

Vanadium Redox Flow Battery Gets Closer to Maritime Use

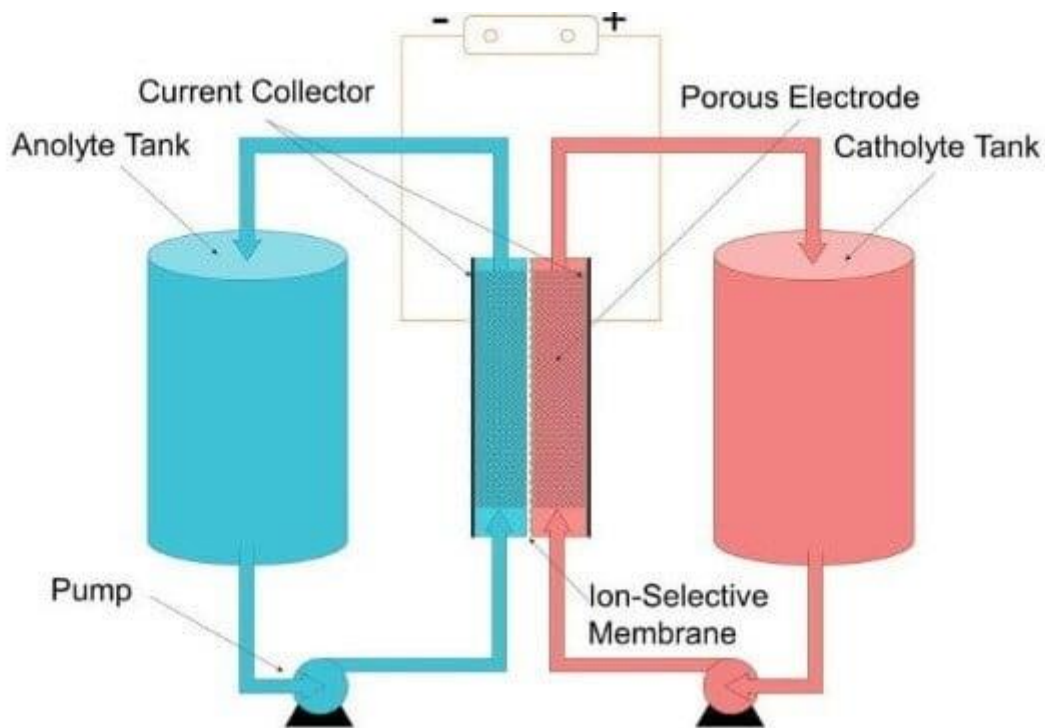


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ABS has issued a new technology qualification (NTQ) for a vanadium redox flow battery, moving ahead one of the first commercial applications of the little-known technology for maritime use.

Vanadium redox flow batteries store electrical energy in pairs of large tanks containing a liquid vanadium electrolyte. They are bulkier than lithium-ion batteries, but they have possible advantages for maritime applications. They are inherently non-flammable, unlike lithium-ion battery banks, which require electronic battery management systems and cooling systems to reduce the risk of fire. Flow batteries also scale up or down by the size of their electrolyte tanks, so the ship's range could be increased with relative simplicity by adding tank capacity.

In addition, flow batteries are long-lasting when worked hard. When repeatedly discharged from 100 percent down to 5 percent of maximum capacity, the technology can deliver up to 20,000 cycles of useable power, [reports](#) Maritime Executive technology contributor Harry Valentine. Singaporean construction conglomerate Gennal Engineering PTE LTD is commercializing a vanadium redox flow battery design for maritime applications. According to Gennal, the new "Blue G" battery system will have a longer lifespan – more than 25 years, about double the life of a typical lithium-ion battery. The company also says that it will be possible to extract and recycle the vanadium electrolyte when the battery is decommissioned at end of life.

The new "Blue G" battery has previously been announced as a power source for Evolution Concepts' Zevo OSV, a novel hybrid-electric offshore supply vessel to be built in Malaysia. Berg Propulsion will be providing the hybrid propulsion system for the project, and Malaysian shipbuilders Grade One Marine Shipyard, Muhibbah Marine Engineering and Shin Yang Shipyard will be carrying out construction.

“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,” said Gareth Burton, ABS Vice President, Technology.

Dutch engineering consultancy Conoship, German shipowner Vega Reederei and Canadian company VanadiumCorp have announced plans for a [similar](#) vanadium redox flow battery for ship propulsion, with support from the German-Australian Alliance for Electrochemical Technologies for the Storage of Renewable Energy (CENELEST). VanadiumCorp announced in December that it is moving towards construction of an electrolyte manufacturing plant.

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