Batteries for Residential, Commercial, Industrial and Utility Applications 2016-2026

Description:

A number of market forces drive the growth of battery storage system market rapidly. On one hand, battery-related companies such as material providers, battery makers, electric vehicle vendors, PV system integrator and heavy industry players are expanding their business area and building cross-industry opportunities to de-risk their primary business and generating secondary value streams.

The ever-increasing demand helps with further economy of scale for battery manufacturing and results in drastic price reduction. On the other hand, the large deployment of distributed generation in behind-the-meter (BTM) sector and increasing renewable generations such as wind and solar in the grid-connected sector are requiring energy storage to be fit as part of whole system.

It is interesting to find it is the general trend that the PV compensation scheme like feed-in-tariff is reducing by various countries globally, which may have a big impact in the further PV deployment. However, at the same time, favorable policies are addressing the importance of energy storage, including financial loans, subsidies, and incentive programs. The interest in energy storage will stimulate further deployment of renewable energy.

Those factors have provided the foundation for the hype brought by energy storage, especially electrochemical battery energy storage systems (BESS). With the launch of Tesla's Powerwall on April 30, 2015, tremendous interests have been attracted and a large number of players as well as products are overwhelming the market.

BESS, with the capabilities to provide high energy, high power and both, have become an important consideration in grid-connected applications such generation, transmission & distribution networks and ancillary services. Increasing pilot and trial projects are on-going.

Within this background, it is important to understand the reality behind the hype in the stationary battery markets covering residential, commercial & industrial (C&I), utility-scale application sectors.

It is obvious BESS can generate both economic values that can be monetized and values that are not directly monetized in the system. An important consideration is whether they can demonstrate positive economic return based on current price range and value streams, which is a significant factor when predicting the future deployment. Current regulatory frame structures are analysed and both opportunities and barriers are evaluated.

Technology is not the major driver, as analysed in this report. Case studies of various business models are shown and "go-to-market" strategies are suggested. It is important to introduce the "sharing economy" concept in energy system/device sector which is already not alien in other business areas. Examples include Airbnb and Uber.

Due to the different regulatory structure, supporting policies, electricity retail rates, penetration of renewables, customers' ability to pay, etc., the market development will vary from region to region. As shown in the figures, in ten-year's time the market value structure will change significantly globally.

The emerging market based on mature technologies will demonstrate huge potential, with a market value of $ 6 billion in ten-year's time.

This report focuses on electrochemical energy storage especially batteries applied in residential, commercial & industrial and grid storage sectors.

The research is done via a combination of primary (interviews, discussions, presentations) and secondary search (database, website search and existing reports). The economic value of residential battery systems was calculated by the author while for the case of grid-scale applications, literature review is the main approach as the economies vary from case to case and are difficult to be evaluated in general.
Part 1 of the report shows what are emerging and what are happening, introducing existing products & companies in residential sectors and pilot projects in grid storage applications. Part 2 provides economic analysis of battery storage systems, starting with the introduction of available compensation schemes in the PV areas, values and benefits that battery storage systems can provide.

After displaying the cost analysis, the economic values of battery storage systems used in behind-the-meter and front-of-the-meter will be evaluated. Based on those results, the global markets will be analysed in Part 3, with detailed regional analysis, current market status evaluation and ten-year market forecast segmented by application and region.

"Go-to-market" strategies are offered in Part 4, including case studies in various business models and business expanding strategies. Part 5 and Part 6 provide background knowledge as well as insights in energy storage in general and different battery chemistries. Part 7 lists company profiles.

Key questions as shown below will be answered in the report:

- Where can energy storage be fit in the electricity system?
- What are the battery energy storage benefits/values?
- What are the number of projects and rated power in grid-connected energy storage and battery storage, segmented by project status, technology, company and country?
- How does the costs influence the deployment of battery storage systems?
- How does the cross industry expand the battery-related business scope?
- What are the market drivers?
- Are the battery energy storage systems economic/commercial in corresponding applications?
- What is the market status in various countries worldwide?
- What are the winning battery technology(ies)?
- Are there regulatory barriers?
- What threats are there in the market?
- What is the reality behind the hype?
- What are the price projects?
- What are the differences in opportunities between behind-the-meter market and utility-scale markets?
- What business models can capture most value streams?
- Which parts of the value chain stand to benefit the most?
- What is the potential market size?
- Which "go-to-market" strategies work better?
- Who are potential customers and active players?

