August 2015

Crosscut

Newsletter of the Witwatersrand Woodworkers' Association

◄ Simoné makes a point on selecting pen blanks at the Pretoria Woodturning day.

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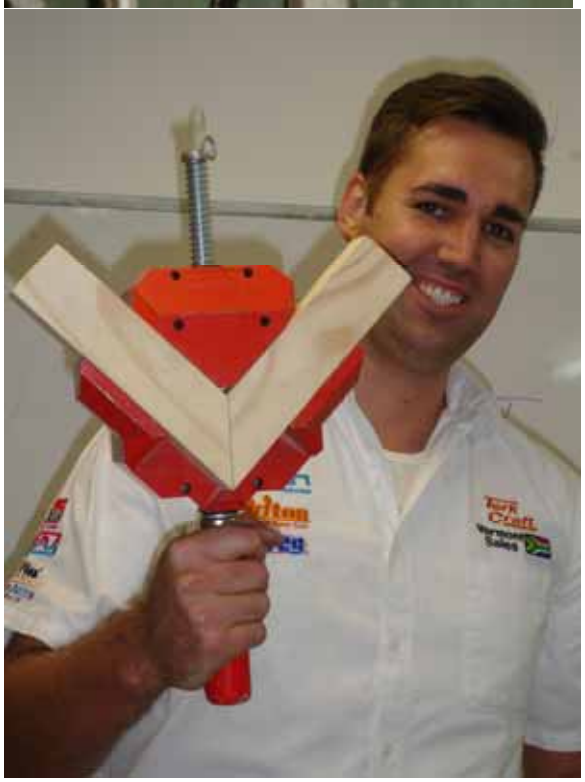
Next Turners Meeting on **Monday, the 3rd August 2015 – General meeting** from 18h00 at WWA clubhouse at the Living Link Hall. Turning a ball inside a box – demonstration by John Speedy. Discussion on lathe steadies – bring any examples you have to show.

Next Meeting on **Wednesday, the 13th August 2015 – General meeting** from 18h00 at WWA clubhouse at the Living Link Hall. Kreg Jigs – demo by Greg de Villiers.

News

6th July - Turner's meeting. Herman Potgieter demonstrated making a yoyo. He starts with the two sides cut using a hole saw and mounts these onto a pen mandrel. After shaping and sanding, they are weighed and any differences equalized. Decorations using felt tip pens are added. A dowel is used for the shaft that joins the sides. A special string is used – these can be purchased from the yoyologist.co.za at R30- for 18, R25- P+P. Once complete, Herman demonstrated his skill with a yoyo (indicating a somewhat misspent youth?)

8th July - Club meeting.
Stephan Pretorius and Charl Mostert from Vermont Tools demonstrated the capabilities of a range of Bessey clamps for wood working applications.



Club Notices

Cape Town Congress – at the Pinelands Hobby Club. – Thursday, 24th September 2015 – Presenters: Thys Carstens: resin work; Gert Ferreira: Bowl decorating; John Wessels: Something new; Simone Janse van Vuuren, Juri van den Heever and Johnny Wilsenach: Pens and Jewellery; Piet Smith: Pepper and coffee grinders.

Friday (25th) and Saturday (26th) Visiting woodturner – Phil Irons, who will also be conducting master classes on the 27th to the 30th. (Spaces still available on the 29th and 30th) Contact **Eric Thornton** on 021-558-3708; fax 021-559-1781; 082- 465 4237 or notnorth AT mweb.co.za for full details and registration forms.

See more on Phil Irons at http://www.philironswoodturning.co.uk/

Replacement batteries for cordless power tools. Herman recommended Shaun Akita for his skill in repacking batteries in cordless power tool battery packs. Contact him at Akita Business Solutions on www.akita.co.za or 011-704-2429

Spring challenge – The provisional date for the Spring Challenge is Saturday 10 October 2015 at Albertskroon. Display of "World Cup trophies" for best/worst player/ref/best try/ etc - use your imagination. Challenge on the day to turn a rugby ball or a Yo-Yo.

