

## SolarTech Power Solutions

# Canadian all-vanadium liquid flow energy storage system



## Overview

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It is the only vanadium flow battery deployed at scale in Canada, with a storage capacity of 8.4 megawatts of solar power serving the electricity needs of 7,000 Albertans. What is a vanadium flow battery system?

Vanadium flow battery systems are ideally suited to stabilize isolated microgrids, integrating solar and wind power in a safe, reliable, low-maintenance, and environmentally friendly manner. VRB Energy grid-scale energy storage systems allow for flexible, long-duration energy storage with proven high performance.

How many MWh can a vanadium flow battery store?

It can store 8.4 megawatt hours (MWh) of solar power, and is the only vanadium flow battery deployed at scale in Canada. Harper, an engineer by training, began working with flow batteries in 2005 at VRB Energy, the original licensee of the all-vanadium technology in North America, which was sold to Prudent Energy in 2009.

How many Albertans use a vanadium flow battery?

It is the only vanadium flow battery deployed at scale in Canada, with a storage capacity of 8.4 megawatts of solar power serving the electricity needs of 7,000 Albertans. (Photo courtesy Invinity Energy Systems) Since the spring of 2023, more than 7,000 Albertans have gotten their power from a shed north of Medicine Hat.

Why is vanadium a problem?

However, as the grid becomes increasingly dominated by renewables, more and more flow batteries will be needed to provide long-duration storage. Demand for vanadium will grow, and that will be a problem. "Vanadium is found around the world but in dilute amounts, and extracting it is difficult," says Rodby.

Why is Vanadium so expensive?

Most vanadium is a byproduct of iron ore mined in China, Russia, South Africa and Brazil for use in strengthening steel products. The vanadium market is known for its price volatility over the past two decades. Prices have been volatile in recent years, but may get more expensive if vanadium plays a bigger role in energy storage.

Can a flow battery save energy?

Flow battery advocates say their water-based technology needs a fraction of the metals used in lithium batteries and can store energy longer and without fire risk. But high costs could limit its role in renewable energy storage.

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