Ten-year market forecasts are given in the following segment:

- Battery price projection in cell level, module level and system level 2015-2026
- Residential battery market forecast 2015-2026 in unit
- Residential battery market forecast 2015-2026 in capacity
- Residential battery market forecast 2015-2026 in value
- Cumulative rated power of deployed large-scale battery system forecast 2015-2026
- Cumulative values of deployed grid-connected battery systems
- Total global value of battery energy storage systems forecast 2015-2026 segmented by country
- Total global value of battery energy storage systems forecast 2015-2026 segmented by application

Contents:

1. EXECUTIVE SUMMARY
1.1.1. Battery energy storage be fit in every position in the electricity system
1.1.2. Battery storage benefits / values
1.1.3. Values provided by battery storage in customer side
1.1.4. Values provided by battery storage in ancillary services
1.1.5. Values provided by battery storage in utility side
1.1.6. Costs play an important role in the spread of battery storage in various applications
1.1.7. Value Chain
1.1.8. Cross-industry expand the battery-related business scope
1.1.9. Reality behind the hype
1.1.10. Market drivers of battery storage system
1.1.11. Winning technology
1.1.12. Global grid-connected battery storage capacity segmented by technology
1.1.13. All grid-connected battery projects
1.1.14. Announced projects for grid-connected battery
1.1.15. Contracted projects for grid-connected battery
1.1.16. Operational projects for grid-connected battery
1.1.17. Under-construction projects for grid-connected battery

2. PART I WHAT IS EMERGING AND WHAT IS HAPPENING?
2.1. Residential Battery: Past-Present-Future
2.1.1. The launch of Tesla Energy and corresponding sales
2.1.2. Powerwall’s specifications
2.1.3. Powerwall - a breakthrough product?
2.1.4. Analysis of Tesla’s strategy
2.1.5. Background of Tesla’s Gigafactory
2.1.6. The impact of Tesla’s Gigafactory
2.1.7. The story did not start with Tesla and will not end with Tesla
2.1.8. BYD
2.1.9. BYD’s layout is similar to Tesla
2.1.10. Sharp Corporation
2.1.11. Sony
2.1.12. Toshiba
2.1.13. Ecosystem for the whole battery life
2.1.14. Mercedes-Benz Energy Storage and Daimler’s 2nd-use stationary battery storage project
2.2. Utility-Scale Battery Storage Systems: A New Opportunity
2.2.1. Top 10 largest global battery storage projects
2.2.2. Nishi-Sendai substation lithium-ion battery system of Tohoku Electric Power
2.2.3. WEMAG Schwerin-Lankow Battery Power Plant
2.2.4. PJM frequency regulation
2.2.5. Enhanced frequency response by National Grid

3. PART II ANALYSIS ON ECONOMIC VALUES OF BATTERY STORAGE SYSTEMS
3.1. Photovoltaic Compensations
3.1.1. Introduction to PV compensations
3.1.2. Feed-in-Tariff
3.1.3. FiT reduction in various countries
3.1.4. Net metering
3.1.5. Power purchase agreement
3.2. Battery Storage Values and Benefits
3.2.1. What is ESS
3.2.2. ESS for every position in the value chain
3.2.3. Where can energy storage be fit in?
3.2.4. Residential, non-residential and utility battery storage systems
3.2.5. “Front of the meter” and “behind the meter”
3.2.6. Battery storage system
3.2.7. Battery storage designed for self-electricity consumption
3.2.8. Battery storage benefits / values
3.2.9. Increase renewable penetration and reduce the reliance on diesel & peak gas use
3.2.10. Energy storage for demand peak shift
3.2.11. Values provided by battery storage in ancillary services
3.2.12. Values provided by battery storage in utility side
3.2.13. Introduction of electricity commodity
3.2.14. Response time and duration characterize required ancillary service response
3.2.15. Properties of ancillary services
3.2.16. Frequency control
3.2.17. Primary vs secondary response
3.2.18. Regulation vs. load following
3.2.19. Contingence operations
3.2.20. Batteries react more accurately and quickly to frequency changes
3.2.21. Power requirement versus discharge duration for some applications in today’s energy system
3.3. Cost Analysis
3.3.1. Cost discussions
3.3.2. Cost should be compared for the same use cases only
3.3.3. Battery storage costs: capital costs
3.3.4. Battery storage costs: LCOE
3.3.5. Drivers for battery cost reduction
3.3.6. Battery price reduction learning curves for consumer electronics, electric vehicles and ESS
3.3.7. Costs that influence the ESS
3.3.8. Cost analysis of battery system
3.4. Economic Analysis of Behind-The-Meter Battery System
3.4.1. Lowest price comparison of residential ESS sold by different manufacturers
3.4.2. Comparison of current and future residential battery products in the market
3.4.3. Cost comparison between Tesla and Sonnen's products
3.4.4. Cost breakdown of a typical 10 kWh residential battery system
3.4.5. Is grid independence achievable by large deployment of residential battery?
3.4.6. Residential battery applications
3.4.7. Time-of-use (TOU) arbitrage
3.4.8. Backup power
3.4.9. PV energy storage
3.4.10. Are residential batteries in PV-battery systems economically rational?
3.4.11. A summary of the economic analysis for residential batteries in different applications
3.4.12. An example of economic analysis
3.4.13. Economic calculation for residential PV-battery system
3.4.14. Potential buyers of residential battery systems
3.4.15. Conclusion
3.4.16. Demand charge reduction
3.5. Economic Analysis of Grid-Scale Battery System
3.5.1. Primary revenue stream currently available to battery storage
3.5.2. Potential sources of revenue for battery storage
3.5.3. How much value can batteries generate?
3.5.4. A trial case
3.5.5. Micro-grid
3.5.6. Off-grid and remote applications
3.5.7. Conclusions

