

# Global Vanadium Redox Flow Battery (VRB) Market 2024 by Manufacturers, Regions, Type and Application, Forecast to 2030

<https://marketpublishers.com/r/GD2DA6AADEF4EN.html>

Date: June 2024

Pages: 115

Price: US\$ 3,480.00 (Single User License)

ID: GD2DA6AADEF4EN

## Abstracts

According to our (Global Info Research) latest study, the global Vanadium Redox Flow Battery (VRB) market size was valued at USD 202.5 million in 2023 and is forecast to a readjusted size of USD 350 million by 2030 with a CAGR of 8.1% 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%.

The Global Info Research report includes an overview of the development of the Vanadium Redox Flow Battery (VRB) industry chain, the market status of Utility Facilities (Carbon Paper Electrode, Graphite Felt Electrode), Renewable Energy (Carbon Paper Electrode, Graphite Felt Electrode), and key enterprises in developed and developing market, and analysed the cutting-edge technology, patent, hot applications and market trends of Vanadium Redox Flow Battery (VRB).

Regionally, the report analyzes the Vanadium Redox Flow Battery (VRB) markets in key regions. North America and Europe are experiencing steady growth, driven by government initiatives and increasing consumer awareness. Asia-Pacific, particularly China, leads the global Vanadium Redox Flow Battery (VRB) market, with robust domestic demand, supportive policies, and a strong manufacturing base.

#### Key Features:

The report presents comprehensive understanding of the Vanadium Redox Flow Battery (VRB) market. It provides a holistic view of the industry, as well as detailed insights into individual components and stakeholders. The report analysis market dynamics, trends, challenges, and opportunities within the Vanadium Redox Flow Battery (VRB) industry.

The report involves analyzing the market at a macro level:

**Market Sizing and Segmentation:** Report collect data on the overall market size, including the sales quantity (MW), revenue generated, and market share of different by Type (e.g., Carbon Paper Electrode, Graphite Felt Electrode).

**Industry Analysis:** Report analyse the broader industry trends, such as government policies and regulations, technological advancements, consumer preferences, and market dynamics. This analysis helps in understanding the key drivers and challenges influencing the Vanadium Redox Flow Battery (VRB) market.

**Regional Analysis:** The report involves examining the Vanadium Redox Flow Battery (VRB) market at a regional or national level. Report analyses regional factors such as government incentives, infrastructure development, economic conditions, and consumer behaviour to identify variations and opportunities within different markets.

**Market Projections:** Report covers the gathered data and analysis to make future projections and forecasts for the Vanadium Redox Flow Battery (VRB) market. This may include estimating market growth rates, predicting market demand, and identifying

emerging trends.

The report also involves a more granular approach to Vanadium Redox Flow Battery (VRB):

**Company Analysis:** Report covers individual Vanadium Redox Flow Battery (VRB) manufacturers, suppliers, and other relevant industry players. This analysis includes studying their financial performance, market positioning, product portfolios, partnerships, and strategies.

**Consumer Analysis:** Report covers data on consumer behaviour, preferences, and attitudes towards Vanadium Redox Flow Battery (VRB). This may involve surveys, interviews, and analysis of consumer reviews and feedback from different by Application (Utility Facilities, Renewable Energy).

**Technology Analysis:** Report covers specific technologies relevant to Vanadium Redox Flow Battery (VRB). It assesses the current state, advancements, and potential future developments in Vanadium Redox Flow Battery (VRB) areas.

**Competitive Landscape:** By analyzing individual companies, suppliers, and consumers, the report presents insights into the competitive landscape of the Vanadium Redox Flow Battery (VRB) market. This analysis helps understand market share, competitive advantages, and potential areas for differentiation among industry players.

**Market Validation:** The report involves validating findings and projections through primary research, such as surveys, interviews, and focus groups.

## Market Segmentation

Vanadium Redox Flow Battery (VRB) market is split by Type and by Application. For the period 2019-2030, the growth among segments provides accurate calculations and forecasts for consumption value by Type, and by Application in terms of volume and value.

### Market segment by Type

Carbon Paper Electrode

Graphite Felt Electrode

## Market segment by Application

Utility Facilities

Renewable Energy

Others

## Major players covered

Dalian Rongke Power

Primus 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 Flow Battery (VRB) product scope, market overview, market estimation caveats and base year.

Chapter 2, to profile the top manufacturers of Vanadium Redox Flow Battery (VRB), with price, sales, revenue and global market share of Vanadium Redox Flow Battery (VRB) from 2019 to 2024.

Chapter 3, the Vanadium Redox Flow 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 Flow Battery (VRB) breakdown data are shown at the regional level, to show the sales quantity, consumption value and growth by regions, from 2019 to 2030.

Chapter 5 and 6, to segment the sales by Type and application, with sales market share and growth rate by type, application, from 2019 to 2030.

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 2017 to 2023. and Vanadium Redox Flow Battery (VRB) market forecast, by regions, type and application, with sales and revenue, from 2025 to 2030.

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 Flow Battery (VRB).

