemented by its spiral cutting edge arrangement with alternate shear angles and DP plunging tip. It can be re-sharpened up to four times, driving down operating costs.

Many South African woodworkers are already familiar with the Diamaster PRO and Diamaster Plus range.

The Diamaster Pro is known for being able to undertake tear-free cuts from its continuous cutting edge arrangement over the total working length of the board. The three edges work over the complete workpiece height.

Meanwhile, it removes dust and chip quickly from the machining area by the cutting edge’s optimised pockets, as well as the tool’s plunge tip design.

**Cutting-edge**

Both the Diamaster Pro and Diamaster Plus also allow for higher feed speeds. This is achieved by their real-Z3 technology.

The Diamaster Plus is 50% faster than tools with conventional cutting edge arrangements, while the Diamaster Pro is up to 30% faster than diamond-router cutters.

Harrison says that Austro has been representing Leitz for two years, taking on the agency of the German manufacturer in 2014 to complement its range of woodworking equipment.

Austro partnered the original equipment manufacturer due to its extensive experience in designing and manufacturing tooling - more than 140 years.

Harrison uses the WhisperCut Plus to highlight Leitz prowess in the field. With this technology, woodworkers are saving up to 10% in operating costs through a reusable aluminium body and diamond knives that can be resharpenned up to 10 times.

**Multi-profile scraper with anti-stress whitening bevel**

**Application:**
For scraping edges with radii or bevels.

**Machine:**
Single or double sided edge banding machines.

**Workpiece material:**
Plastic edge bandings.

**Technical information:**
Prevention of stress whitening and rework through special bevel. Multi-profile scraper with different bevels and radii.

**Multi-profile scrapers**

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<td>Oval head screw Torx® 15</td>
<td>M4x6</td>
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Further radii combinations with anti-stress bevel available at short time.
The WEINIG Group:
Machines and systems for solid wood and panel processing

Innovative state-of-the-art technology, comprehensive services and system solutions through to turnkey production lines: the WEINIG Group is your partner for profitable processing of solid wood and panels. WEINIG quality and profitability give small businesses and industrial operations a decisive edge in the global competition.

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WEINIG OFFERS MORE
In addition to reducing costs, it is half the weight of its steel counterparts therefore reducing pressure on spindle loads, while protecting the spindle bearings.

**No stress**

The benefits of the other two new launches from Leitz at the open day will be realised in the edging stages of the board products by eliminating whitening from stress.

Harrison says that Leitz’s new TM 135-0 multi-profile scraper is used in single or double-sided edge-banding machines for scraping plastic edges with radii or bevels.

This is complemented by the TM 435-0 that features special cutting geometry - scraper turn-blades with different radii that can be adapted in the scraper holder - to improve the quality of the edging. The market will continue to demand high-end products from woodworkers.

This, in turn, will drive the demand for a partner, such as Austro, who can best advise on the equipment, tooling and maintenance requirements needed for processing board products with a high gloss finish.

Clearly, a visit to its high-gloss board processing section is a must!

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**Radii scraper with anti-stress whitening bevel**

**Application:**
For scraping edges with radii or bevels.

**Machine:**
Single or double sided edge banding machines.

**Workpiece material:**
Plastic edge bandings.

**Technical information:**
Prevention of stress whitening and rework through special cutting geometry and -quality. Scraper turnblades with different radii for adaption in scraper holder.

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<td>Oval head screw Torx®</td>
<td>M4x6</td>
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Woodworking
How long does it take to grow the American hardwoods used in our projects?

15 seconds


The Invisible Store of Happiness is a unique experiment between artist Laura Ellen Bacon and furniture maker Sebastian Cox. Natural regrowth across the vast American forests replaces the cherry and maple used in the Invisible Store of Happiness in just 15 seconds.

For more information visit www.americanhardwood.org

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Carving out a niche

A young woodworker is carving out its niche in the high-end local woodworking market.

Houtlander, the young woodworking company, which is now in the final stages of Furntech’s incubation phases, is getting ready to carve out an even larger share of the wood products market it has created for itself over the past two years.

By March 2017, the company will have established itself in its own factory, complete with the equipment and staff needed to execute all of its own unique designs.

At the time of writing, Houtlander was also in the early stages of establishing its own design studio at Furntech’s premises - the foundation of its business model, as Phillip Hollander, owner of Houtlander, explains.