4. PART III ANALYSIS OF THE GLOBAL MARKETS
4.1.1. Reality behind the hype
4.1.2. Market drivers of battery storage system
4.1.3. Lessons from PV growth
4.1.4. Market barriers & challenges
4.1.5. Legislative and regulatory framework
4.1.6. Challenges in remote-region and island applications
4.1.7. Market Status: BESS Will not Develop in Isolation
4.1.8. Moving beyond automotive & consumer electronics into ESS
4.1.9. Companies from other sectors jumping in
4.1.10. Joint ventures related to battery business
4.1.11. Cross-industry expand the battery-related business scope
4.1.12. Value Chain
4.1.13. Downstream Energy Storage component vendors
4.1.14. Global players in ESS
4.1.15. Convergence of solar and storage
4.1.16. Increasing number of companies entering assembly business
4.1.17. Value captured across the electricity value chain: trend
4.1.18. Preference of battery system sizes
4.2. Regional Analysis
4.2.1. Summary of international markets
4.2.2. Countries may consider electricity storage options
4.2.3. Summary of energy storage market activities in different countries
4.2.4. Global grid-connected battery installation capacity (MW) segmented by territory
4.2.5. Germany
4.2.6. Historical installed PV-capacity and number of installations in Germany
4.2.7. Programs in Germany for storage support
4.2.8. German behind-the-meter battery storage market: percentages of battery technology, system design and installation type
4.2.9. The U.S.
4.2.10. Average U.S. residential electricity price by census division and state
4.2.11. California
4.2.12. California's huge grid energy storage mandate
4.2.13. List of Southern California Edison's 261 MW energy storage procurement
4.2.14. Hawaii
4.2.15. New York
4.2.16. Texas
4.2.17. Japan
4.2.18. Storage battery strategy and target for installing in Japan
4.2.19. Technology roadmap for stationary battery in Japan
4.2.20. R&D challenges for batteries
4.2.21. A list of residential battery systems for PV applications in Japan
4.2.22. Australia
4.2.23. Barriers for energy storage in the Australian market
4.2.24. China
4.2.25. South Korea
4.2.26. United Kingdom
4.2.27. Italy
4.2.28. Other markets: Canada, European Union, Puerto Rico, India, New Zealand, France, Belgium, Spain, Singapore

4.3. Market Forecast
4.3.1. Price projection (2015-2026)
4.3.2. Residential battery market forecast 2015-2026 (units)
4.3.3. Assumption and explanation of the forecast
4.3.4. Residential battery market forecast 2015-2026 (capacity)
4.3.5. Assumption and explanation of the forecast
4.3.6. Residential battery market forecast 2015-2026 (value)
4.3.7. Cumulative rated power of deployed large-scale battery system forecast 2015-2026 (power)
4.3.8. Assumption and explanation of the forecast
4.3.9. Cumulative values of deployed grid-connected battery systems
4.3.10. Total global value of BESS forecast 2015-2026 by country
4.3.11. Market segment by country in 2015 and 2026
4.3.12. Total global value of BESS forecast 2015-2026 by application
4.3.13. Market segment by application in 2015 and 2026