Saturday workshop was held at the Albertskroon Workshop on Saturday 11th of July, on the use of a jigsaw. (See left)

Pretoria Woodworkers Association Turner's Day (25th July 2015):

A chilly Saturday morning saw over 50 people gather for the turner's day at the Scout Hall in Menlo Park. At Smit (shown on right), Carel van der Merwe, and Simoné Janse van Vuuren spoke and demonstrated on hollowing, decorating and pen turning. The topics were of value to both beginners and advanced turners alike. Wood sales, raffles and refreshments rounded out the day, which finished in time for the rugby. A Stubby lathe was used for the demos and large screens displayed close-ups of the action for all to see. Leon Wolmarans put together a budget AV setup to display the pictures.

Pretoria Woodworkers Open Day. 19th September 2015. New Hope School, Ashlea Gardens, Pretoria. (Cecilia St – Take the Atterbury Road off-ramp from the N1, go west and turn left into 26th St, and then left again into Celilia – GPS Co-ords S 25º 46'43.70" E 28º 16' 02.21")

Winston's Friday morning workshop. Please contact Winston if you are interested to attending Friday mornings so that he can gauge interest in the Friday date.

Saturday meetings – August 2015

1. Second Saturday (8th August)- Eddie will open the workshop – 011 678 8062 rm22 AT mweb.co.za
   i. "Bring a Jig – share your ideas with other members and learn from theirs.
   ii. We will also demonstrate the sharpening of Router Bits. – Members must please bring their Router Bits that need sharpening and it would be great it a few members could bring their DMT Sharpening Stones
   iii. We will also run in the Drill Doctor so members need to bring their bits for sharpening. It would be great if someone who owns a Drill Doctor were to attend the meeting to demo the process.
2. Third Saturday (15th August) – Clive will open the workshop – 083 407 8008 stacey AT netactive.co.za
   i. This month - Sharpening members Chisels and Plane Blades using the Club's Tormek
3. Fourth Saturday (22nd August) – Subject to be advised. Graham will open the workshop – 082 900 0242 grahamcr AT mweb.co.za

Regular Events:

Toymakers. The toymakers meet on the first and third Mondays of every month, at 09h00 till 12h00 at the new clubhouse in Albertskroon. Contact Eddie Marchio on 011-678-8062 or rm22 AT mweb.co.za for more information.

Wednesday Workshop. Currently suspended until a new convener can be allocated. (Due to the move to the new location, Grant is unable to be in time to open the clubhouse. To attend or volunteer to convene, contact Alistair Brande on Alistair.brande AT gmail.com or on 079 895 8709.

Ken's Saturday Workshop. Ken Bullivant holds a Saturday workshop at his house in Boksburg. The location is 13 Franklin Avenue, Comet, Boksburg on the first Saturday of the month from 09:00 to 12:00. They decide on an annual project and work throughout the year making it. Individual projects are discussed and problems solved. Ken also offers private lessons too. Contact Ken on 082 809 0020 if you wish to take part.

Friday Morning workshop - Winston Klein will be convening a workshop at the new work shop on the 1st and 3rd Fridays monthly from 09:00 t0 12:00. Contact Winston at 072 553 5045 or kleins AT iburst.co.za (Winston used to run the Wednesday workshops at the clubhouse until Grant took over.)

Saturday Turning workshop. Schalk van Niekerk conducts Saturday morning turning workshops at his premises in Germiston. (At the old East-African Timbers site) Membership is R400- per year, R30- per meeting. He can accommodate up to 12 people in a session with the lathes he has available for teaching. They meet on the 2nd and 3rd Saturdays of the month from 8h00 to 12h00. Contact Schalk on 082 443 4972 or schalk@onegoodturn.co.za or Johan Kramer on 083 251 0183.

