

Maritime approval of Vanadium redox flow batteries

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The need for Vanadium mined for commercial use has received a boost thanks to the American Bureau of Shipping ([ABS](#)), which has issued a new technology qualification (NTQ) for Vanadium redox flow batteries (VRFB) in the maritime industry. The nod from the agency committed to setting standards for safety and excellence could also prove an exciting development for Norge Mining as demand for the EU Critical Raw Material continues to evolve.

Although not widely known as a technology, Vanadium redox flow batteries have a number of advantages over existing systems and work by storing electrical energy in tanks containing liquid Vanadium electrolyte. Unlike Lithium battery banks, they are non-flammable and can be scaled up or down by the size and number of their tanks depending on the needs of the vessel.

'A game changer' at sea

The fact that Vanadium as a material is malleable, ductile and corrosion-resistant further enhances its manufacturing appeal. Global leader [Invinity Energy Systems](#) are amongst those who praise the safety, longevity, economy and reliability of the batteries, saying 'flow batteries exhibit far greater capacity retention and far less performance degradation over time than lithium-ion batteries'.

Gareth Burton, ABS vice President, Technology, has also clearly been persuaded of their perks.

"Vanadium redox technology is a potential game changer in the application of batteries at sea. It has the advantages of a long lifespan, greatly improved energy capacity and an improved safety profile as a non-flammable product. This technology is one that has the potential to accelerate the energy transition in the maritime industry, supporting global decarbonization goals."

Going global

One company already working on a commercial-use VRFB for the maritime industry is Singapore-based Gennal Engineering PTE Ltd, which is developing a 'Blue G' battery system. Not only will the 'Blue G' last around 25 years – almost double the life span of existing lithium-ion batteries – but Gennal also claims that the Vanadium electrolyte can be extracted and recycled when the battery is eventually recommissioned.

Indeed, the 'Blue G' has already been commissioned as the power source for a new hybrid-electric off-shore supply vessel, the Evolution Concepts' Zevo OS to be built in Malaysia. Similar ship propulsion projects using VRFB systems have also been announced by Dutch engineering consultancy Conoship, German shipowner Vega Reederei and Canadian company VanadiumCorp.

And closer to home

On land VRFB systems are also gaining ground and in February, the Portugal-based utility company EDP has been given the [go-ahead for a 1MWh VRFB system](#) as part of a hybrid energy storage project at a downgraded thermal plant in the Spanish region of Asturias.

Closer to home, [Energy Storage News](#) reported that the first Vanadium redox flow battery was installed in Norway in January, in the district of Sluppen in Trondheim. Property developer R. Kjeldsberg contracted local company Bryte Batteries to install the 5kW/25kW system in a refurbished food court. The project was part-funded by Innovation Norway and its efficacy will be assessed by the University of Science and Technology.

Future promise

While Norway mostly relies on hydroelectric power for its electricity demands, this is nonetheless an exciting time for companies such as Norge Mining that holds 61 exploration licences for areas rich in Vanadium in the southwest of the country. As the war in Ukraine rumbles on, further impacting the European energy crisis and the world ramps up its search for renewables, the demand for Vanadium and reliable supply chain security has become an urgent priority.