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

## Contents

### 1 MARKET OVERVIEW

- 1.1 Product Overview and Scope of Vanadium Redox Flow Battery (VRB)
- 1.2 Market Estimation Caveats and Base Year
- 1.3 Market Analysis by Type
  - 1.3.1 Overview: Global Vanadium Redox Flow Battery (VRB) Consumption Value by Type: 2019 Versus 2023 Versus 2030
  - 1.3.2 Carbon Paper Electrode
  - 1.3.3 Graphite Felt Electrode
- 1.4 Market Analysis by Application
  - 1.4.1 Overview: Global Vanadium Redox Flow Battery (VRB) Consumption Value by Application: 2019 Versus 2023 Versus 2030
  - 1.4.2 Utility Facilities
  - 1.4.3 Renewable Energy
  - 1.4.4 Others
- 1.5 Global Vanadium Redox Flow Battery (VRB) Market Size & Forecast
  - 1.5.1 Global Vanadium Redox Flow Battery (VRB) Consumption Value (2019 & 2023 & 2030)
  - 1.5.2 Global Vanadium Redox Flow Battery (VRB) Sales Quantity (2019-2030)
  - 1.5.3 Global Vanadium Redox Flow Battery (VRB) Average Price (2019-2030)

### 2 MANUFACTURERS PROFILES

- 2.1 Dalian Rongke Power
  - 2.1.1 Dalian Rongke Power Details
  - 2.1.2 Dalian Rongke Power Major Business
  - 2.1.3 Dalian Rongke Power Vanadium Redox Flow Battery (VRB) Product and Services
  - 2.1.4 Dalian Rongke Power Vanadium Redox Flow Battery (VRB) Sales Quantity, Average Price, Revenue, Gross Margin and Market Share (2019-2024)
  - 2.1.5 Dalian Rongke Power Recent Developments/Updates
- 2.2 Primus Power
  - 2.2.1 Primus Power Details
  - 2.2.2 Primus Power Major Business
  - 2.2.3 Primus Power Vanadium Redox Flow Battery (VRB) Product and Services
  - 2.2.4 Primus Power Vanadium Redox Flow Battery (VRB) Sales Quantity, Average Price, Revenue, Gross Margin and Market Share (2019-2024)

- 2.2.5 Primus Power Recent Developments/Updates
- 2.3 Sumitomo Electric
  - 2.3.1 Sumitomo Electric Details
  - 2.3.2 Sumitomo Electric Major Business
  - 2.3.3 Sumitomo Electric Vanadium Redox Flow Battery (VRB) Product and Services
  - 2.3.4 Sumitomo Electric Vanadium Redox Flow Battery (VRB) Sales Quantity, Average Price, Revenue, Gross Margin and Market Share (2019-2024)
  - 2.3.5 Sumitomo Electric Recent Developments/Updates
- 2.4 VRB ENERGY
  - 2.4.1 VRB ENERGY Details
  - 2.4.2 VRB ENERGY Major Business
  - 2.4.3 VRB ENERGY Vanadium Redox Flow Battery (VRB) Product and Services
  - 2.4.4 VRB ENERGY Vanadium Redox Flow Battery (VRB) Sales Quantity, Average Price, Revenue, Gross Margin and Market Share (2019-2024)
  - 2.4.5 VRB ENERGY Recent Developments/Updates
- 2.5 Largo Clean Energy
  - 2.5.1 Largo Clean Energy Details
  - 2.5.2 Largo Clean Energy Major Business
  - 2.5.3 Largo Clean Energy Vanadium Redox Flow Battery (VRB) Product and Services
  - 2.5.4 Largo Clean Energy Vanadium Redox Flow Battery (VRB) Sales Quantity, Average Price, Revenue, Gross Margin and Market Share (2019-2024)
  - 2.5.5 Largo Clean Energy Recent Developments/Updates
- 2.6 Invinity Energy Systems
  - 2.6.1 Invinity Energy Systems Details
  - 2.6.2 Invinity Energy Systems Major Business
  - 2.6.3 Invinity Energy Systems Vanadium Redox Flow Battery (VRB) Product and Services
  - 2.6.4 Invinity Energy Systems Vanadium Redox Flow Battery (VRB) Sales Quantity, Average Price, Revenue, Gross Margin and Market Share (2019-2024)
  - 2.6.5 Invinity Energy Systems Recent Developments/Updates
- 2.7 Big Power
  - 2.7.1 Big Power Details
  - 2.7.2 Big Power Major Business
  - 2.7.3 Big Power Vanadium Redox Flow Battery (VRB) Product and Services
  - 2.7.4 Big Power Vanadium Redox Flow Battery (VRB) Sales Quantity, Average Price, Revenue, Gross Margin and Market Share (2019-2024)
  - 2.7.5 Big Power Recent Developments/Updates
- 2.8 H2, Inc.
  - 2.8.1 H2, Inc. Details



- 2.8.2 H2, Inc. Major Business
- 2.8.3 H2, Inc. Vanadium Redox Flow Battery (VRB) Product and Services
- 2.8.4 H2, Inc. Vanadium Redox Flow Battery (VRB) Sales Quantity, Average Price, Revenue, Gross Margin and Market Share (2019-2024)
- 2.8.5 H2, Inc. Recent Developments/Updates
- 2.9 CellCube Energy Storage
  - 2.9.1 CellCube Energy Storage Details
  - 2.9.2 CellCube Energy Storage Major Business
  - 2.9.3 CellCube Energy Storage Vanadium Redox Flow Battery (VRB) Product and Services
  - 2.9.4 CellCube Energy Storage Vanadium Redox Flow Battery (VRB) Sales Quantity, Average Price, Revenue, Gross Margin and Market Share (2019-2024)
  - 2.9.5 CellCube Energy Storage Recent Developments/Updates
- 2.10 Shanghai Electric
  - 2.10.1 Shanghai Electric Details
  - 2.10.2 Shanghai Electric Major Business
  - 2.10.3 Shanghai Electric Vanadium Redox Flow Battery (VRB) Product and Services
  - 2.10.4 Shanghai Electric Vanadium Redox Flow Battery (VRB) Sales Quantity, Average Price, Revenue, Gross Margin and Market Share (2019-2024)
  - 2.10.5 Shanghai Electric Recent Developments/Updates