“This places us in a very good position to keep growing in our chosen fields. The markets that we serve means that we need to be able to design and manufacture our own furniture,” Hollander tells Wood Southern Africa & Timber Times.

South Africa may have lost its competitive edge in the furniture manufacturing sector to cheaper Asian imports but, as Hollander points out, there is still a very niche South African market that appreciates real craftsmanship. The company and customers are challenging basic modern consumer patterns that are based on costs and mass production.

This appreciation for custom-made furniture is mainly evident in the upper end of the market, namely Living Standard Measure 8, 9 and 10. While this is the basis of Houtlander’s business model, the woodworker has steadily been diversifying into the manufacture of other wood products, and this strategy has been a significant driver behind its growth, especially of late.

Hollander reports that the company has worked with leading artists, creating sculptures out of solid wood. This includes milling a 3 m solid piece of Kiaat for the new FNB head-office, while the company has been working closely with unique retail outlets who are challenging the norm in terms of shop-fitting design.

“There are customers pushing the boundary when it comes to design. Our restaurateur customer, who is a leading franchise, understands that a bar counter is not a few panels that have been put together. It has to mean more to attract customers,” says Hollander.

Useable and homely designs

Playing into Houtlander’s space is the revival of the Art-Deco design movement, challenging the minimalist and sterile designs that were favoured over the past five years.

“We are seeing design warming up again,” says Hollander. “Designs that are now in demand are useable and homely, there is demand for more than just stone, concrete and glass. People are insisting on a design that looks good, but is also functional, and we have been able to give them exactly this.”

However, it is not only restaurateurs and retail outlets that are driving this trend. Houtlander is also manufacturing bespoke furniture products for children and sees itself playing a bigger role in the office design and fitting arena, which has seen a growing focus on comfortable working environments that motivate creativity and productivity.

Hollander points to a project Houtlander is undertaking for the Small Enterprise Development Agency (SEDA). The company has been briefed by SEDA to design and make creative spaces at various learning institutions countrywide that encourages innovation.

“We were chosen for our design capabilities, challenging the norm of how offices have been put together in the past,” he says.

Meanwhile, Houtlander has also diversified into high-end kitchen manufacture.

Essential to the production process is the raw material that Houtlander uses. While the company is using large quantities of pine to manufacture the work stations for the SEDA project, he favours African hardwoods, such as Kiaat, which he sources from a host of suppliers, such IFA, Newmill Marketing and Bos Timbers. These timbers are finished with oils, polyurethane sealers, or waxes, depending on customers’ specifications.

Hollander is also known for sourcing some of his timber requirements from unconventional means. An example of this was his recent trip to Lephalale in the Waterberg to inspect unwanted timber species for possible use in his
workspace at Furntech’s 3,000m² workshop, which is being shared with other enterprising fledgling woodworking companies.

While these hardwoods are in demand by the company’s customers, Hollander says that they also more competitively priced than other international timbers, especially the North American variety. This is especially the case at present with the significant weakening of the Rand against the US Dollar.

**Begins with a brief**

Hollander says the design process starts with understanding the customer’s needs. Once briefed, design starts with using a program known as Sketch Up. He describes this program as user friendly, while facilitating quick design and, more importantly, rapid changes if necessary, regardless of how far the concept has progressed in its lifecycle.
Hollander avoids using perfect renders as it believes that this can often lead to the wrong impression of the end product, and false expectations which are always very damaging to businesses. “There are just too many variables that come into play that may create a false expectation of the end-product. These include textures and colours for example. Sketch Up allows us to provide the customer with just enough enough visual inputs to understand the concept,” he says.

Three-dimensional models of the design are then created and exported to the cut-list directly from Sketch Up, before cutting commences. The team of eight then assemble and discuss what is being made. All the components are marked and labelled to streamline production and facilitate the making of a quality end product.

One of the biggest advantages that participating in Furntech’s incubator programme has given Houtlander is access to capital equipment.

The huge capital outlay required to operate a successful woodworking operation is impossible for most small, medium and micro enterprises.

However, Houtlander’s impressive order book through its diversification strategy over the past year has allowed it to raise money that it will use as collateral to finance its own machines. Thrift is a trait Furntech teaches all of the participants in its programme.

At the same time, Hollander says that there are many government sponsored programmes that will help him finance his capital equipment needs.

