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RESEARCH REPORT

Executive Summary:

Navigant Research Leaderboard: Utility-Scale Energy Storage Systems Integrators

Assessment of Strategy and Execution for 12 Energy Storage Systems Integrators

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Section 1
EXECUTIVE SUMMARY

1.1 Market Introduction

The utility-scale energy storage market has grown increasingly competitive since 2016 as projects become economically viable for a range of new applications in new geographies. As the market matures and expands, the role of energy storage systems integrators (ESSIs) has become the key position in the value chain for ensuring successfully built and profitable ESSs.

Companies in the ESSI space are moving away from providing project development services to offer integrated hardware and software solutions for a range of ESS customers. These innovative companies are responsible for both the design and optimization of an energy storage project, typically leveraging their robust software and controls platform to maximize the value of a project. This requires substantial expertise, as the overall ROI of a project relies heavily on the systems integrator. ESSs are increasingly asked to provide the flexibility to serve several different applications ranging from short-duration and high power ancillary services to long-duration time shifting of energy. ESSI companies are responsible for managing this complexity by designing and optimizing systems that can provide the maximum value to both the grid and the system owners.

A key trend in the utility-scale systems integration market since 2016 has been consolidation through merger and acquisition activity. There have been three major acquisitions of leading ESSI companies featured in the 2016 iteration of this report. 1Energy Systems was acquired in June 2016 by South Korean conglomerate Doosan for an undisclosed sum. This was followed by two acquisitions in July 2017. Systems integrator and software provider Greensmith was acquired by multinational power plant technology firm Wärtsilä for approximately $170 million, while Younicos was acquired by global power rental company Aggreko for $52 million. Perhaps the most notable consolidation in the industry came in July 2017, when industry leaders AES Energy Storage and Siemens AG announced the formation of a new ESSI JV company known as Fluence. All four companies remain active in this space and are profiled in this report.

While there are several competing utility-scale energy storage technologies with differing characteristics matched for certain applications, battery ESSs are emerging as the leading technology globally for new projects. Thus, this *Leaderboard* is focused on battery technologies and the companies responsible for their integration. There are three additional criteria that companies in the market must meet to be included in this report. First, ESSI companies must have a pure-play focus on the utility-scale ESS market. This refers to larger projects installed on either the transmission or distribution grid. Some ESSI companies have integrated utility-scale projects, yet their primary focus is on behind-the-meter (BTM) projects installed for commercial and industrial (C&I) customers. Second,

ESSI companies included in this report have all been active with projects integrated since 2016. Finally, companies included all have ESS projects in more than one country. While there are many successful ESSI companies around the world that only focus on their home country, this report is global in scope.

The criteria by which ESSI companies are compared in this *Navigant Research Leaderboard* include the following:

- Vision
- Go-to-Market Strategy
- Partners
- Production Strategy
- Technology
- Geographic Reach
- Sales, Marketing, and Distribution
- Product Performance
- Product Quality and Reliability
- Product Portfolio
- Pricing
- Staying Power

Detailed descriptions of each criterion are provided in the “Criteria Definitions” section of this report.

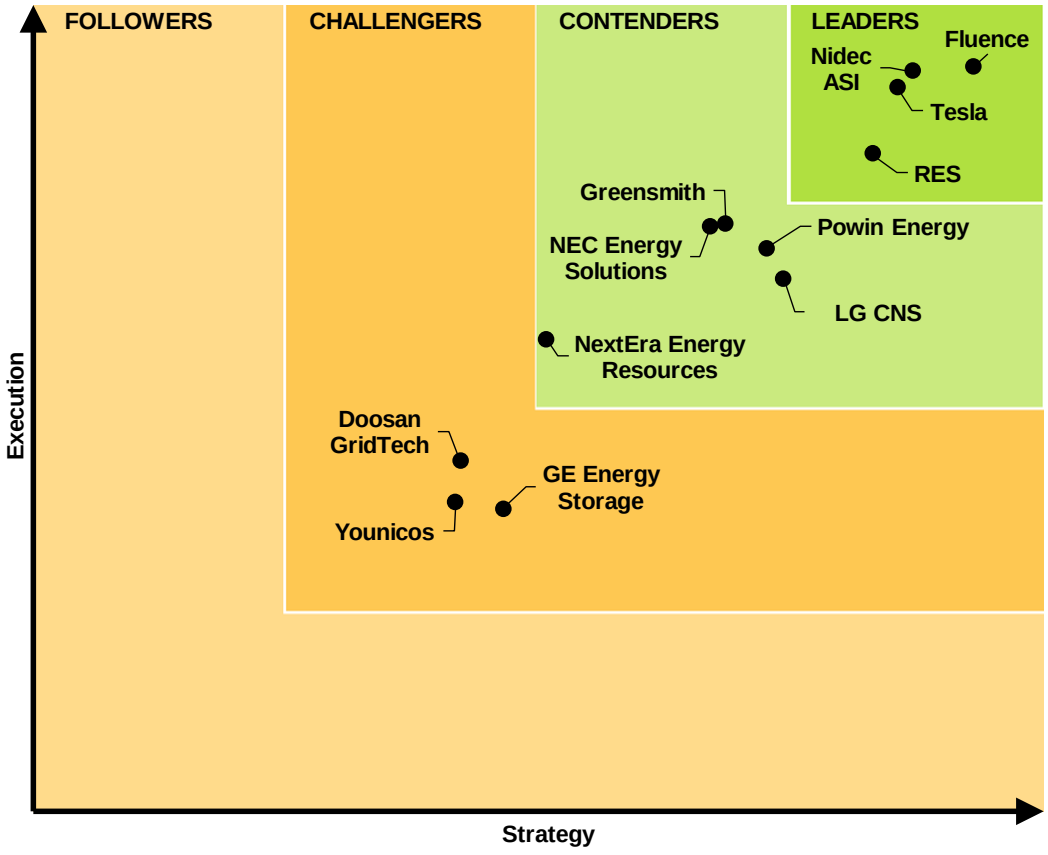
1.2 The Navigant Research Leaderboard Grid

