

## Velo Vision Sample Article



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If you have any comments, problems or suggestions about the magazine in general, or this PDF in particular, please email me at

[peter@velovision.com](mailto:peter@velovision.com)

I hope you enjoy the read!

*Peter Eland.*

Peter Eland  
Editor and Publisher, *Velo Vision*

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### Small print

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**COVER:** The custom trike developed by Inspired Cycle Engineering for an attempt to cycle to the South Pole is tested in the disused Poldice quarry in Cornwall. *Photo: ICE*

**OPPOSITE:** A very different custom trike: Steve from Two Hoots Ice Cream ([www.facebook.com/TwoHootsIceCream](http://www.facebook.com/TwoHootsIceCream)) shows us his solar-powered vending trike: the panels on the canopy power the freezer via a battery on the rear rack. *Photo: Peter Eland*

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## Cargo centric

We're rather heavy on cargo bikes this issue, with no fewer than four tested to varying extents, plus the Atlas trailer and a visit to a London specialist dealer. I'm not sure I should be apologising, though. Cargo bikes are a vital part of the 'velo vision': goods and people need to be transported in any cycle-friendly community. And even if you're not fortunate enough to live in such a place, cargo bikes are a low cost, fitness-enhancing, non-polluting way to go about your business.

The pendulum will swing in a more laid back direction for Issue 48, though. Already lined up are reviews of the AZUB TriCON recumbent trike and the Windcheetah SL bike, and we're also hoping to do reports on the Greenspeed Magnum trike, Nazca Quetzal tandem and Veloschmitt velomobile.

And I hope readers will continue to write in too: your contributions are always very much appreciated, be it on cargo bikes, trikes, recumbents or anything velovisionary!

Peter Eland

## Running on the rim

**We test the CompactDynamo from German company Velogical Engineering. Can this radical new design stand up to real-world use?**

In Issue 43 we ran a feature about an engineer from Germany, Peter Frieden, who had decided to apply his background in wind turbine engineering to bicycle dynamos



(and a very interesting tandem). The key innovation was that the CompactDynamo would run against the rim wall: this should be more reliable and efficient than running against the tyre, and it should also mean that the dynamo can be made much lighter than relatively slow-turning hub dynamos: speed is generally good when it comes to making electricity from magnetic fields.

Since then the dynamo has moved to full availability and production, and as you may have read in the SPEZI report, they're also developing a motor system along very similar lines, the Velo Speeder. They sent a sample dynamo for review towards the end of last year, and I've been using it since through the winter and into the summer.

The company now has a long list of dealers and distributors across the world: see their website for full details, and contact them direct if there's no local supplier. Before you order it is well worth reading the

instructions carefully to select the correct mount for your bike (there's a wide variety), and also be sure you have a compatible front light unit (there's a list). Everything's in both English and German. The unit costs around 150 Euros or local equivalent, plus shipping if applicable.

### FIRST IMPRESSIONS

I'd seen plenty of pictures, but nothing really conveys just how small this dynamo is until you hold it in your hand. It's tiny! And it weighs practically nothing too – 60 grams for the dynamo body, and around 15g for the mount. It's all nicely finished and spins with reassuring ease and smoothness.

The dynamo comes with a set of O-rings (two thick for fast riding, two thin for 'normal' pace), the mounting hardware and a 'thermistor' in the form of a 20W, 12V halogen bulb. The idea of this is to protect the front light from excessive voltage at higher speeds: the bulb has a very low resistance at lower speeds (and hence voltage) but as voltage rises, the element warms up and resistance increases.

Velogical say that this should be used on all set-ups with LED headlights (so the vast majority of applications) and I suggested to them that given this, it would make more sense to factory-fit a thermistor within the dynamo body. They're working on it... but for now, whoever is fitting the dynamo needs to wire in the thermistor too, and secure it in place with heatshrink





really safe to do when riding.

