

Speleo Technics Nova Gear Review

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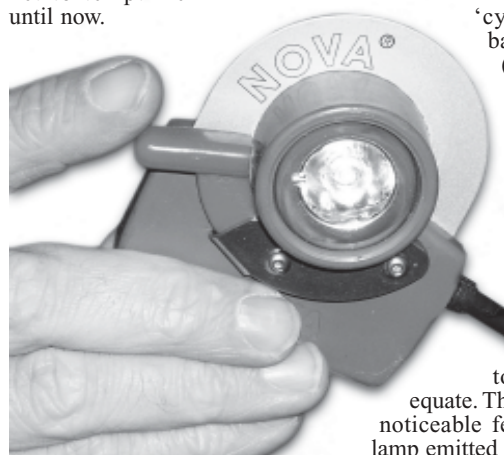
The latest light from Speleo Technics, the Nova, has produced a great deal of interest in the caving community. In answer to the question 'How good is this light?' two cavers have put the Nova through its paces: Descent's Devon caving correspondent, Peter Glanvill, and David Gibson, Technical Editor of the Cave Radio & Electronics Group Journal and a Research Project Manager at the Mines Rescue Service.



Speleo Technics Nova

'CAVING should be a cheap sport' is an oft-repeated mantra by one of my friends. He never wears an oversuit, still has a battered Nife cell with a Texolex helmet, and his wetsuit is one of those self-made black efforts with yellow taped seams – remember them? Unfortunately, his light regularly fails and he often complains he's cold and wet.

I have, at least, used oversuits and fleeces for a number of years and worn out two off-the-peg wetsuits, but my lighting system has remained the same for the last 25 years – nicads in Oldham casings, powering halogen bulbs (in a part-concession to modernity). It required constant maintenance and even then was prone to failure. I saw nothing innovative on the market to tempt me – until now.



I have watched the development of LED lights with interest and over a year ago purchased a Petzl Tikka as a spare. This proved that LEDs had their place and light failures that cause a rescue callout should now be a thing of the past, considering the toughness and durability of these light sources. As lithium-ion batteries that could be helmet-mounted were developed, these started to whet my appetite. Then I saw an advertisement for the Nova in *Descent*.

Here was a light to metaphorically jump ship for. It delivered a healthy 5W at maximum output – more than my nicads could ever achieve. After a short visit to Bat Products I emerged clutching a lamp, charger and battery, having just spent more on lights in ten minutes than I had in the previous 35 years.

Eager to try out the lamp immediately, I rolled up at the St Cuthbert's 50th anniversary bash and lashed it onto my helmet with a piece of inner tube. I placed a



'cycle' battery in the battery compartment (no time to charge the lithium-ion cell) and dived down the cave. There was only one problem – I couldn't attach my ammo box to my belt because, without a waist-mounted battery, I wasn't wearing one.

The Nova proved to be more than adequate. The main, immediately noticeable feature, was that the lamp emitted an even beam over a large area with no 'treacherous shadows'; it was also bluish-white rather than yellow. I was sold – just as well, as I don't think J-Rat would have taken it back.

Are there snags? Well, nothing is perfect and I find that assessing which power level I am on is difficult without shifting through them all. There are five settings: using my battery pack, at the highest the lamp will only last for 3.5 hours, while at the lowest it will function for nearly 18 (at which brightness it is quite adequate for most caving activities, but it does require discipline to keep it there). The single LED is protected by a plastic housing and the lamp is surrounded by a rather curious looking but highly necessary aluminium heat sink.

One peculiar feature of the system is that as the battery fails the lamp starts to flicker. This led to some speculation from those at the top of St Cuthbert's entrance rift as to what I was doing at the bottom. From my point of view the disco strobe effect was somewhat

disorientating and, in fact, started to cause nausea. Be warned: don't let your battery go flat!

There is a standard Speleo Technics fitting between the lamp and battery, enabling a variety of power sources to be used, although I cannot think why anybody would now want to lug around a heavy battery on their waist. The system is also waterproof to a silly depth, and Speleo Technics is considering a marine version, which would definitely appeal to open-water divers. For (freshwater) cave diving the Nova already offers definite advantages, in that no cables are required and the light output is very satisfactory indeed.

The Nova was worth waiting for – the dustbin awaits my Oldham conversions!

Peter Glanvill

SPELEO TECHNICS is well known for its innovative lights, such as the FX2 and the FX-ion. Now there is another amazing product: the Nova. This is, I am sure, the first commercially available caving lamp to use the new 5W LEDs that are now on the market, and it is possibly the first headtorch of any type to do so. We can expect it to revolutionise cave lighting systems, just as the FX2 did in its day (though, at only a penny under £100 it may be too pricey for some).

The revolution will come about for a number of reasons. The Nova is small and lightweight compared with a traditional miner's caplamp, and it is fully waterproof; it is very bright – and the brightness can be adjusted. The LED is long-lasting (many thousands of hours' use can be expected) and it can be powered by a variety of battery packs. There

are other subtler benefits – for example, unlike a traditional lamp, the Nova does not grow dimmer as the battery voltage drops because it uses a switch-mode power supply (or 'switching regulator') to convert the battery voltage to the exact voltage required by the lamp. The lamp is not particularly fussy about the battery pack, therefore, and it will operate from an FX2, FX3, Headlite or FX-ion battery pack as well as from alkaline cells (such as a 4.5V Duracell MN1203).