### **3 COMPETITIVE ENVIRONMENT: VANADIUM REDOX FLOW BATTERY (VRB) BY MANUFACTURER**

- 3.1 Global Vanadium Redox Flow Battery (VRB) Sales Quantity by Manufacturer (2019-2024)
- 3.2 Global Vanadium Redox Flow Battery (VRB) Revenue by Manufacturer (2019-2024)
- 3.3 Global Vanadium Redox Flow Battery (VRB) Average Price by Manufacturer (2019-2024)
- 3.4 Market Share Analysis (2023)
  - 3.4.1 Producer Shipments of Vanadium Redox Flow Battery (VRB) by Manufacturer Revenue (\$MM) and Market Share (%): 2023
  - 3.4.2 Top 3 Vanadium Redox Flow Battery (VRB) Manufacturer Market Share in 2023
  - 3.4.2 Top 6 Vanadium Redox Flow Battery (VRB) Manufacturer Market Share in 2023
- 3.5 Vanadium Redox Flow Battery (VRB) Market: Overall Company Footprint Analysis
  - 3.5.1 Vanadium Redox Flow Battery (VRB) Market: Region Footprint
  - 3.5.2 Vanadium Redox Flow Battery (VRB) Market: Company Product Type Footprint
  - 3.5.3 Vanadium Redox Flow Battery (VRB) Market: Company Product Application Footprint

- 3.6 New Market Entrants and Barriers to Market Entry
- 3.7 Mergers, Acquisition, Agreements, and Collaborations

## **4 CONSUMPTION ANALYSIS BY REGION**

- 4.1 Global Vanadium Redox Flow Battery (VRB) Market Size by Region
  - 4.1.1 Global Vanadium Redox Flow Battery (VRB) Sales Quantity by Region (2019-2030)
  - 4.1.2 Global Vanadium Redox Flow Battery (VRB) Consumption Value by Region (2019-2030)
  - 4.1.3 Global Vanadium Redox Flow Battery (VRB) Average Price by Region (2019-2030)
- 4.2 North America Vanadium Redox Flow Battery (VRB) Consumption Value (2019-2030)
- 4.3 Europe Vanadium Redox Flow Battery (VRB) Consumption Value (2019-2030)
- 4.4 Asia-Pacific Vanadium Redox Flow Battery (VRB) Consumption Value (2019-2030)
- 4.5 South America Vanadium Redox Flow Battery (VRB) Consumption Value (2019-2030)
- 4.6 Middle East and Africa Vanadium Redox Flow Battery (VRB) Consumption Value (2019-2030)

## **5 MARKET SEGMENT BY TYPE**

- 5.1 Global Vanadium Redox Flow Battery (VRB) Sales Quantity by Type (2019-2030)
- 5.2 Global Vanadium Redox Flow Battery (VRB) Consumption Value by Type (2019-2030)
- 5.3 Global Vanadium Redox Flow Battery (VRB) Average Price by Type (2019-2030)

## **6 MARKET SEGMENT BY APPLICATION**

- 6.1 Global Vanadium Redox Flow Battery (VRB) Sales Quantity by Application (2019-2030)
- 6.2 Global Vanadium Redox Flow Battery (VRB) Consumption Value by Application (2019-2030)
- 6.3 Global Vanadium Redox Flow Battery (VRB) Average Price by Application (2019-2030)

## **7 NORTH AMERICA**

7.1 North America Vanadium Redox Flow Battery (VRB) Sales Quantity by Type (2019-2030)

7.2 North America Vanadium Redox Flow Battery (VRB) Sales Quantity by Application (2019-2030)

7.3 North America Vanadium Redox Flow Battery (VRB) Market Size by Country

7.3.1 North America Vanadium Redox Flow Battery (VRB) Sales Quantity by Country (2019-2030)

7.3.2 North America Vanadium Redox Flow Battery (VRB) Consumption Value by Country (2019-2030)

7.3.3 United States Market Size and Forecast (2019-2030)

7.3.4 Canada Market Size and Forecast (2019-2030)

7.3.5 Mexico Market Size and Forecast (2019-2030)

## **8 EUROPE**

8.1 Europe Vanadium Redox Flow Battery (VRB) Sales Quantity by Type (2019-2030)

8.2 Europe Vanadium Redox Flow Battery (VRB) Sales Quantity by Application (2019-2030)

8.3 Europe Vanadium Redox Flow Battery (VRB) Market Size by Country

8.3.1 Europe Vanadium Redox Flow Battery (VRB) Sales Quantity by Country (2019-2030)

8.3.2 Europe Vanadium Redox Flow Battery (VRB) Consumption Value by Country (2019-2030)

8.3.3 Germany Market Size and Forecast (2019-2030)

8.3.4 France Market Size and Forecast (2019-2030)

8.3.5 United Kingdom Market Size and Forecast (2019-2030)

8.3.6 Russia Market Size and Forecast (2019-2030)

8.3.7 Italy Market Size and Forecast (2019-2030)

## **9 ASIA-PACIFIC**

9.1 Asia-Pacific Vanadium Redox Flow Battery (VRB) Sales Quantity by Type (2019-2030)

9.2 Asia-Pacific Vanadium Redox Flow Battery (VRB) Sales Quantity by Application (2019-2030)

9.3 Asia-Pacific Vanadium Redox Flow Battery (VRB) Market Size by Region

9.3.1 Asia-Pacific Vanadium Redox Flow Battery (VRB) Sales Quantity by Region (2019-2030)

9.3.2 Asia-Pacific Vanadium Redox Flow Battery (VRB) Consumption Value by Region

(2019-2030)