“Government realises the importance of SMME development and it is definitely showing a willingness to grow this very important aspect of the South African economy,” he says. However, it is also Hollander’s entrepreneurial flair that makes him see opportunity where others don’t.

For example, he acknowledges that the loss in the value of the Rand has increased his start-up costs considering his reliance on imported equipment and consumables, but the scenario
has also made local furniture manufacturers more competitive against their Asian counterparts.

“I have always had the ability to see the opportunity in everything, and this is exactly why I decided to venture into this field,” he says.

The essential machines that Houtlander will need when it starts operating on its own in 2017 are a panel saw, a computer-numerical controlled machining centre, spindle and, Hollander’s favourite, an overhead belt-sander, which he uses the most. At Furntech’s premises, the company is using equipment supplied by Geerlings. This includes a five axis SEM five router, to which the 3D designs are downloaded.

Most of the tooling is supplied and sharpened by Austro.

The machines and consumables are in immaculate condition with every Wednesday morning set aside to maintain them. They are thoroughly cleaned and inspected, while blades are removed and then sharpened, oiled and greased. These are just a few of the other nuances that the incubation programme has passed onto Houtlander that will ensure that its shop floor runs at optimal levels of production and at the lowest total operating cost.

Asked what he would like to eventually see in his factory next year, Hollander says that he has not yet given it much thought, apart from the fact that he would insist on quality equipment that is adequately supported by the local agent.

Wood Southern Africa & Timber Times looks forward to visiting Houtlander’s new premises next year, with the company now clearly on its feet to help take South African furniture to the next level!
Sandown Furniture’s unique range of Afro-centric furniture has been very well received by the upper-middle end of the furniture market.

And, the demand for its contemporary classic and contemporary modern furniture is expected to grow, as the company continues to buck the trend of mass producing run-of-the-mill items for gain.

Jeni Edelman has been at the helm of the company for the past 11 years, building on her father’s legacy which was his ability to quickly recognise novel trends in the market and respond accordingly, while avoiding run-of-the-mill designs.

“T grew up working with my father in this industry, and take great pride in having saw dust in my blood. I learnt everything I know from him, and have kept to his business policies.

“We do not want to make ‘boxy’ furniture, shying away from the mass-produced furniture market. We stick to what we know, and that is unique designs that appeal to a very different market, which we want to continue servicing to the best of our ability,” she says.

While Edelman continues ensuring that the company identifies market trends and is able to respond accordingly, she is joined by other strategic players that have refined Sandown Furniture’s design and manufacturing processes over the years.

Both design and production and the interaction between the two divisions has also been pivotal to the woodworker’s success over the years.

As Edelman explains, Sandown Furniture ensures it strikes a delicate balance between the unique designs generated by the company and the ability of the factory floor to execute them with existing resources.

In fact, the way in which the company strives to constantly optimise production while containing or even reducing
costs was one of the very noticeable aspects of the operation when Wood Southern Africa & Timber Times visited there in mid-April.

Firstly, Errol Smith, general manager, of Sandown Furniture, runs the factory floor on a just-in and just-out system, keeping stock levels to an absolute minimum. This includes the board that is sourced from PG Bison, which is also used to manufacture the company’s well-known Contempo range of furniture.

“One of the ways in which we have been able to contain costs at a time when other inputs keep climbing is by reducing our stock levels on both fronts. It has kept us lean, especially with all of the uncertainty in the South African economy,” he says.

Smith says the company processes between 120 to 240 boards a week, completing 100 Contempo furniture units a day at its factory, which was recently expanded to 1 500 m² under roof.

As Smith notes, another challenge in keeping a lean factory is ensuring the correct balance between labour-based and automated production. The company’s organic and rounded designs, as well as specialised finishes call for a certain number of workers. At present, both Sandown Furniture and Sandown Zebra employ just under 60 people.

The cutting of the various items is automated, with the production line featuring two computer-numerical controlled machining centres (CNC). More recently, Sandown Furniture added a new nesting machine to its line to help keep up with the ongoing demand for its products.

The Weeke Vantage 100 was supplied by Donald Fuchs Specialised Woodworking Machinery Suppliers.
While still new on the factory floor, both Edelman and Smith are extremely impressed with the productivity of the machine which is already 20% more productive than its older counterpart. As such, the bulk of the cutting will be directed to this machine and the other unit will be used to supplement its capacity.

