

NEWS

A roundup of the latest Everyday News from the world of electronics



Hardware round-up – report by Barry Fox

When your PC absolutely, definitely has to work

Panasonic has been making rugged laptop PCs since 1996. The latest, the Toughbook CF-33, is a 2-in-1 device with detachable 12.5-inch screen and keyboard, so it can be used either as a laptop or tablet.

The CF-33 is weatherproof, surviving 30 minutes of water dunking, or a trip, naked, into space, and some pretty brutal dropping. (Although an integrated handle makes it less likely to be dropped.) The touchpad is pressure-sensitive, rather than capacitive, which makes it more use when the weather is wet.

In addition to all the usual ports (HDMI, SD-XC, USB, VGA, headset and LAN) there's one that will appeal to telecoms engineers – a native Serial RS232 socket (rather than USB-to-Serial converter) with all the pins individually addressable.

Power comes from twin batteries, which are hot swappable – so one battery can be changed while the other runs the device.

The CF-33 comes with Windows 10 Pro but can be 'downgraded' to Windows 7 Pro for those who want, need or simply prefer the older system. The downgrade option will, however, be available only until the end of October 2017, when Microsoft stops registering new devices.

The physical strength of the CF-33 does not come cheap, at 3552 euros plus VAT; and the Windows 7 downgrade costs another \$100 for the additional royalty payment Panasonic must make to Microsoft.

A potentially very significant trademark application...

Registered trademarks can be a very powerful and valuable commercial weapon. They last for ever, if renewal fees are paid; Bass for Beer was

the first UK trademark registered in January 1876 and is still in force. They give very strong protection – just try selling a drink labelled Coke or Pepsi and you will soon find out how strong.



Panasonic's latest 'Toughbook' – the CF-33

It's a basic principle of trademark law that you can't register an everyday dictionary word, but – if there are no objections – companies can sometimes monopolise surprising words. Bose succeeded in registering the word Lifestyle for audio equipment in the 1990s, which means other companies, which failed to object at the time, now have to steer clear of the label.

History is now repeating in the TV industry. Samsung recently applied to register the word 'HDR10',

which is already being used to describe the 'Open' high dynamic range system built into most new 4K TV sets and BD players. The industry seems to have been taken unawares and is now wondering what to do or say.

John Higgins, director general of Digital Europe, the European body in Brussels which 'represents the digital technology industry in Europe', first said thanks 'for the alert' and then referred the hot potato to Digital Europe's communications and marketing director who said 'we have no comment on this subject'.

A spokeswoman for LG, traditionally Samsung's main rival, first said 'LG do not comment on rumours or speculation.'

When pointed to the official documents that detail Samsung's formal application, the spokeswoman said 'LG does not wish to comment.'

Ironically, LG has just issued a press release (20 March) which boasts that LG's 'entire 2017 line-up of premium TVs support the full palette of HDR formats... including... HDR10' – which is the very word for which Samsung wants exclusive rights. (See: <http://bit.ly/2p4IXIT> and <http://bit.ly/2pNQoNT>)

Hands-free brolly

And finally... news comes (and not on 1 April) of an 'Umbrella Drone to protect against wet weather'. Anyone with £1299 to spare can now pay drone e-tailer DronesDirect for the 'the perfect companion for this season's outings' and protection from 'the unpredictable British weather'

The 'exclusive and limited edition DJI Phantom 4 allows users to walk freely knowing they are shielded from overhead rainclouds by the drone-operated umbrella.'

Hardware round-up continued

The device 'boasts advanced tracking technology which links to the GPS signal of a mobile phone', so that 'the flying umbrella will expertly navigate itself and track its owner's steps, sheltering them from each and every spring shower, so there is no need to operate it as you move.'

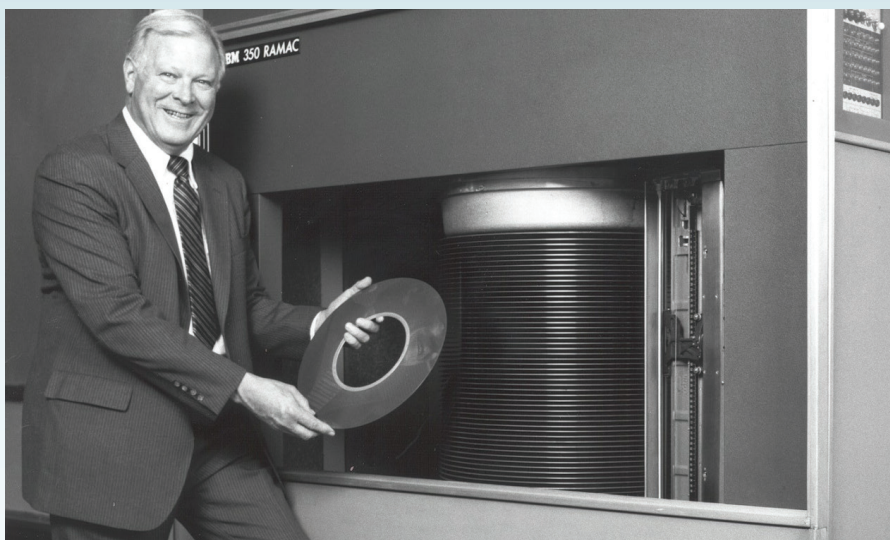
The Umbrella Drone has a 4K camera, for picturing the rain, and in-built intelligent collision avoidance technology.

