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Next-Generation
Vanadium Redox Flow Battery (VRFB)

Photo: Redox Flow Battery System Delivered to Hokkaido Electric Power Network (51MWh) *(Image for reference; not the new model).*

The new vanadium redox flow battery (VRFB) achieves significant improvements in output and energy density through component enhancements, enabling cost reduction and space efficiency. Additionally, by adopting long-life materials, it allows for an operational lifespan of up to 30 years. Scheduled for order placement starting in 2025, this battery leverages its features—high safety, non-flammability, and environmental friendliness—to serve a wide range of applications. These include grid-scale energy storage, Long Duration Energy Storage (LDES), backup power for microgrids and public facilities during emergencies, and power sources for businesses and factories working towards 100% renewable energy (RE100).

Four Key Features of Our VRFB

High Safety (Extremely Low Fire Risk)
The electrolyte is non-flammable, and all components use flame-retardant materials, meaning it is not classified as hazardous under fire safety regulations. No special hazardous material permits or on-site hazardous materials handlers are required.

Long Duration
Due to the fundamental charge-discharge principle, the electrolyte and electrodes do not degrade, and the number of charge-discharge cycles does not accelerate aging. The system can operate stably over long periods, regardless of operating conditions.

Eco-Friendly
The electrolyte can be reused (proven in past applications), and up to 99% of system materials can be recycled with proper separation.

Superior Life Cycle Cost Advantage
The cost per unit of capacity decreases for longer-duration storage. With no need for cell or electrolyte replacement and minimal waste at decommissioning, the system achieves low life cycle costs in long-duration configurations.

Next-Generation VRFB Concept

15%

15% Increase in Energy Density*
The new system offers a 15% increase in energy density (energy storage per cubic meter of electrolyte), reducing its overall footprint.

30%

30% Cost Reduction*
Optimized design, improved electrolyte circulation control, reduced electrolyte volume, and enhanced manufacturing processes have led to a 30% cost reduction.

30yr

30-Year Operational Lifespan
By applying newly developed long-life materials and appropriate maintenance, the system can be used for up to 30 years.

(*Compared to Previous Models)

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Standard Specification

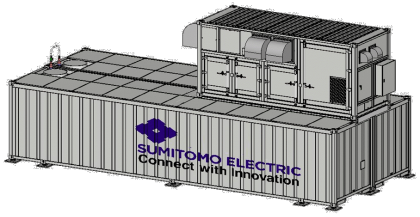
Specifications are subject to change without prior notice.

Type (Duration)※1	40 ft. (6 hour)	45 ft. (8 hour)	45 ft. (10 hour)
Energy Capacity	2,000 kWh	2,400 kWh	2,400 kWh
Rated Output Power	AC 334 kW	AC 300 kW	AC 240 kW
Duration (@Rated Power)	6 h	8 h	10 h
Dimension (L×W×H)	40×16×18 ft.	45×16×18 ft.	45×16×18 ft.
Ambient Temperature Range※2	-10 ~ +45 ℃		
Installation Location※3	Outdoor or indoor, altitude ≤1,000 m		
Seismic Design	Horizontal 1.0 G, Vertical 0.5 G		
Color※4	Standard: RAL7032n		
DC Voltage	DC 268–442 V, Maximum System Voltage: DC 1,327 V		
DC Current	DC 1,433 A		
Over Current Protection	400 A fuses × 4 in parallel		
Auxiliary Power Supply	Three-phase, three-wire 210 V, 50 Hz or 60 Hz		
Auxiliary Power Consumption	Maximum: 49kW (50Hz) / 44kW (60Hz), Average: 11 kW Standby Mode: 7.3kW, Minimum: 1kW		

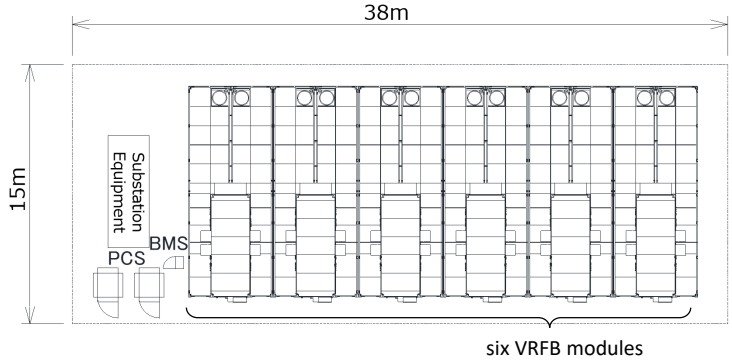
※1. Discharge durations of 8 hours or more are also available.
※2. Average daily temperature of +30.8℃ or lower. Low-temperature compatibility is also available.
※3. Optional salt damage resistance available.
※4. Optional colors and logo customization available.

Layout Example

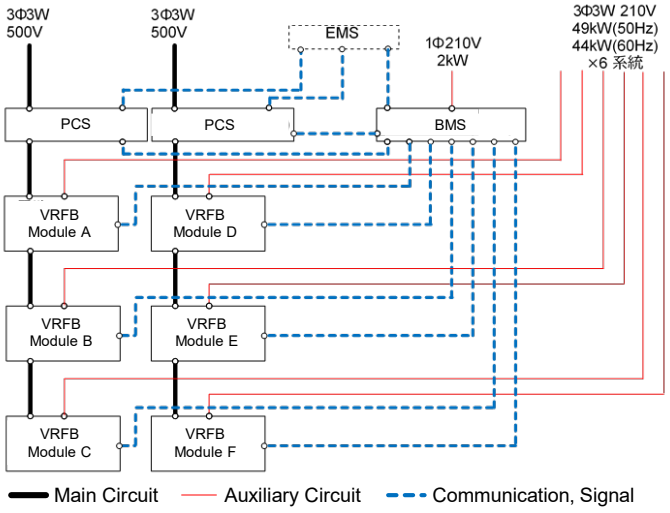
The design is carried out according to the site conditions. Please consult for details. Below is an example layout for a 2MWx6h system.



VRFB Module Image: 40ft Container Type (6h)



System Configurations Example



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