“We are still very new to the machine which arrived here in March, but we know that it will be even more productive as we familiarise ourselves with the technology. It has already impressed us, and we know that it won’t let us down,” says Smith. The productivity improvements achievable with Weeke’s technology were one of the main reasons the company opted for the unit. According to Smith, it is much faster between cuts - a significant benefit considering that up to 27 different pieces are produced from one board at any given time.

Meanwhile, he says tool change cycle times are also much quicker than those on the other machine. This can be attributed to its moving speed. He is also impressed by the size of the motor and robust construction of the machine, designed for heavy-duty production requirements.
Planning output

Smith begins his morning an hour before the shift starts at 7h00, planning the day ahead. This includes finalising the cutting list for the CNC machines and the assembly processes to achieve daily targets.

At present, the production line also comprises two panel saws, an overhead router, spindle, radial-arm saw and overhead router, among other essential equipment needed for manufacture of these products.

In line with striking a balance between labour-based processes and automation, Smith and Edelman are also exploring implementing a spraying line and belt sander at a later stage.

The Vantage 100 and its counterpart are fed a cutting list based on the designs of Ferdi Louwrens, a staunch proponent of the African classic style, which was popularised by Sol Kerzner on his Lost City project. It was while working on this project that Louwrens started realising the potential of developing a furniture market incorporating many of these concepts. His first products incorporating these designs that he developed with Edelman were case goods. Over time, the range has been expanded to include a host of lifestyle products that are distributed countrywide and, more recently, Namibia.

The best examples of some of these concepts are mirrored by the products produced by the company’s other operation, known as Zebra.

It makes hand-crafted bespoke items, combining a host of different materials, for the upper-end of the market.

As Edelman highlights, this operation is also a cornerstone of the company’s success.

“Together with the output from Zebra, we are essentially doubling up our output in these markets, which includes all demographics found in rural, urban and cosmopolitan areas of the country,” she says.

Many of the traits of the Zebra operation have also been adopted at this operation. This includes a close eye to detail and tight grip on quality.
All new designs are first assembled by Smith who inspects every detail of the end product before handing it over to Anton Venter, the operations manager, for production.

This approach has been taken with all of Sandown Furniture’s newer products including dining room tables and bedroom suites.

While the company will be diversifying further, Edelman says that this will be done slowly and carefully. She does not want to lose control over quality, which, she says, is a risk when a company grows too big and very quickly.

“There are many examples of what can happen when you grow too big. There is a very real risk of losing quality, despite the fact that you have to ensure that you constantly have big orders to feed the monster that you have created. We have grown responsibly over the years. However, I believe that we will want this to plateau for a while and then focus on streamlining our processes even further to capitalise on this growth,” she says.

Plans are already under way to start producing knock-down furniture but, in line with the company’s calculated approach to expanding, these are still in their very early stages, and undergoing thorough scrutiny before being implemented.

Edelman’s approach to business means that she demands a very high level of service from all her supply-chain partners, and this is one of the reasons she has opted for Donald Fuchs Specialised Woodworking Machinery Suppliers for her CNC machining requirements.

Edelman says she knows that she will receive excellent back-up support from the company, based purely on the way in which it conducted the delivery and installation of the Vantage 100. Donald Fuchs junior, personally commissioned the machine and handed it over to the team.

This is in line with Edelman and her father’s philosophy of providing a personalised service to customers and, clearly, an essential ingredient for success!
20% off professional power tools

Price-conscious contractors in Africa now have the opportunity to purchase Bosch professional power tools at a 20% discounted rate off the retail price.

Bosch’s Exchange Campaign 2016 forms part of Bosch Power Tools’ ongoing focus on growing its business in sub-Saharan Africa. “Our ambition is to change the power tool landscape in Africa by offering affordable yet robust and long lasting quality products that professionals can use with pride,” says Bosch Power Tools SA senior brand manager Juergen Lauer. The idea is for the customer to hand in any brand of old power tools to a participating dealer and receive a 20 percent discount on a selected Bosch professional power tool.

Products that will be discounted as part of the Bosch Exchange Campaign 2016 include: GSR 1080-2-LI and GSR 1800-LI cordless drill/drivers; GSB 1080-2-LI and GSB 1300 impact drills, GBM 320 and GBM 1000 rotary drills, GWS 6700 and GWS 22-230 H angle grinders, GST 8000 E jigsaw, GHO 6500 planer and the GAS 15 vacuum cleaner. For more information on the tools visit the Bosch Professional SA website.