For sale:

Drum Sander. Almost new. New price at Adendorf is R7995-00. Will accept R4500- o.n.c.o. Contact Ari on 072-462-6255

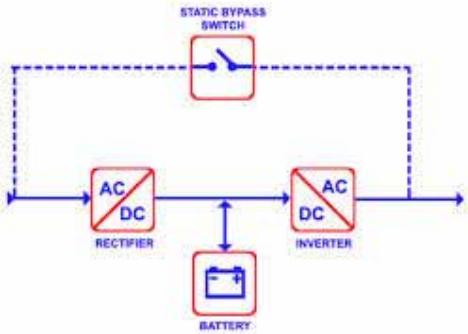
Using a UPS during load-shedding

Desktop Uninterruptible Power Supplies (UPS) are widely available and cheap. Can these be used to provide power during load shedding? Yes, provided you understand their limitations. This article explains how they work and how they can be used.

When buying a desktop UPS, you will see that they are rated in terms of Volt-Amps (VA). 600VA, 800VA, 1000VA, or 1200VA for example. Unfortunately, this doesn't tell you how long it will hold up the supply for a given load, and bigger is not necessarily better.

A typical desktop UPS rated at 650VA can be bought for less than R1000-. These units are built very much to a price, and technology wise are very basic.

The unit has an input connector for 230V AC mains and several output connectors for 230V AC mains to connect loads such as computers.



It operates off-line when the power supply is in the normal range, and as soon as the supply goes out of the normal range, typically 230V ±10%, it will supply power to the loads using the internal inverter and batteries. An inverter converts the 24V DC from the batteries to 230V AC. The picture below with the cover off shows the batteries on the lower right.

While the 230V AC input power is in the normal range, the UPS charges the internal batteries so that they are ready to supply power in the event of an interruption.

A UPS rated at 650 VA is rated to supply power to loads up to 650VA, but the real (resistive load) power capability is probably around 400W.

The hold-up time is the time that the UPS is rated to supply power from the batteries to the load. At maximum power this

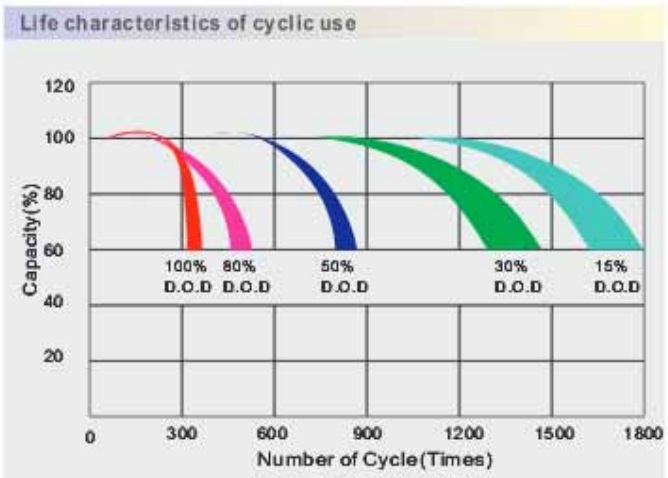
is typically is less than 10 minutes. This is really just enough time to finish up what you are doing and shut down your computer.
The basic limitation is the capacity of the internal batteries. The unit shown has two 12V 7Ah lead-acid gel electrolyte batteries. These are sealed batteries that do not leak electrolyte and cause corrosion unlike the old fashioned car batteries you may be familiar with.
The 7 Ampere – hour (Ah) rating of the batteries refers to the capability of the batteries to supply a certain amount of energy. The Ah rating is usually calculated at the 20 hour rate – the current drained to discharge a fully charged battery over a period of 20 hours. In this case, 7Ah ÷ 20 = 0.35 A for 20 hours. Discharging the battery at 0.35 amps for 20 hours gives you 7 Ah. The output voltage is approximately 12 V, so 12V x 7Ah = 84 Watt hours (Wh) of energy.