Underground, I was impressed with the Nova's brightness and clarity of beam. LED users already know that LED beams tend to be much more even and consistent than those from a filament lamp. The Nova has a bright, central beam that is not too narrow, and it has just the right amount of 'spill'. Compared with a random selection of my colleagues' electric lamps, it was easily the brightest and most penetrating. On number two of its five brightness settings (where one is the dimmest) it outperformed my Speleo Technics Headlite, which has a similar beam spread, though the Nova has a lower power drain.

However, I found that the most useful feature is the ability to dim the light. Unlike a filament lamp, LEDs can be dimmed without losing efficiency or changing colour, meaning that cavers can select a light level to suit requirements. At full power the Nova uses about 5W, which would produce (according to the literature) five hours' life from an FX3 or two hours from a Headlite battery. The Nova's brightness settings give a duration of 1, 2, 3, 5 and 6 times the full power setting. The ×6 setting is quite dim, corresponding to a seven-LED lamp (or thereabouts), but obviously this also produces a six times increase in battery life; it is perfectly adequate as a pilot beam.

I found it difficult to determine which brightness setting I was using. The switch cycles up and down through the settings, from dim to bright then back down to dim, but I found the switch awkward. It is a sealed magnetic sensor; flicking a small lever briefly moves the magnet away from the sensor and operates the switch (and it did seem, on occasions, as if it had a mind of its own). To turn the lamp off you hold the lever down for two seconds, whereupon the lamp 'remembers' the setting in use and subsequently powers up again at that level. Unfortunately, flicking the switch while turning it off selects the next brightness level in the

sequence, which is frustrating because if you are using the dimmest setting it can come on again at the next brightest level and requires a full cycle to return to the dimmest – even supposing you noticed the problem.

Alkaline batteries are not capable of providing 5W for very long and the instructions warn the user to use only the lower two light levels with this power source. However, I found that problems in keeping track of the setting made it difficult to successfully use an alkaline battery.

These difficulties make me wonder whether it would be better to cycle from brightest to dimmest then straight back to brightest again, whether five levels are too many anyway and whether it would be better if the lamp always came on at its dimmest (presumably only requiring a change in the micro-processor-controlled lamp's software). Of course, every customer will have a different – and perhaps vociferous – idea about what

is best. I wonder if we will end up checking version numbers when we buy the lamp?

When the battery starts to fail, the lamp responds by progressively switching to lower brightness levels, which is sensible. When the battery is almost dead the lamp starts to flicker, as a warning. The flickering starts off fast and becomes progressively slower – a strange effect, although the warning is appreciated. I measured the battery voltage and is fair to say that the flickering really *does* mean

that there is *no* useful life left in the battery! I had perhaps five minutes of light left at this stage.

The Luxeon LED and its collimator (the reflector that produces the beam) is sealed in the headset along with the electronics, but there is a clear plastic cap in front of the LED to protect it from dirt. This cap is not part of the sealed unit; it can be changed when scratched (replacements cost 99p), which mine was after only two caving trips – possibly as a result of being shoved into my rucksack.

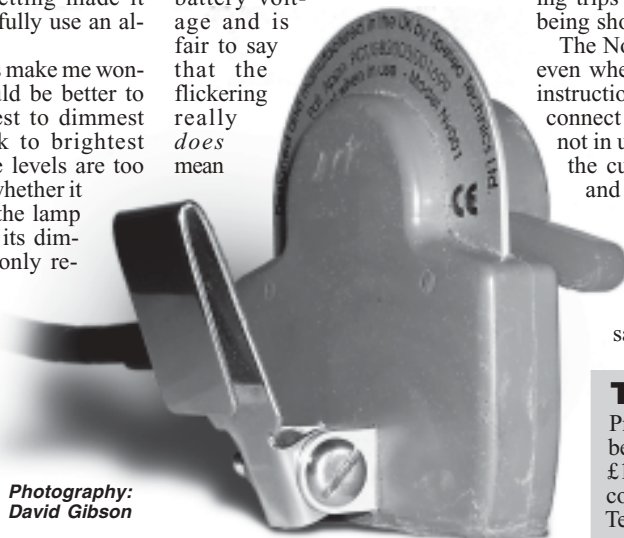
The Nova draws a small current even when it is switched off. The instructions instruct the user to disconnect it from the battery when not in use (testing it, I found that the current drain is over 6mA and this will drain a Headlite pack in only two weeks).

The instructions also warn against leaving the Nova connected to a battery in your rucksack, because it could ac-

cidentally switch on and overheat, and it cannot be used with an FX5 as this has too high a voltage (a pity, as it could have powered the 5W LED for a useful period).

There is no doubt that the Nova is an excellent product and that, once again, Speleo Technics has shown that it leads the way in cave lighting products. As an electronic engineer, I know that the drawbacks that I perceived – the current drain when switched off, the potential for overheating and the voltage limitation – are not insurmountable. Likewise, although the magnetic sensor is a neat solution to the problem of waterproofing a switch, there are other, more tactile methods of achieving the same result.

However, these factors will not stop me using the lamp and it has already replaced my existing light as part of my current caving gear. I look forward to many years' service and I definitely recommend it. *David Gibson*



Photography:
David Gibson

The Nova

Prices for the Nova with an empty pack for alkaline batteries begin at £99.99. Supplied with an FX cable the price rises to £108.80, and with a lithium battery pack and charger the Nova costs £229.94. More information is available from Speleo Technics – tel: 01995 600216; web: www.speleo.co.uk.