

Global Vanadium Redox Battery (VRB) Market 2026 by Manufacturers, Regions, Type and Application, Forecast to 2032

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Abstracts

According to our (Global Info Research) latest study, the global Vanadium Redox Battery (VRB) market size was valued at US\$ 3220 million in 2025 and is forecast to a readjusted size of US\$ 29140 million by 2032 with a CAGR of 37.4% during review period.

The vanadium redox battery (VRB) (or Vanadium flow battery) is a type of rechargeable flow battery that employs vanadium ions in different oxidation states to store chemical potential energy. The vanadium redox battery exploits the ability of vanadium to exist in solution in four different oxidation states, and uses this property to make a battery that has just one electro active element instead of two. For several reasons, including their relatively bulky size, most vanadium batteries are currently used for grid energy storage, such as being attached to power plants or electrical grids.

Unlike other RFBs, vanadium redox flow batteries (VRBs) use only one element (vanadium) in both tanks, exploiting vanadium's ability to exist in several states. By using one element in both tanks, VRBs can overcome cross-contamination degradation, a significant issue with other RFB chemistries that use more than one element. The energy density of VRBs depends on the concentration of vanadium: the higher the concentration, the higher the energy density.

Rongke Power, Sumitomo Electric Industries and VRB ENERGY are the main producers of vanadium REDOX batteries (VRBs). Rongke Power is the world's first, accounting for about 40% of the market, and the top 3 accounted for about 70%.

China is the largest producing region, accounting for about 60% of the world's total,

followed by Japan at about 20%.

This report is a detailed and comprehensive analysis for global Vanadium Redox Battery (VRB) market. Both quantitative and qualitative analyses are presented by manufacturers, by region & country, by Type and by Application. As the market is constantly changing, this report explores the competition, supply and demand trends, as well as key factors that contribute to its changing demands across many markets. Company profiles and product examples of selected competitors, along with market share estimates of some of the selected leaders for the year 2025, are provided.

Key Features:

Global Vanadium Redox Battery (VRB) market size and forecasts, in consumption value (\$ Million), sales quantity (MW), and average selling prices (USD/KW), 2021-2032

Global Vanadium Redox Battery (VRB) market size and forecasts by region and country, in consumption value (\$ Million), sales quantity (MW), and average selling prices (USD/KW), 2021-2032

Global Vanadium Redox Battery (VRB) market size and forecasts, by Type and by Application, in consumption value (\$ Million), sales quantity (MW), and average selling prices (USD/KW), 2021-2032

Global Vanadium Redox Battery (VRB) market shares of main players, shipments in revenue (\$ Million), sales quantity (MW), and ASP (USD/KW), 2021-2026

The Primary Objectives in This Report Are:

To determine the size of the total market opportunity of global and key countries

To assess the growth potential for Vanadium Redox Battery (VRB)

To forecast future growth in each product and end-use market

To assess competitive factors affecting the marketplace

This report profiles key players in the global Vanadium Redox Battery (VRB) market based on the following parameters - company overview, sales quantity, revenue, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Dalian Rongke Power, Sumitomo Electric, VRB ENERGY, Largo Clean Energy, Invinity Energy Systems, Big Pauer, H2, Inc., CellCube Energy Storage, Shanghai Electric, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Market Segmentation

Vanadium Redox Battery (VRB) market is split by Type and by Application. For the period 2021-2032, the growth among segments provides accurate calculations and forecasts for consumption value by Type, and by Application in terms of volume and value. This analysis can help you expand your business by targeting qualified niche markets.

Market segment by Type

Carbon Paper Electrode

Graphite Felt Electrode

Market segment by Application

Utility Facilities

Renewable Energy Integration

Others

Major players covered

Dalian Rongke Power

Sumitomo Electric

VRB ENERGY

Largo Clean Energy

Invinity Energy Systems

Big Power

H2, Inc.

CellCube Energy Storage

Shanghai Electric

Market segment by region, regional analysis covers

North America (United States, Canada, and Mexico)

Europe (Germany, France, United Kingdom, Russia, Italy, and Rest of Europe)

Asia-Pacific (China, Japan, Korea, India, Southeast Asia, and Australia)

South America (Brazil, Argentina, Colombia, and Rest of South America)

Middle East & Africa (Saudi Arabia, UAE, Egypt, South Africa, and Rest of Middle East & Africa)

The content of the study subjects, includes a total of 15 chapters:

Chapter 1, to describe Vanadium Redox Battery (VRB) product scope, market overview, market estimation caveats and base year.

Chapter 2, to profile the top manufacturers of Vanadium Redox Battery (VRB), with price, sales quantity, revenue, and global market share of Vanadium Redox Battery (VRB) from 2021 to 2026.

Chapter 3, the Vanadium Redox Battery (VRB) competitive situation, sales quantity, revenue, and global market share of top manufacturers are analyzed emphatically by landscape contrast.

Chapter 4, the Vanadium Redox Battery (VRB) breakdown data are shown at the regional level, to show the sales quantity, consumption value, and growth by regions, from 2021 to 2032.

Chapter 5 and 6, to segment the sales by Type and by Application, with sales market share and growth rate by Type, by Application, from 2021 to 2032.

Chapter 7, 8, 9, 10 and 11, to break the sales data at the country level, with sales quantity, consumption value, and market share for key countries in the world, from 2021 to 2026. and Vanadium Redox Battery (VRB) market forecast, by regions, by Type, and by Application, with sales and revenue, from 2027 to 2032.

Chapter 12, market dynamics, drivers, restraints, trends, and Porters Five Forces analysis.

Chapter 13, the key raw materials and key suppliers, and industry chain of Vanadium Redox Battery (VRB).

Chapter 14 and 15, to describe Vanadium Redox Battery (VRB) sales channel, distributors, customers, research findings and conclusion.

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