The global ESSI market has grown and matured considerably since the previous version of this report was published in 2016. There are far more ESS projects built and in development stages around the world today. The company rankings in this report are more focused on what projects have been built and awarded to each company. This focus also considers the diversity of those projects in terms of their use case/applications, customer types, technical specifications, and geographic locations.

Chart 1-1 illustrates the rankings of leading ESSI companies included in this report. Companies have largely fallen into three distinct groups where overall scores on Strategy and Execution criteria are similar. Several companies have emerged as Leaders; these companies are actively pushing the boundaries of how energy storage is viewed by stakeholders in the industry and working to open new markets. Other companies are well positioned as Contenders to capitalize on new markets and project opportunities. This market remains highly competitive with companies offering similar products and services.

Despite the current segmentation, dramatic growth is expected in in the global utility-scale energy storage market. All companies included in this report are positioned to be successful as the market grows. However, some are likely to thrive as they build on the strong foundation and capitalize on complementary offerings, including ESS hardware and renewable energy project development.

Chart 1-1. The Navigant Research Leaderboard Grid



(Source: Navigant Research)

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8.1 Scope of Study

The scope of this report is limited to the Strategy and Execution associated with Leaders in the global market for ESSI. Companies included in this report are approaching the market with various backgrounds and offerings, ranging from IPPs and equipment OEMs to pure-play software vendors. However, all companies offer fully integrated and customizable ESSs to customers, with some level of automation and control platform included. Unlike previous versions, this report only ranks firms active specifically in the utility-scale ESS market. This excludes companies focused on providing ESS solutions located BTM for commercial, industrial, and residential customers.

Note that company rankings capture the vendor's standing at the time of the report and Navigant Research's perspective on their potential for future success based on publicly stated strategy. The ratings may change rapidly as this market matures and business models continue to evolve. Moreover, the report is not exhaustive, as there are other global and smaller market players that were not included because of specific focus on one aspect of the market or lack of geographic reach.

8.2 Sources and Methodology

Navigant Research's industry analysts utilize a variety of research sources in preparing Research Reports. The key component of Navigant Research's analysis is primary research gained from phone and in-person interviews with industry leaders including executives, engineers, and marketing professionals. Analysts are diligent in ensuring that they speak with representatives from every part of the value chain, including but not limited to technology companies, utilities and other service providers, industry associations, government agencies, and the investment community.

Additional analysis includes secondary research conducted by Navigant Research's analysts and its staff of research assistants. Where applicable, all secondary research sources are appropriately cited within this report.

These primary and secondary research sources, combined with the analyst's industry expertise, are synthesized into the qualitative and quantitative analysis presented in Navigant Research's reports. Great care is taken in making sure that all analysis is well-supported by facts, but where the facts are unknown and assumptions must be made, analysts document their assumptions and are prepared to explain their methodology, both within the body of a report and in direct conversations with clients.

Navigant Research is a market research group whose goal is to present an objective, unbiased view of market opportunities within its coverage areas. Navigant Research is not beholden to any special interests and is thus able to offer clear, actionable advice to help

clients succeed in the industry, unfettered by technology hype, political agendas, or emotional factors that are inherent in cleantech markets.

8.2.1 Vendor Selection

Vendors were selected based on market presence, commercial activity, and unique expertise related to utility-scale ESSI. Pure-play component integrators are not included because such firms do not contribute the integration expertise required to deliver an intelligent storage system to the customer. Companies purely offering project development services and not specifically involved in the design, installation, commissioning, and operation of a system are not included. Furthermore, companies that have integrated some projects at the utility-scale level (FTM) but have a primary focus on the integration of distributed (BTM) energy storage have been excluded. This is intended to focus the analysis and comparisons on companies that focus on larger utility-scale ESSI.