- 9.3.3 China Market Size and Forecast (2019-2030)
- 9.3.4 Japan Market Size and Forecast (2019-2030)
- 9.3.5 Korea Market Size and Forecast (2019-2030)
- 9.3.6 India Market Size and Forecast (2019-2030)
- 9.3.7 Southeast Asia Market Size and Forecast (2019-2030)
- 9.3.8 Australia Market Size and Forecast (2019-2030)

## **10 SOUTH AMERICA**

- 10.1 South America Vanadium Redox Flow Battery (VRB) Sales Quantity by Type (2019-2030)
- 10.2 South America Vanadium Redox Flow Battery (VRB) Sales Quantity by Application (2019-2030)
- 10.3 South America Vanadium Redox Flow Battery (VRB) Market Size by Country
  - 10.3.1 South America Vanadium Redox Flow Battery (VRB) Sales Quantity by Country (2019-2030)
  - 10.3.2 South America Vanadium Redox Flow Battery (VRB) Consumption Value by Country (2019-2030)
  - 10.3.3 Brazil Market Size and Forecast (2019-2030)
  - 10.3.4 Argentina Market Size and Forecast (2019-2030)

## **11 MIDDLE EAST & AFRICA**

- 11.1 Middle East & Africa Vanadium Redox Flow Battery (VRB) Sales Quantity by Type (2019-2030)
- 11.2 Middle East & Africa Vanadium Redox Flow Battery (VRB) Sales Quantity by Application (2019-2030)
- 11.3 Middle East & Africa Vanadium Redox Flow Battery (VRB) Market Size by Country
  - 11.3.1 Middle East & Africa Vanadium Redox Flow Battery (VRB) Sales Quantity by Country (2019-2030)
  - 11.3.2 Middle East & Africa Vanadium Redox Flow Battery (VRB) Consumption Value by Country (2019-2030)
  - 11.3.3 Turkey Market Size and Forecast (2019-2030)
  - 11.3.4 Egypt Market Size and Forecast (2019-2030)
  - 11.3.5 Saudi Arabia Market Size and Forecast (2019-2030)
  - 11.3.6 South Africa Market Size and Forecast (2019-2030)

## **12 MARKET DYNAMICS**

- 12.1 Vanadium Redox Flow Battery (VRB) Market Drivers
- 12.2 Vanadium Redox Flow Battery (VRB) Market Restraints
- 12.3 Vanadium Redox Flow Battery (VRB) Trends Analysis
- 12.4 Porters Five Forces Analysis
  - 12.4.1 Threat of New Entrants
  - 12.4.2 Bargaining Power of Suppliers
  - 12.4.3 Bargaining Power of Buyers
  - 12.4.4 Threat of Substitutes
  - 12.4.5 Competitive Rivalry

## **13 RAW MATERIAL AND INDUSTRY CHAIN**

- 13.1 Raw Material of Vanadium Redox Flow Battery (VRB) and Key Manufacturers
- 13.2 Manufacturing Costs Percentage of Vanadium Redox Flow Battery (VRB)
- 13.3 Vanadium Redox Flow Battery (VRB) Production Process
- 13.4 Vanadium Redox Flow Battery (VRB) Industrial Chain

## **14 SHIPMENTS BY DISTRIBUTION CHANNEL**

- 14.1 Sales Channel
  - 14.1.1 Direct to End-User
  - 14.1.2 Distributors
- 14.2 Vanadium Redox Flow Battery (VRB) Typical Distributors
- 14.3 Vanadium Redox Flow Battery (VRB) Typical Customers

## **15 RESEARCH FINDINGS AND CONCLUSION**

## **16 APPENDIX**

- 16.1 Methodology
- 16.2 Research Process and Data Source
- 16.3 Disclaimer

## List Of Tables

### LIST OF TABLES

Table 1. Global Vanadium Redox Flow Battery (VRB) Consumption Value by Type, (USD Million), 2019 & 2023 & 2030

Table 2. Global Vanadium Redox Flow Battery (VRB) Consumption Value by Application, (USD Million), 2019 & 2023 & 2030

Table 3. Dalian Rongke Power Basic Information, Manufacturing Base and Competitors

Table 4. Dalian Rongke Power Major Business

Table 5. Dalian Rongke Power Vanadium Redox Flow Battery (VRB) Product and Services

Table 6. Dalian Rongke Power Vanadium Redox Flow Battery (VRB) Sales Quantity (MW), Average Price (USD/KW), Revenue (USD Million), Gross Margin and Market Share (2019-2024)