In addition to 20% off the retail price, all customers purchasing a Bosch professional power tool during the Exchange Campaign 2016 will also receive a complimentary Bosch-branded baseball cap. They can also register online with the campaign to stand a chance of winning a Bosch Professional GML 50 jobsite radio. Lauer concludes by saying that through its commitment to supplying the highest standard of innovative power tools, Bosch has developed a reputation for being a trusted supplier in the market. “This campaign will help us retain our valued customers, in addition to creating new ones too.”

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Over the last five years there has been an increasing number of new products being added to the range of Makita Power Tools.

Some of the latest additions to Makita’s southern African range include new brushless motor cordless models, a host of new and updated corded models and the “side by side” Lithium-Ion Cordless Tools, which use two 18V batteries to supply the motor with 36V of power.

The advent of Lithium-Ion Cordless technology has meant the user no longer needs to rely on a readily available power supply, whether on a job site or in a factory, effectively achieving the productivity and performance that comes with using a cordless power tool. Run and charge times are also faster and far more efficient than earlier Ni-Cd models.

All Makita 18V 3.0Ah Lithium-Ion batteries are interchangeable with Makita LXT18V tools in their range, while 5.0Ah batteries are compatible with model numbers starting with a D, or battery terminals with a star emblem.

The battery charge time of a 3.0Ah battery is 22 minutes and the 5.0Ah, 45 minutes. All 18V Lithium-Ion tools are supplied as tools only, and batteries and chargers are sold separately, making it cost effective for customers to add to their collection without having to purchase a specific battery and charger every time.

The exciting 36V addition to our current range comprises of three models in which two 18V batteries are installed in series to supply energy to the powerful 36V DC motor drive system: a cordless rotary hammer (Model-DHR263ZK), cordless circular saw (DHS710ZK) and cordless chain saw (DUC302Z).

Powerful contender

The DHS710ZK cordless circular saw (190mm blade) is as powerful as a corded circular saw, is lightweight, well balanced and ideal for cutting roof rafters.
HS7601 Corded Circular Saw
- Soft grip provides more comfort
- Single action lever for quick adjustment of cutting depth.
- Rear dust exhaust port exhausts sawdust backward only, preventing it from scattering around.
- Compact and lightweight
- Aluminium plate base
- Max. cutting capacity:
  - at 0°: 66mm
  - at 45°: 46mm
  - Blade diameter: 190mm
  - No load speed (r/min): 5,200
  - Net weight: 4.0kg

DHS680ZJ 18V Cordless Circular Saw
- Compact and lightweight design
- Automatic speed control: automatically changes the cutting speed according to load condition for an optimum operation
- Blower function blows sawdust off the cut line ahead for a better cutting view.
- Twin LED job light
- Max. cutting capacity:
  - at 0°: 57mm
  - at 45°: 41mm
  - at 50°: 37mm
  - Blade diameter: 163mm
  - No load speed (r/min): 5,600

DHS710ZK - 36V (18V + 18V) Cordless Circular Saw
- Ideal for cutting roof rafters, sheathing & more
- All the power without the cord
- Lightweight & well balanced
- Blade diameter: 190mm
- Max. cutting capacity:
  - at 0°: 68.5mm
  - at 45°: 49mm
- No load speed (r/min): 4,800

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This model has a sturdy base plate and locking guide and it is easy to adjust to the depth of cut required.

An ergonomically designed handle with soft grip reduces the magnitude of vibration and hand fatigue while the non-skid elastomer provides a sturdy grip.

The DHS710ZK has a maximum cutting capacity of 68.5mm at 0 degrees and 49mm at 45 degrees. The blower function at the front of the machine, flows sawdust off the cut line for a better cutting view.

The two red battery lights will come on when the batteries need recharging and the operator will feel the saw slowing down. There is also a thermostat which will switch the machine off if it overloads, to prevent motor burnout.

**Brushless motors**

The new brushless motor models in the Makita range provide the user with efficient energy consumption. This is due to the fact that there is little or no friction, enabling lower amperage for reduced heat production and greatly reduced maintenance costs.

Makita’s new brushless motor models are stronger, lighter, smaller, smarter and more durable than ever before.