5. PART IV GO-TO-MARKET STRATEGIES
5.1.1. Conclusions from previous analysis
5.1.2. Important considerations for battery selection
5.1.3. Sharing economy
5.2. Business Models
5.2.1. Introduction
5.2.2. Virtual power plant
5.2.3. Case study: SENEC.IES
5.2.4. Case study: Green Charge Networks
5.2.5. Case study: LichtBlick
5.2.6. Case study: MVV Strombank
5.2.7. Case study: Green Mountain Power
5.2.8. Green Mountain Power's Innovation Strategy
5.2.9. Case study: Ampard + Fenecon
5.2.10. Case study: Stem
5.2.11. Case study: Sonnen
5.3. Expansion of Battery Values
5.3.1. Vehicle-to-grid and vehicle-to-home
5.3.2. A brief history of V2G/V2H
5.3.3. Schematics of V2G and V2H

6. PART V ENERGY STORAGE TECHNOLOGIES
6.1.1. Classification of energy storage systems by energy form
6.1.2. Energy storage technology descriptions
6.1.3. Global energy storage capacity
6.1.4. Number of projects and rated power of different energy storage technologies used in grid-connected applications
6.1.5. Global energy storage capacity for total projects
6.1.6. Global energy storage capacity for announced projects
6.1.7. Global energy storage capacity for contracted projects
6.1.8. Global energy storage capacity for operational projects
6.1.9. Global energy storage capacity for under-construction projects
6.1.10. Numerical specifications of different energy storage technologies
6.1.11. Maturity of energy storage technologies
6.1.12. Power comparison of different energy storage technologies
6.1.13. Description of typical applications based on discharge time
6.1.14. Typical applications of energy storage based on storage duration
6.1.15. Power-energy plot of different energy storage technologies
6.1.16. Energy density vs. specific energy of different battery technologies

7. PART VI BATTERY TECHNOLOGIES
7.1. Introduction to Batteries
7.1.1. What is a battery?
7.1.2. Battery categories
7.1.3. Glossary of terms - specifications
7.1.4. Primary battery chemistries and common applications
7.1.5. Numerical specifications of popular battery chemistries
7.1.6. Solid electrolyte interface
7.1.7. Global grid-connected battery storage capacity segmented by technology
7.1.8. Grid-connected unsure battery projects on power split by status
7.2. Why is the battery development so slow?
7.2.1. Overview
7.2.2. A big obstacle - energy density
7.2.3. Battery technology is based on redox reactions
7.2.4. Electrochemical reaction is essentially based on electron transfer
7.2.5. Electrochemical inactive components reduce energy density
7.2.6. The importance of an electrolyte in a battery
7.2.7. Cathode & anode need to have structural order
7.2.8. Failure story about metallic lithium anode
7.2.9. Electrochemical inactive components in the battery
7.2.10. Many considerations for batteries
7.2.11. Conclusion
7.3. Lithium-ion Batteries
7.3.1. Lithium-ion battery chemistry
7.3.2. Nomenclature for lithium-based rechargeable batteries
7.3.3. Lithium-ion & lithium metal batteries
7.3.4. Comparison of lithium variant
7.3.5. Grid-connected Li-ion battery projects on power split by status
7.3.6. Operational grid-connected Li-ion battery projects on power split by technology
7.4. Lead-Acid Battery
7.4.1. Lead-acid battery
7.4.2. Grid-connected lead-acid battery projects on power split by status
7.4.3. Grid-connected operational lead-acid battery projects on power split by technology
7.4.4. Operational grid-connected lead-acid battery projects on power split by territory
7.5. Nickel-Based Battery
7.5.1. Nickel cadmium and nickel metal hydride battery
7.5.2. Grid-connected nickel-based battery projects on power split by status
7.6. Sodium-Based Battery
7.6.1. Sodium sulphur battery
7.6.2. Sodium nickel chloride battery
7.7. Liquid metal battery
7.7.1. Grid-connected sodium-based battery projects on power split by status
7.7.2. Grid-connected sodium-based battery projects on power split by technology
7.8. Flow Battery
7.8.1. Flow battery
7.8.2. Schematic of redox flow battery system
7.8.3. Companies working on flow batteries
7.8.4. Grid-connected flow battery projects on power split by status
7.9. Metal Air Battery
7.9.1. Grid-connected metal-air battery projects on power split by status

8. PART VII COMPANY PROFILES
8.1.1. Operational grid-connected Li-ion battery projects on power split by battery provider
8.1.2. Top 15 companies for battery used in utility-scale applications, by installed capacity (MW)
8.2. COMPANY PROFILES
8.2.1. 24m Technologies
8.2.2. A123 Systems
8.2.3. Advanced Microgrid Solutions
8.2.4. AES Energy Storage
8.2.5. Aquion Energy
8.2.6. BYD
8.2.7. Imergy Power Systems
8.2.8. Kokam Co., Ltd
8.2.9. Sonnenbatterie
8.2.10. Tesla Motors
8.2.11. TESLA
8.2.12. Younicos AG

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