Table 7. Dalian Rongke Power Recent Developments/Updates

Table 8. Primus Power Basic Information, Manufacturing Base and Competitors

Table 9. Primus Power Major Business

Table 10. Primus Power Vanadium Redox Flow Battery (VRB) Product and Services

Table 11. Primus Power Vanadium Redox Flow Battery (VRB) Sales Quantity (MW), Average Price (USD/KW), Revenue (USD Million), Gross Margin and Market Share (2019-2024)

Table 12. Primus Power Recent Developments/Updates

Table 13. Sumitomo Electric Basic Information, Manufacturing Base and Competitors

Table 14. Sumitomo Electric Major Business

Table 15. Sumitomo Electric Vanadium Redox Flow Battery (VRB) Product and Services

Table 16. Sumitomo Electric Vanadium Redox Flow Battery (VRB) Sales Quantity (MW), Average Price (USD/KW), Revenue (USD Million), Gross Margin and Market Share (2019-2024)

Table 17. Sumitomo Electric Recent Developments/Updates

Table 18. VRB ENERGY Basic Information, Manufacturing Base and Competitors

Table 19. VRB ENERGY Major Business

Table 20. VRB ENERGY Vanadium Redox Flow Battery (VRB) Product and Services

Table 21. VRB ENERGY Vanadium Redox Flow Battery (VRB) Sales Quantity (MW), Average Price (USD/KW), Revenue (USD Million), Gross Margin and Market Share (2019-2024)

Table 22. VRB ENERGY Recent Developments/Updates

Table 23. Largo Clean Energy Basic Information, Manufacturing Base and Competitors

Table 24. Largo Clean Energy Major Business

Table 25. Largo Clean Energy Vanadium Redox Flow Battery (VRB) Product and Services

Table 26. Largo Clean Energy Vanadium Redox Flow Battery (VRB) Sales Quantity (MW), Average Price (USD/KW), Revenue (USD Million), Gross Margin and Market Share (2019-2024)

Table 27. Largo Clean Energy Recent Developments/Updates

Table 28. Invinity Energy Systems Basic Information, Manufacturing Base and Competitors

Table 29. Invinity Energy Systems Major Business

Table 30. Invinity Energy Systems Vanadium Redox Flow Battery (VRB) Product and Services

Table 31. Invinity Energy Systems Vanadium Redox Flow Battery (VRB) Sales Quantity (MW), Average Price (USD/KW), Revenue (USD Million), Gross Margin and Market Share (2019-2024)

Table 32. Invinity Energy Systems Recent Developments/Updates

Table 33. Big Power Basic Information, Manufacturing Base and Competitors

Table 34. Big Power Major Business

Table 35. Big Power Vanadium Redox Flow Battery (VRB) Product and Services

Table 36. Big Power Vanadium Redox Flow Battery (VRB) Sales Quantity (MW), Average Price (USD/KW), Revenue (USD Million), Gross Margin and Market Share (2019-2024)

Table 37. Big Power Recent Developments/Updates

Table 38. H2, Inc. Basic Information, Manufacturing Base and Competitors

Table 39. H2, Inc. Major Business

Table 40. H2, Inc. Vanadium Redox Flow Battery (VRB) Product and Services

Table 41. H2, Inc. Vanadium Redox Flow Battery (VRB) Sales Quantity (MW), Average Price (USD/KW), Revenue (USD Million), Gross Margin and Market Share (2019-2024)

Table 42. H2, Inc. Recent Developments/Updates

Table 43. CellCube Energy Storage Basic Information, Manufacturing Base and Competitors

Table 44. CellCube Energy Storage Major Business

Table 45. CellCube Energy Storage Vanadium Redox Flow Battery (VRB) Product and Services

Table 46. CellCube Energy Storage Vanadium Redox Flow Battery (VRB) Sales Quantity (MW), Average Price (USD/KW), Revenue (USD Million), Gross Margin and Market Share (2019-2024)

Table 47. CellCube Energy Storage Recent Developments/Updates

Table 48. Shanghai Electric Basic Information, Manufacturing Base and Competitors

Table 49. Shanghai Electric Major Business

Table 50. Shanghai Electric Vanadium Redox Flow Battery (VRB) Product and Services

Table 51. Shanghai Electric Vanadium Redox Flow Battery (VRB) Sales Quantity (MW), Average Price (USD/KW), Revenue (USD Million), Gross Margin and Market Share (2019-2024)

Table 52. Shanghai Electric Recent Developments/Updates

Table 53. Global Vanadium Redox Flow Battery (VRB) Sales Quantity by Manufacturer (2019-2024) & (MW)

Table 54. Global Vanadium Redox Flow Battery (VRB) Revenue by Manufacturer (2019-2024) & (USD Million)

Table 55. Global Vanadium Redox Flow Battery (VRB) Average Price by Manufacturer (2019-2024) & (USD/KW)

Table 56. Market Position of Manufacturers in Vanadium Redox Flow Battery (VRB), (Tier 1, Tier 2, and Tier 3), Based on Consumption Value in 2023

Table 57. Head Office and Vanadium Redox Flow Battery (VRB) Production Site of Key Manufacturer

Table 58. Vanadium Redox Flow Battery (VRB) Market: Company Product Type Footprint

Table 59. Vanadium Redox Flow Battery (VRB) Market: Company Product Application Footprint

Table 60. Vanadium Redox Flow Battery (VRB) New Market Entrants and Barriers to Market Entry