The Makita 18V Lithium-Ion Cordless Brushless Jig Saw Model DJV182ZK, is as powerful as its corded counterpart. This top handle jig saw has a no load speed of 0 – 3500 strokes per minute and a cutting capacity of 135mm in wood and 10mm in steel. There are three orbital plus a straight cut setting that can be selected by simply turning the change lever on the side of the tool. It has a tool-less blade clamp for easy blade insertion and removal.

The DJV182ZK has the added safety feature of a separate lock-off button that when pressed once will turn the LED job light on and place the tool in stand-by mode. The trigger switch is then activated to start the machine. It has an ergonomically designed handle with soft grip that ensures operator comfort and control, while minimising operator hand fatigue. The variable speed control dial is located on the rear side for easier operation.

The soft start allows for accurate landing of the blade on the surface of the work piece, while the soft no load speed reduces the blade stroke for easy tracing of your cutting line. The handy blower function on the front of the tool keeps the cut line clean to enhance operator accuracy.

The DJV182ZK will provide you with excellent performance and a high level of productivity.
Taming the table

An Oregon-based equipment manufacturer has tamed the table-saw.
By David Poggiolini

Soon many South African woodworkers will be using state-of-the-art table-saw technology, which is arguably the safest on the market.

Launched by Vermont Sales late last year and one of the major highlights at its recent open day in Midrand, Gauteng, South Africa, Oregon-based SawStop’s technology aims to tame one of the professional woodworker’s most dangerous pieces of equipment.

In the United States, at least one amputation occurs every nine minutes on a table saw. It is a life-changing moment for the worker, while morale and productivity on the factory floor takes a serious knock for the worst. Skilled workers are lost and significant resources have to be spent training a replacement.

SawStop has removed the risk from the table-saw by giving it a braking system, which automatically stops the blade within 4,98 milliseconds as soon as it comes into contact with human flesh.

Many workers have walked away from this machine with a mild nick or scratch after being exposed to the blade - challenging the notion that is is just a matter of time before an accident happens on this vital piece of capital equipment.

As Vermont Sales’ Greg De Villiers explains, the heart of the system is the electrical signal that is carried by the blade. This signal changes when the blade comes into contact with human flesh which is conductive.

This change activates the aluminium brake cartridge, which springs into the spinning blade bringing it to an abrupt halt.

At the same time, the blade’s angular motion drives it beneath the table, removing the risk of subsequent contact, and the motor is shut off.

All of this happens quicker than the activation of air-bag system of a car, notes De Villiers, adding that reactivating the machine...
t) takes as little as five minutes by replacing the blade and brake cartridge.

De Villiers says that it will take time to develop the technology in South Africa, but there is definitely an awareness of the advantages it offers in the local woodworking market. This was also apparent at Vermont Sales’ open day, where many professional woodworkers enquired about the technology.

He tells Wood Southern Africa & Timber Times that a woodworker in Louis Trichardt and a hardware retail outlet in Durbanville are already using the table-saw.

At present, the company supplies an industrial and professional saw through various retailers and dealers, including a hardware centre.

They all use the same technology, but differ in the size of their motors and weight of their castings.

The job-site saw, which is significantly lighter than its other counterparts, will be launched in the South African market shortly. This will be geared at the mainstream market.

Does a table-saw really have to be dangerous? Clearly, SawStop and Vermont Sales are on a mission to prove that it doesn’t!
Thousands of fingers saved...
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That cutting-edge

Successful woodworkers have one thing in common - their investment into hi-tech gear. This includes their power tools. By David Poggiolini

There is a reason Festool continues to draw massive crowds at any industry-related exhibition. This includes Vermont Sales' recent open day at its premises in Midrand, Gauteng, South Africa, where professional woodworkers could be found familiarising themselves with existing and new offerings from the power tool specialist’s stable.

Wood Southern Africa & Timber Times spoke with Vermont Sales’ Martin Rossouw to find out how this marque has managed to retain such a sizeable share of the woodworking machinery market since Gottlieb Stoll designed and manufactured his company’s first universal chain mortiser. This, together with the company’s portable chainsaw, laid down the foundations for the makings of a powerhouse in the power tool market.

A leader

“You can describe Festool as the leader of power tools. They are top-of-the-range products that do not have many competitors. Its a premium brand, mainly geared at professionals,” says Rossouw, who specialises in the sales and after-market support for Vermont, which has been representing the original equipment manufacturer in South Africa, Botswana and Namibia over the past one-and-a-half years.