Another key differentiator for the set of companies included in this *Leaderboard* is ensuring project profitability—all the companies profiled are charged with ensuring that a storage system functions properly on a technical level, but they are also tasked with ensuring the profitability of the system for the customer. Therefore, the ESSI firms included in this report provide a software and control platform that manages system operation to ensure profitability. Some firms were excluded due to imperfect information. This does not reflect a lack of market activity, but rather, a deficit of information at the time of publication.

This report is intended to identify Leaders in this market—only the more established and experienced companies are evaluated. There are several smaller firms with promising offerings that are newer to the market that have been excluded from this report. Companies included in this report have been active in the market since 2016 and have projects in more than one country.

8.2.2 Ratings Scale

Companies are rated relative to each other using the following point system. The ratings are a snapshot in time, showing the current state of the company. These scores are likely to be fluid as new competitors enter the market and customer requirements evolve.

- Very Strong 91 – 100
- Strong 76 – 90
- Strong Moderate 56 – 75
- Moderate 36 – 55
- Weak Moderate 21 – 35
- Weak 11 – 20
- Very Weak 1 – 10

8.2.2.1 Score Calculations

The scores for Strategy and Execution are weighted averages based on the subcategories. The overall score is calculated based on the root mean square of the Strategy and Execution scores.

8.2.3 Criteria Definitions

8.2.3.1 Strategy

- **Vision:** Measures the company's stated goals in designing market solutions against the actual needs of customers. Clear and compelling visions that are effectively communicated to the industry result in higher scores. This criterion considers if the company is forward-looking and building a business that can scale and has the agility to evolve with the market. It also evaluates any complementary business lines within the company that can support the growth of its energy storage integration business, such as renewable or conventional power plant development, electronics hardware manufacturing, etc.
- **Go-to-Market Strategy:** Evaluates the company's strategy for reaching the target market, including the sales and marketing channels to be used, as well as the processes established for informing the target market about brand differentiation and unique product value. A key consideration is whether companies offer solutions for multiple customer types, applications, and ownership models.
- **Partners:** Measures the company's established partnerships with key organizations that will provide an advantage in financial backing, sales, business, and product development. Affiliations with well-known battery manufacturers and other established vendors in the supply chain, as well as a track record of financial strength through fundraising or profitable product sales, positively affect scores in this *Leaderboard*. This category also evaluates downstream partners for the company, such as project developers and construction firms, or whether a company provides those services in house.
- **Production Strategy:** Evaluates the long-term competitiveness of the product/project development plan as an effective solution that satisfies market requirements and meets market capacity needs. Focus of production strategy scoring is on determining if companies can provide all aspects of systems integration and development or if they rely on third parties for certain services.
- **Technology:** Evaluates whether the company has developed and/or patented technology that provides a significant business advantage over competitors that is likely to have an enduring effect on its success. Higher scores are given if the company's technology is already a proven market success or delivers unique product attributes. For this report, the technology criterion primarily evaluates any software and controls systems being offered as well as technical integration expertise.

- **Geographic Reach:** An evaluation of companies' ability or plans to reach national and international customers through networks of partners/affiliates. Scores are lower if the company does not have a sales strategy suitable for multiple regions. While the utility-scale energy storage market is currently concentrated in a relatively small number of companies, those with a broad corporate presence and global sales channels receive higher scores.

8.2.3.2 Execution

- **Sales, Marketing, and Distribution:** Evaluates the company's marketing and sales performance and current distribution channel. Higher scores are given to companies with a large global network with access and support for current product. This is measured based on deployed and announced projects for each company and the diversity of those projects in terms of customers, use cases, and designs, which demonstrate their success in this area.
- **Product Performance:** Evaluates the competitive performance of the storage offerings. Higher scores are given to companies that provide more competitive performance profiles or guarantees, warranties, and that delivered products that are reliable. Publicly available data on performance, such as accuracy in responding to grid signals, are also considered.
- **Product Quality and Reliability:** Evaluates the quality and reliability of the storage offers delivered to customers, the company's strategy to develop quality products for the market, and its track record on quality with the current product line. Safety records and plans to manage risks are an important aspect of this criterion.
- **Product Portfolio:** Addresses the products' relative competitiveness in and suitability to the market. This includes whether a company offers various technologies and product offerings targeted to different market needs (e.g., high power/short-duration versus long-duration energy systems). Higher scores are given to companies with a variety of products to meet different customer needs; this may include various storage technologies. This criterion also takes into consideration complementary products offered by companies such as power electronics, EPC services, power plant development, etc.
- **Pricing:** Determines the suitability of product pricing based on its feature set, including whether products are available at multiple price points and how pricing compares to that of competitor products. This includes options for system financing and partnerships with financial institutions that can support project development.

- **Staying Power:** Evaluates whether the company has the financial resources to withstand weak or variable markets and price-based assaults by competitors. Also measures the company's likelihood to continue to pursue storage products in the event of market softening. Higher scores are given to companies with better financial performance and greater capability to survive market downturns. For larger corporations, in addition to available capital, this criterion is judged by the prioritization that the energy storage division has been given within the corporate hierarchy.

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