Table 61. Vanadium Redox Flow Battery (VRB) Mergers, Acquisition, Agreements, and Collaborations

Table 62. Global Vanadium Redox Flow Battery (VRB) Sales Quantity by Region (2019-2024) & (MW)

Table 63. Global Vanadium Redox Flow Battery (VRB) Sales Quantity by Region (2025-2030) & (MW)

Table 64. Global Vanadium Redox Flow Battery (VRB) Consumption Value by Region (2019-2024) & (USD Million)

Table 65. Global Vanadium Redox Flow Battery (VRB) Consumption Value by Region (2025-2030) & (USD Million)

Table 66. Global Vanadium Redox Flow Battery (VRB) Average Price by Region (2019-2024) & (USD/KW)

Table 67. Global Vanadium Redox Flow Battery (VRB) Average Price by Region (2025-2030) & (USD/KW)

Table 68. Global Vanadium Redox Flow Battery (VRB) Sales Quantity by Type (2019-2024) & (MW)

Table 69. Global Vanadium Redox Flow Battery (VRB) Sales Quantity by Type



(2025-2030) & (MW)

Table 70. Global Vanadium Redox Flow Battery (VRB) Consumption Value by Type (2019-2024) & (USD Million)

Table 71. Global Vanadium Redox Flow Battery (VRB) Consumption Value by Type (2025-2030) & (USD Million)

Table 72. Global Vanadium Redox Flow Battery (VRB) Average Price by Type (2019-2024) & (USD/KW)

Table 73. Global Vanadium Redox Flow Battery (VRB) Average Price by Type (2025-2030) & (USD/KW)

Table 74. Global Vanadium Redox Flow Battery (VRB) Sales Quantity by Application (2019-2024) & (MW)

Table 75. Global Vanadium Redox Flow Battery (VRB) Sales Quantity by Application (2025-2030) & (MW)

Table 76. Global Vanadium Redox Flow Battery (VRB) Consumption Value by Application (2019-2024) & (USD Million)

Table 77. Global Vanadium Redox Flow Battery (VRB) Consumption Value by Application (2025-2030) & (USD Million)

Table 78. Global Vanadium Redox Flow Battery (VRB) Average Price by Application (2019-2024) & (USD/KW)

Table 79. Global Vanadium Redox Flow Battery (VRB) Average Price by Application (2025-2030) & (USD/KW)

Table 80. North America Vanadium Redox Flow Battery (VRB) Sales Quantity by Type (2019-2024) & (MW)

Table 81. North America Vanadium Redox Flow Battery (VRB) Sales Quantity by Type (2025-2030) & (MW)

Table 82. North America Vanadium Redox Flow Battery (VRB) Sales Quantity by Application (2019-2024) & (MW)

Table 83. North America Vanadium Redox Flow Battery (VRB) Sales Quantity by Application (2025-2030) & (MW)

Table 84. North America Vanadium Redox Flow Battery (VRB) Sales Quantity by Country (2019-2024) & (MW)

Table 85. North America Vanadium Redox Flow Battery (VRB) Sales Quantity by Country (2025-2030) & (MW)

Table 86. North America Vanadium Redox Flow Battery (VRB) Consumption Value by Country (2019-2024) & (USD Million)

Table 87. North America Vanadium Redox Flow Battery (VRB) Consumption Value by Country (2025-2030) & (USD Million)

Table 88. Europe Vanadium Redox Flow Battery (VRB) Sales Quantity by Type (2019-2024) & (MW)

Table 89. Europe Vanadium Redox Flow Battery (VRB) Sales Quantity by Type (2025-2030) & (MW)

Table 90. Europe Vanadium Redox Flow Battery (VRB) Sales Quantity by Application (2019-2024) & (MW)

Table 91. Europe Vanadium Redox Flow Battery (VRB) Sales Quantity by Application (2025-2030) & (MW)

Table 92. Europe Vanadium Redox Flow Battery (VRB) Sales Quantity by Country (2019-2024) & (MW)

Table 93. Europe Vanadium Redox Flow Battery (VRB) Sales Quantity by Country (2025-2030) & (MW)

Table 94. Europe Vanadium Redox Flow Battery (VRB) Consumption Value by Country (2019-2024) & (USD Million)

Table 95. Europe Vanadium Redox Flow Battery (VRB) Consumption Value by Country (2025-2030) & (USD Million)

Table 96. Asia-Pacific Vanadium Redox Flow Battery (VRB) Sales Quantity by Type (2019-2024) & (MW)

Table 97. Asia-Pacific Vanadium Redox Flow Battery (VRB) Sales Quantity by Type (2025-2030) & (MW)

Table 98. Asia-Pacific Vanadium Redox Flow Battery (VRB) Sales Quantity by Application (2019-2024) & (MW)

Table 99. Asia-Pacific Vanadium Redox Flow Battery (VRB) Sales Quantity by Application (2025-2030) & (MW)

Table 100. Asia-Pacific Vanadium Redox Flow Battery (VRB) Sales Quantity by Region (2019-2024) & (MW)

Table 101. Asia-Pacific Vanadium Redox Flow Battery (VRB) Sales Quantity by Region (2025-2030) & (MW)

Table 102. Asia-Pacific Vanadium Redox Flow Battery (VRB) Consumption Value by Region (2019-2024) & (USD Million)