Says Tim Morley, business unit manager at DronesDirect.co.uk:

'For those who don't want to be confined to staying indoors, who want to drone in changeable weather, and those who don't want to juggle managing an umbrella while carrying out their everyday tasks, then the innovative Umbrella Drone is a gadget not to be without. This is a truly clever and unique companion, which DronesDirect.co.uk is delighted to offer to consumers.'

Battery life is 'up to 30 minutes' – after which their proud owner presumably gets wet carrying a hands-free brolly home.

Single-atom magnetic storage breakthrough



The grandfather of all hard drives from 1956 – IBM's 350 RAMAC with 3.75MB of storage

In 1956, IBM announced the 350 RAMAC, the world's first magnetic hard drive. It had 50 24-inch platters and stored 3.75MB of data. It was complicated, sensitive and very expensive. It was also a breakthrough technology that more than sixty years later is still used in many computers the world over. Yes, Flash memory is steadily eating into its one-time monopoly, but as a technology it has proved to be incredibly resilient. Size and cost have shrunk dramatically and, of course, storage has rocketed by the million compared to IBM's wardrobe-sized original design.

The secret of the hard drive's success has been the extraordinary scalability of the medium. Engineers and physicists have done a remarkable job of squeezing ever-more bits into a smaller and smaller area – and finding ways to read and write those bits reliably.

The core technology is defining minute areas of the drive's platter as bits that can be magnetised with one of two polarities, representing a logical 1 or 0. Currently, this basic real-estate storage unit is made up of roughly a million atoms, but researchers are much more ambitious

and have now set their eyes on the ultimate in miniaturisation.

A recent report in the journal *Nature* explains how physicists created a stable magnetisable area from a single atom. Fabian Natterer, from the Swiss Federal Institute of Technology (EPFL) in Lausanne, who wrote the paper, described how 'single-atom magnets' were used to make an atomic hard drive. A rewritable device, made from two atoms was able to store a modest two bits of data. The Swiss team used holmium atoms at a temperature of less than 5K above absolute zero.

They wrote data with a pulse of current from the tip of a scanning tunnelling microscope, which flips the orientation of the atom's field between a 0 or 1. The atomic magnets proved stable, each retaining their data for several hours, with the team never seeing one flip unintentionally. They used the same microscope to read the bit – with different flows of current revealing the atom's magnetic state.

The technology is nowhere near commercialisation, but neatly shows just how far engineers are prepared to go to keep the hard drive show on the road.

Old bottles, new batteries

Researchers at the University of California, using waste glass bottles and a low-cost chemical process, have demonstrated lithium-ion batteries with nanosilicon anodes.

Silicon anodes can store ten-times more energy than graphite ones, but expansion/shrinkage during charge/discharge cycles make them unstable.

However, applying nanotechnology techniques to the silicon has reduced this problem. Using processed silicon dioxide and a cheap chemical reaction, the researchers created lithium-ion half-cell batteries that store almost four times more energy than conventional graphite anodes.

To create the anodes, the team crushed and ground bottles into a fine white powder, then transformed the silicon dioxide into nanostructured silicon, and finally coated the silicon nanoparticles with carbon to improve stability and energy storage.

One glass bottle can provide enough nanosilicon for hundreds of coin cell batteries.

New PicoScope software

Pico Technology has added CAN FD decoding to its PicoScope 6 software. 'Our software could already decode a wide variety of serial protocols such as I²C, SPI and UART, as well as automotive standards such as CAN, LIN and FlexRay,' said Trevor Smith, business development manager at Pico Technology. 'Now it can also decode CAN FD, which is the latest and fastest version of CAN Bus used in automotive and industrial applications.' More details at: picotech.com

King coal's day off

If you used mains electricity on Friday, 21 April 2017 then you helped make a little bit of power history – in the UK at least.

The industrial revolution started in Britain, and from the get go coal was the energy source that lifted industry from animal to machine power.

Coal first delivered mechanical power and then became the fuel of choice for generating electrical power. After the Second World War, coal's dominance was challenged by nuclear energy, gas and more recently renewable sources, especially offshore wind. However, coal continues to be used when other sources are unavailable or more expensive – but, according to the National Grid, 21 April was the first-ever 24-hour period when no coal at all was used to generate electricity in the UK.