If we have two of these batteries, then we have 2 x 84Wh = 168 Wh of energy stored. If the unit is called on generate 400 W, then we can expect the hold-up time to be approximately 168Wh ÷ 400W = 0.42 hours or 25 minutes, theoretically.
Unfortunately, there are all sorts of losses that occur. The batteries are much less efficient at high discharge currents (400W ÷ 24V = 17A) because the internal resistance starts to dominate, and the batteries warm up. The inverter is probably only 80% efficient as well, so the UPS may manage 10 minutes hold-up time. Obviously, if the load is lower than 400W in our example, then the hold-up time will extend proportionally. A typical desktop computer may only load the UPS with 100W, so you could perhaps expect a hold-up time of closer to 168Wh ÷ 100W = 100 minutes, but given all the losses mentioned, 60 minutes is realistic.
As the UPS discharges the battery, it monitors the battery voltage and when the voltage drops below a minimum level, it will shut off to avoid damaging the batteries. Initially, the UPS may beep at a slow rate, and then approximately half-way through the discharge cycle, it will beep more rapidly. Finally, just before it cuts off, it will beep continuously.
Once the batteries are discharged, when the power returns, they must be recharged. Typically this is done at the 10 hour rate, so accounting for losses, you need about 14 hours to get back to full capacity. Fast charging is also bad for batteries as heat is generated and batteries don't last long in high temperatures.

To get back to the question on UPS sizing, many suppliers do not state the size of the internal batteries – but you need to know this before you buy one. Most of the typical desktop ranges have the same pair of 12V 7Ah batteries in the example above. This means that the larger ones have larger peak power capacity, but the poor batteries just go flat sooner.

Another factor to bear in mind is that, if you operate the UPS with deep discharges ie running it until it switches off, the batteries will not last very long. Depending on the minimum voltage setting of the UPS and the quality of the batteries, you should not expect to get many cycles before the battery capacity drops off so much that you only have a minute of breathing space.
Also, even with no discharges, the batteries have similar operating life times to those you find in your car – four to five years before the capacity drops off too much. 12V 7Ah batteries can be found for less than R200- each, so a pair will be less than R400-, every five years or so, provided the batteries are not worked hard. They are also easy to replace, provided you observe basic safety precautions.

So the question may be asked: **How do I make sure my batteries last?**
All rechargeable batteries wear out, losing some capacity with each discharge cycle. The deeper the discharge, the quicker they wear out. Rapid, deep discharges are particularly stressful – such as UPS duty.
In UPS duty, you will be lucky to get 100 cycles of maximum power down to 100% depth of discharge (DoD). If you discharge them at



the 10 hour rate (ie 16W over 10 hours in our case) down to 100%, then you may see 300 cycles until the capacity loss exceeds 20%. If you limit the depth of discharge to 50%, then you may be able to achieve 800 cycles before the batteries need replacing. These are for high quality batteries like the one shown in the graph alongside.
The extra-cheap UPS you found at the China-mall may not quite be up to this.
(See http://www.mantech.co.za/Datasheets/Products/RT1270E.pdf and http://www.mantech.co.za/Datasheets/Products/RA12-100AD.pdf for typical battery data sheets if you want to see more.)

If you have load shedding twice a week – say 100 times a year, and then if you treat your UPS batteries gently, then they will probably last five years, before other wear-out mechanisms occur.
Typically, when the UPS goes from a slow beep to a fast beep, then you are at about 50% depth of discharge, and you should switch off for decent battery life.
For our example above, the energy draw for a 50 % DoD is 80Wh, so for a four hour load shedding period, you should only draw 20W (80Wh ÷ 4 hours = 20W). This is not much, but is perhaps enough to keep an ADSL modem and WiFi router alive, and charge a couple of cell phones, or power a table lamp with LED bulbs.

Modern lap-top batteries can often make it through a four hour black-out, so a small UPS on the modem/router may be enough to keep you on-line and working in the above example.