Table 103. Asia-Pacific Vanadium Redox Flow Battery (VRB) Consumption Value by Region (2025-2030) & (USD Million)

Table 104. South America Vanadium Redox Flow Battery (VRB) Sales Quantity by Type (2019-2024) & (MW)

Table 105. South America Vanadium Redox Flow Battery (VRB) Sales Quantity by Type (2025-2030) & (MW)

Table 106. South America Vanadium Redox Flow Battery (VRB) Sales Quantity by Application (2019-2024) & (MW)

Table 107. South America Vanadium Redox Flow Battery (VRB) Sales Quantity by Application (2025-2030) & (MW)

Table 108. South America Vanadium Redox Flow Battery (VRB) Sales Quantity by

Country (2019-2024) & (MW)

Table 109. South America Vanadium Redox Flow Battery (VRB) Sales Quantity by Country (2025-2030) & (MW)

Table 110. South America Vanadium Redox Flow Battery (VRB) Consumption Value by Country (2019-2024) & (USD Million)

Table 111. South America Vanadium Redox Flow Battery (VRB) Consumption Value by Country (2025-2030) & (USD Million)

Table 112. Middle East & Africa Vanadium Redox Flow Battery (VRB) Sales Quantity by Type (2019-2024) & (MW)

Table 113. Middle East & Africa Vanadium Redox Flow Battery (VRB) Sales Quantity by Type (2025-2030) & (MW)

Table 114. Middle East & Africa Vanadium Redox Flow Battery (VRB) Sales Quantity by Application (2019-2024) & (MW)

Table 115. Middle East & Africa Vanadium Redox Flow Battery (VRB) Sales Quantity by Application (2025-2030) & (MW)

Table 116. Middle East & Africa Vanadium Redox Flow Battery (VRB) Sales Quantity by Region (2019-2024) & (MW)

Table 117. Middle East & Africa Vanadium Redox Flow Battery (VRB) Sales Quantity by Region (2025-2030) & (MW)

Table 118. Middle East & Africa Vanadium Redox Flow Battery (VRB) Consumption Value by Region (2019-2024) & (USD Million)

Table 119. Middle East & Africa Vanadium Redox Flow Battery (VRB) Consumption Value by Region (2025-2030) & (USD Million)

Table 120. Vanadium Redox Flow Battery (VRB) Raw Material

Table 121. Key Manufacturers of Vanadium Redox Flow Battery (VRB) Raw Materials

Table 122. Vanadium Redox Flow Battery (VRB) Typical Distributors

Table 123. Vanadium Redox Flow Battery (VRB) Typical Customers

## List Of Figures

### LIST OF FIGURES

- Figure 1. Vanadium Redox Flow Battery (VRB) Picture
- Figure 2. Global Vanadium Redox Flow Battery (VRB) Consumption Value by Type, (USD Million), 2019 & 2023 & 2030
- Figure 3. Global Vanadium Redox Flow Battery (VRB) Consumption Value Market Share by Type in 2023
- Figure 4. Carbon Paper Electrode Examples
- Figure 5. Graphite Felt Electrode Examples
- Figure 6. Global Vanadium Redox Flow Battery (VRB) Consumption Value by Application, (USD Million), 2019 & 2023 & 2030
- Figure 7. Global Vanadium Redox Flow Battery (VRB) Consumption Value Market Share by Application in 2023
- Figure 8. Utility Facilities Examples
- Figure 9. Renewable Energy Examples
- Figure 10. Others Examples
- Figure 11. Global Vanadium Redox Flow Battery (VRB) Consumption Value, (USD Million): 2019 & 2023 & 2030
- Figure 12. Global Vanadium Redox Flow Battery (VRB) Consumption Value and Forecast (2019-2030) & (USD Million)
- Figure 13. Global Vanadium Redox Flow Battery (VRB) Sales Quantity (2019-2030) & (MW)
- Figure 14. Global Vanadium Redox Flow Battery (VRB) Average Price (2019-2030) & (USD/KW)
- Figure 15. Global Vanadium Redox Flow Battery (VRB) Sales Quantity Market Share by Manufacturer in 2023
- Figure 16. Global Vanadium Redox Flow Battery (VRB) Consumption Value Market Share by Manufacturer in 2023
- Figure 17. Producer Shipments of Vanadium Redox Flow Battery (VRB) by Manufacturer Sales Quantity (\$MM) and Market Share (%): 2023
- Figure 18. Top 3 Vanadium Redox Flow Battery (VRB) Manufacturer (Consumption Value) Market Share in 2023
- Figure 19. Top 6 Vanadium Redox Flow Battery (VRB) Manufacturer (Consumption Value) Market Share in 2023
- Figure 20. Global Vanadium Redox Flow Battery (VRB) Sales Quantity Market Share by Region (2019-2030)
- Figure 21. Global Vanadium Redox Flow Battery (VRB) Consumption Value Market

Share by Region (2019-2030)

Figure 22. North America Vanadium Redox Flow Battery (VRB) Consumption Value (2019-2030) & (USD Million)

Figure 23. Europe Vanadium Redox Flow Battery (VRB) Consumption Value (2019-2030) & (USD Million)

Figure 24. Asia-Pacific Vanadium Redox Flow Battery (VRB) Consumption Value (2019-2030) & (USD Million)

Figure 25. South America Vanadium Redox Flow Battery (VRB) Consumption Value (2019-2030) & (USD Million)