Since its inception 90 years ago, Festool has registered more than 300 patents and has received over 80 awards for its products and business, of which 90% is generated from the international woodworking industry. As Rossouw points out, these achievements represent the extent of the company’s investment into research and development (R&D), as well as its manufacturing ethos.

“Its investment into R&D and quality manufacturing is solely geared at improving the performance of its existing offering. If the company cannot dramatically improve on the existing performance of a power tool, it is not going to manufacture it - it is simple as that,” he says.

Power of perfection

How is it possible to improve the trusted jig-saw, just one of the company’s tool offerings? For Festool’s engineers, the answer is to add strobe lights to the machine that make the blade appear stationary, improving accuracy in the factory. This is just one example of the company pushing the boundaries of already tried-and-tested hand-tool technology.

Then there is the brushless EC-TEC motors on some of its popular drills, improving fastening capacities by up to 100%, while reducing the overall weight of the unit. Their four-speed gearboxes are capable of 3 800 revs per minute providing up to 40Nm of torque when drilling into wood. Add to this a 200mm driver that runs dead centre.

“There is not another original equipment manufacturer (OEM) who can provide this level of technology on their drilling range,” says Rossouw.

The quality of the company’s design and manufacturing processes is reflected by other popular units in South Africa.
More speed, more profit

woodworking tools FESTOOL

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This includes its Domino DF 500, which is put to good use in many jointing applications, such as lightweight frame and rack manufacture.

Used with dowels ranging from 4mm x 20mm to 10mm x 50mm, mirroring the diversity of the product, Rossouw points to the unit’s patented routing principle. This is unique to hand-held machines and provides better accuracy and no kick-backs, improving safety on the factory floor.

**Accuracy matters**

Accuracy and, therefore, productivity is further improved by the tool’s stops that are quick and easy to adjust.

One of the many highlights of Vermont Sales’ Festool exhibit was the TS 55 R circular saw, yet another fast mover from the company’s factory in Esslingen, Germany, and well-known in Vermont Sales’ southern African territories.

According to Rossouw, this is the best plunge-cut saw the company has ever built, with its slim-line housing maximising flexibility and allowing cutting to be undertaken close to a wall.

It features an angle adjustment with undercut function ranging from 1 degree to 47 degrees.

Like the Domino DF 500, Festool’s ongoing focus on improving ergonomics is apparent on this power tool. Here, we see features such as a guide wedge for safer work and easy positioning in existing joints. Its transparent sliding viewing window provides a sound view of the scribe mark and saw blade.

**Drilling into the detail**

Rossouw highlights another one of the company’s competitive edges. “All of Festool’s power tools are complete solutions that come with so many add-ons for bolstering productivity,” he says.

Repeat business is always a sound indicator of a successful product, or service. He says that the lion’s share of Festool’s customers have stayed with the brand, expanding their toolboxes or replacing other items with Festool. He adds that it is not uncommon for Vermont Sales’ spares department to receive 30-year-old Festool hand tools that undergoing their very first service - a testament to the durability of the workmanship of the OEM. All of the motors, for example, are manufactured in-house on small, but efficient production lines. Die-cast casing are the norm with every single bushing re-milled internally to ensure a complete press fit, lowering total cost of ownership of the power tool.

“It is clear that our customers have bought into these systems, and the level of service they receive from these tools they know is incomparable to anything else,” says Rossouw.

**Focused R&D**

The Rotex RO 150 sander is also another great example of Festool’s focused R&D geared at trades-people. Here, the user has three machines in one: it is able to remove aggressive material and undertake extra-fine patterns in sanding applications, as well as do gleaming finishes when polishing.

Meanwhile, the rotary motion for polishing reduces speeds, keeping the temperature of the tool low, preventing the polish from smearing or spraying off, while the tool’s Multi-Jetstream principle allows for efficient dust extraction at maximum sanding capacity - and, as Rossouw notes, keeps abrasives much cleaner, cutting costs.

What’s next from the Festool stable? We’ll have to wait and see what the company’s R&D department is working on for now, but one thing is for certain, it won’t be an angle grinder. Professional woodworkers know that they can only expect improved productivity, better accuracy and enhanced ergonomics from Festool, separating the professional woodworker from the rest!
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