

Battery buyer beware, only a free flow of data will benefit the sector: Australian Vanadium boss

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An Australian maker of vanadium flow batteries says only an informed market can make the best decisions about investing in utility-scale storage solutions.

As costs drop in the world of energy storage and the technology matures, any purchase made today runs the risk of looking expensive in the years ahead. The key to getting it right is identifying systems that offer modular flexibility, says Australian Vanadium managing director Vincent Algar.

"We've solved the generation problem – we have efficient cells and efficient wind technology – but is storage technology at its peak? Absolutely not," says Algar (pictured above). "So many people will say, I'm not going to buy a device today because in two years' time there's going to be a better device and it's going to be cheaper."

The risk, he says, is in buying an inflexible solution which hasn't been tested through years of experience. "Trying to find good data about how long [lithium batteries] will really last, what is their true safety situation, and if I really smash 'em, what's going to happen? We haven't done it; we haven't been there long enough," he says.

Lab tests are all very well, but real world applications will make or break the reputations of all the various battery makers lining up to appeal to buyers will deep pockets. "Different things happen in the real world, and they happen with a whole bunch of other factors that screw things up."

Well grounded

Algar is a bit of a rarity in the clean energy world in that he's a miner and a battery maker, operating the vanadium flow battery brand VSun. If the market for vanadium flow batteries takes off, he can take the resource from the ground in Meekatharra, Western Australia, make vanadium electrolyte and start cracking. If flow batteries turn out to be a fringe technology, the vanadium is still good for steel-making and chemicals.

"It enables us to offset that 'miner' tag by putting it [the mined resource] into a more useful space," he says. "I think it's important miners do it."

Vanadium flow batteries are an Australian invention, the brainchild of Emeritus Professor Maria Skyllas-Kazacos of UNSW. The technology is not unique to VSun batteries.

Algar's hoping that as the market settles vanadium flow batteries will shine through for their stamina. As time ticks by, he expects various types of battery to look a little less exciting as operating costs stack up. "This issue of duration, or age, is really critical," he says. "If you bought a car you'd know [at purchase] how long it would last you; that it would be 200,000km at the most and that you should probably get rid of it around 80,000km."

"We know that intuitively with a car, but we don't know that at all with a storage system."

Until years and years more data are available, consumers are left in the fog. Until then, the longer we wait the more we'll know. Buyers of residential systems are more likely to buy in the near term to act on immediate savings, he says.

At work and at home

The company is working with Austrian battery manufacturer Gildemeister on designing a 5kW residential system it hopes will deliver around 20kWh. "Your self-consumption ability is then 100%," he says. "At 20kWh at 5kW I could go to zero and not touch the grid."



Gildemeister also makes utility-scale vanadium flow batteries under the CellCube brand.

That's a lot of energy, and some in the industry might say that when households with smart systems start trading solar power with one another the typical household battery won't need to be that big. Algar sees it another way. "If you're trading with each other, you don't need a battery at all," he says, pointing to the example of commercial and industrial solar sold cheaply to households on the weekends.

"I think peer-to-peer trading is a fantastic idea and I love the Reposit opportunity and [Power Ledger's] bitcoin model – it's definitely going to be the way to go. Whether the utilities let that happen or not is a different story," he says. As a self-consumer, however, "the more I have in terms of kilowatt hours to use at my will is important to me – and if I'm trading, it's still good to have more kilowatt hours."

The ability to scale storage capacity will put vanadium flow batteries in a good light, he says, where the incremental cost drops as the energy capacity rises. "With a flow battery you have the same power requirement, you just keep adding units of liquid to make it bigger," says Algar, speaking to *EcoGeneration* during the Australian Energy Storage Conference and Exhibition in Sydney in June.

Modularity is the key, he says, where it needs to be cost effective to either incrementally increase capacity or power. "You need to have those two things separate, as opposed to having them in the same box."

As a taxpayer who is subsidising research into storage via ARENA funding, Algar says he'd like to see more knowledge shared around by R&D departments of battery-makers. West Australian company Magellan's website is a terrific source of data on large and small integrations, but there should be more of it. "And then you get some people who don't tell you a thing," he says. "There are different rules ARENA applies to different people."

If utility-scale storage is going to prove itself, everything should be out in the open. "There's a cloud of hype and a lack of technical data, but you can't tell the one from the other."



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