Figure 26. Middle East & Africa Vanadium Redox Flow Battery (VRB) Consumption Value (2019-2030) & (USD Million)

Figure 27. Global Vanadium Redox Flow Battery (VRB) Sales Quantity Market Share by Type (2019-2030)

Figure 28. Global Vanadium Redox Flow Battery (VRB) Consumption Value Market Share by Type (2019-2030)

Figure 29. Global Vanadium Redox Flow Battery (VRB) Average Price by Type (2019-2030) & (USD/KW)

Figure 30. Global Vanadium Redox Flow Battery (VRB) Sales Quantity Market Share by Application (2019-2030)

Figure 31. Global Vanadium Redox Flow Battery (VRB) Consumption Value Market Share by Application (2019-2030)

Figure 32. Global Vanadium Redox Flow Battery (VRB) Average Price by Application (2019-2030) & (USD/KW)

Figure 33. North America Vanadium Redox Flow Battery (VRB) Sales Quantity Market Share by Type (2019-2030)

Figure 34. North America Vanadium Redox Flow Battery (VRB) Sales Quantity Market Share by Application (2019-2030)

Figure 35. North America Vanadium Redox Flow Battery (VRB) Sales Quantity Market Share by Country (2019-2030)

Figure 36. North America Vanadium Redox Flow Battery (VRB) Consumption Value Market Share by Country (2019-2030)

Figure 37. United States Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 38. Canada Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 39. Mexico Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 40. Europe Vanadium Redox Flow Battery (VRB) Sales Quantity Market Share by Type (2019-2030)

Figure 41. Europe Vanadium Redox Flow Battery (VRB) Sales Quantity Market Share by Application (2019-2030)

Figure 42. Europe Vanadium Redox Flow Battery (VRB) Sales Quantity Market Share by Country (2019-2030)

Figure 43. Europe Vanadium Redox Flow Battery (VRB) Consumption Value Market Share by Country (2019-2030)

Figure 44. Germany Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 45. France Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 46. United Kingdom Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 47. Russia Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 48. Italy Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 49. Asia-Pacific Vanadium Redox Flow Battery (VRB) Sales Quantity Market Share by Type (2019-2030)

Figure 50. Asia-Pacific Vanadium Redox Flow Battery (VRB) Sales Quantity Market Share by Application (2019-2030)

Figure 51. Asia-Pacific Vanadium Redox Flow Battery (VRB) Sales Quantity Market Share by Region (2019-2030)

Figure 52. Asia-Pacific Vanadium Redox Flow Battery (VRB) Consumption Value Market Share by Region (2019-2030)

Figure 53. China Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 54. Japan Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 55. Korea Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 56. India Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 57. Southeast Asia Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 58. Australia Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 59. South America Vanadium Redox Flow Battery (VRB) Sales Quantity Market Share by Type (2019-2030)

Figure 60. South America Vanadium Redox Flow Battery (VRB) Sales Quantity Market

Share by Application (2019-2030)

Figure 61. South America Vanadium Redox Flow Battery (VRB) Sales Quantity Market Share by Country (2019-2030)

Figure 62. South America Vanadium Redox Flow Battery (VRB) Consumption Value Market Share by Country (2019-2030)

Figure 63. Brazil Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 64. Argentina Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 65. Middle East & Africa Vanadium Redox Flow Battery (VRB) Sales Quantity Market Share by Type (2019-2030)

Figure 66. Middle East & Africa Vanadium Redox Flow Battery (VRB) Sales Quantity Market Share by Application (2019-2030)

Figure 67. Middle East & Africa Vanadium Redox Flow Battery (VRB) Sales Quantity Market Share by Region (2019-2030)

Figure 68. Middle East & Africa Vanadium Redox Flow Battery (VRB) Consumption Value Market Share by Region (2019-2030)

Figure 69. Turkey Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 70. Egypt Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 71. Saudi Arabia Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 72. South Africa Vanadium Redox Flow Battery (VRB) Consumption Value and Growth Rate (2019-2030) & (USD Million)

Figure 73. Vanadium Redox Flow Battery (VRB) Market Drivers

Figure 74. Vanadium Redox Flow Battery (VRB) Market Restraints

Figure 75. Vanadium Redox Flow Battery (VRB) Market Trends

Figure 76. Porters Five Forces Analysis

Figure 77. Manufacturing Cost Structure Analysis of Vanadium Redox Flow Battery (VRB) in 2023

Figure 78. Manufacturing Process Analysis of Vanadium Redox Flow Battery (VRB)

Figure 79. Vanadium Redox Flow Battery (VRB) Industrial Chain

Figure 80. Sales Quantity Channel: Direct to End-User vs Distributors

Figure 81. Direct Channel Pros & Cons

Figure 82. Indirect Channel Pros & Cons

Figure 83. Methodology

Figure 84. Research Process and Data Source

## I would like to order

Product name: Global Vanadium Redox Flow Battery (VRB) Market 2024 by Manufacturers, Regions, Type and Application, Forecast to 2030

Product link: <https://marketpublishers.com/r/GD2DA6AADEF4EN.html>

Price: US\$ 3,480.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

[info@marketpublishers.com](mailto:info@marketpublishers.com)

## Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/GD2DA6AADEF4EN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:  
Last name:  
Email:  
Company:  
Address:  
City:  
Zip code:  
Country:  
Tel:  
Fax:  
Your message:

**\*\*All fields are required**

Customer signature \_\_\_\_\_

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970



