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AUSTRALIA 

## Energy storage developer targets mining operations

2 December 2016 by Sara Verbruggen , [Be the first to comment](#)

AUSTRALIA: Energy storage developer VSUN is seeking to roll out its battery technology in mining operations and other off-grid sites from 2017.



VSUN is in talks with mining project owners

The company is in talks with mining project owners as well as providers of power systems for mining operations in Australia.

In September VSUN, which is a subsidiary of mining junior Australian Vanadium, installed its first vanadium redox flow battery (VRFB) storage system at a remote nursery tree farm in Western Australia.

Gildemeister, based in Austria, supplied the 100kWh flow battery, which is connected to a 15kW solar PV array also installed at the farm.

"I'd driven up to the farm with my son to check how the battery was running after it had been installed," said Vincent Algar, Australia Vanadium's managing director.

"For dinner the farm's owner had served up potatoes that had been cooked in the oven using energy stored in the battery from sun that had been shining two weeks beforehand. It was running the lights, television, everything, at night and the next morning too," he said.

The nursery farm's owner hopes the solar PV system and the flow battery will support virtually 100% self-sufficiency in electricity.

The battery cost €112,000 (A\$160,00), but it worked out to be more cost-effective than paying for a new grid connection for a new house being built on the property, which is located near Busselton, Western Australia.

Vanadium redox flow batteries have a lower energy density than lithium but they can be scaled up to any size and so are able to hold more total energy, making the technology highly suited to banking large amounts of renewable energy for use, hours or even days later.

They can also achieve longer operational lifetimes than lithium ion technology, as they can cycle more, at 100% depth of discharge.

Vanadium can be recycled, from steel, which is the largest end-use market for the mineral today, though ensuring purity levels needed for applications such as energy storage is a challenge.

Crucially these types of batteries, which despite being bulkier and more costly than lithium ion batteries per kWh, are rugged and

robust, performing well even in hot climates and needing little maintenance, making them perfect for remote applications.

## Payback calculations

The Busselton farm will serve as a demonstration site. In certain cases the payback period for a vanadium redox battery, based on Gildemeister's Cellcube — probably the most widely deployed flow battery-based energy storage system on the market today — can be good.

"It depends on factors such as high variations between peak and off-peak electricity, if there is grid power," said Algar.

"This allows a second charge from the grid to occur daily. This double charge and discharge increases the revenue saved from peak time energy use, shortening payback."

VSUN is currently working on a business case for a banana plantation in Queensland, which is grid connected.

"The plantation has to pump water for its crops, which requires continuous power, so here the battery can store off-peak electricity for powering the water pump during peak electricity prices. You are looking at a payback within year six," said Algar.

"Islanded fossil fuel generation, especially where the load is constant and fuel costs are high day or night, means shifting renewable energy to night time use is more efficient," he said.

"It is a case of targeting those sectors where combination of load profile and energy costs provide the best outcomes."

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