Setting off with dynamo on, light appears at a slow walking pace and is swiftly at full brightness. It should have been no surprise that this did not happen in silence, but after so many years of riding on hub dynamos I admit the noise did surprise me. It's a sort of turbine-like whine, rising and falling in tone as your speed changes. It's less intense than I remember the noise of tyre side-runner dynamos, but it's certainly very much audible. Interestingly I found one report online from a user who said the sound had led to him being asked if he was on an electric bike!

I tried making some changes to minimise the noise. Swapping to the thicker O-ring made little difference (I'm not a 'fast' rider, so did most of the test on a thin one). Moving the dynamo from front to rear wheel, though, made quite a big difference in the subjective noise level: it's noticeably less intrusive with the dynamo at the back, perhaps because the rider's body is between the dynamo and the ears.

Velogical also say that different rims and wheels produce quite different sound levels – they're still working on pinning down the factors at work. Hollow frame tubes or fork blades can resonate, too. The noise levels were pretty similar on both the Villiers and my old yellow bike, however.

Other than that, I have nothing bad to say about the CompactDynamo. After, at a rough estimate, 1000 or so miles in operation (and at least the same again switched off), it's still on the original O-ring, which is looking a little rougher now but still in good working order. It has run faultlessly through several torrential downpours, without

even a hint of slippage, and at one point I even rode my bike through several hundred yards of ankle-deep floodwater: the dynamo just kept on working. The bearings feel as smooth now as they did when I fitted it.

## CONCLUSIONS

There is a lot to like about the CompactDynamo. It's incredibly small, super lightweight, can be completely disengaged, puts out plenty of power, and it's been utterly reliable in all-weather use. Rolling resistance is very hard to judge without lab testing but it's certainly at a low level, and I'd believe them when they say efficiency is excellent for fast riding.

The only downside, unless you also count the slightly fiddly wiring, is the noise, and that's at a level which is probably acceptable to many occasional users. It won't suit everyone: for my winter commuting at least, I do prefer the silence of a hub dynamo, and for me weight isn't a big issue.

But for the rider of a lightweight bike who wants reliable lighting for the last leg home after an evening ride, or for the cycle tourist who could get caught short of a campsite as night falls but doesn't want to carry around extra weight, it would be perfect. Its compact nature and very flexible mounting arrangements make it especially attractive for folding bikes, too.

Logical considerations aside, it's also a rather lovely item to have on your bike. It's mechanically and even aesthetically pleasing to use such a minimalist, clever device: in that respect it's not a bad match for the structural efficiency of the bicycle frame itself.

**Peter Eland**

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see [www.velogical-engineering.com](http://www.velogical-engineering.com)

tubing. It not hard, and there are copious illustrations online to help, but it does feel like a little more work than it need be.

Mounting the dynamo itself can also cause a little head-scratching at first, but once you work out the angles and how it's going to pivot all becomes clear. I've no space here to describe the ins and outs of it all, but I can say that Velogical were super-helpful when it turned out that my brake bosses were somewhat non-standard, so the mount they'd sent initially didn't offer quite enough adjustment. A new one arrived in the post within days and worked perfectly.

All in all, if you're not mechanically inclined, it would be worth asking a dealer to fit the dynamo. If you are happy with bike mechanics, though, you should be fine.

One thing to bear in mind is that the dynamo should be fitted approximately upright: it's deliberately not a sealed unit (so it can ventilate) and while it's not sensitive to water, if not upright water could pool within the casing and eventually cause problems.

I used the dynamo with the SON Edelux front light (pictured right) which we reviewed back in Issue 30: it's been working superbly ever since and continued to do so during

this test. It's on their list of lights with built-in voltage regulation. I fitted the system to my Villiers for the pictures and some longer rides, but I also had it for some months on my yellow town bike for winter commuting.

## THE RIDE

With the dynamo disengaged there is no effect at all on the ride.

To engage the unit you lift the little wire lever off its stop and hook it over the second little pin. This presses the O-ring against the rim, with the wire of the lever inside that brass tube working as a torsion spring. Very clever and very minimal. It's probably safest to operate the lever only while stopped: your fingers are too close to the spokes to make it

