



Research Report

EXECUTIVE SUMMARY:

Pike Pulse Report:

UPS/Backup Power Stationary Fuel Cells

Assessment of Strategy and Execution of 13 Leading
UPS/Backup Power Fuel Cell System Manufacturers

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Section 1

EXECUTIVE SUMMARY

1.1 Introduction

The stationary fuel cell uninterruptible power supply (UPS) and backup power markets are experiencing double-digit annual growth, though admittedly from a low base. An increasing number of companies operating in the UPS and backup power markets have fully certified products in many different regions, including Europe, the United States, China, Indonesia, and India. Certification is enabling these companies to move quickly through the low volume, quasi-automated production phase.

The stationary fuel cell UPS and backup power market consists of companies with products and those with potential close-to-market products. Thus, the vendor scores across several of the criteria calculated herein are spread across the board – from “Challengers” to “Leaders.” As the market expands and product (and company) differentiation increases, we could well see the scores change rapidly.

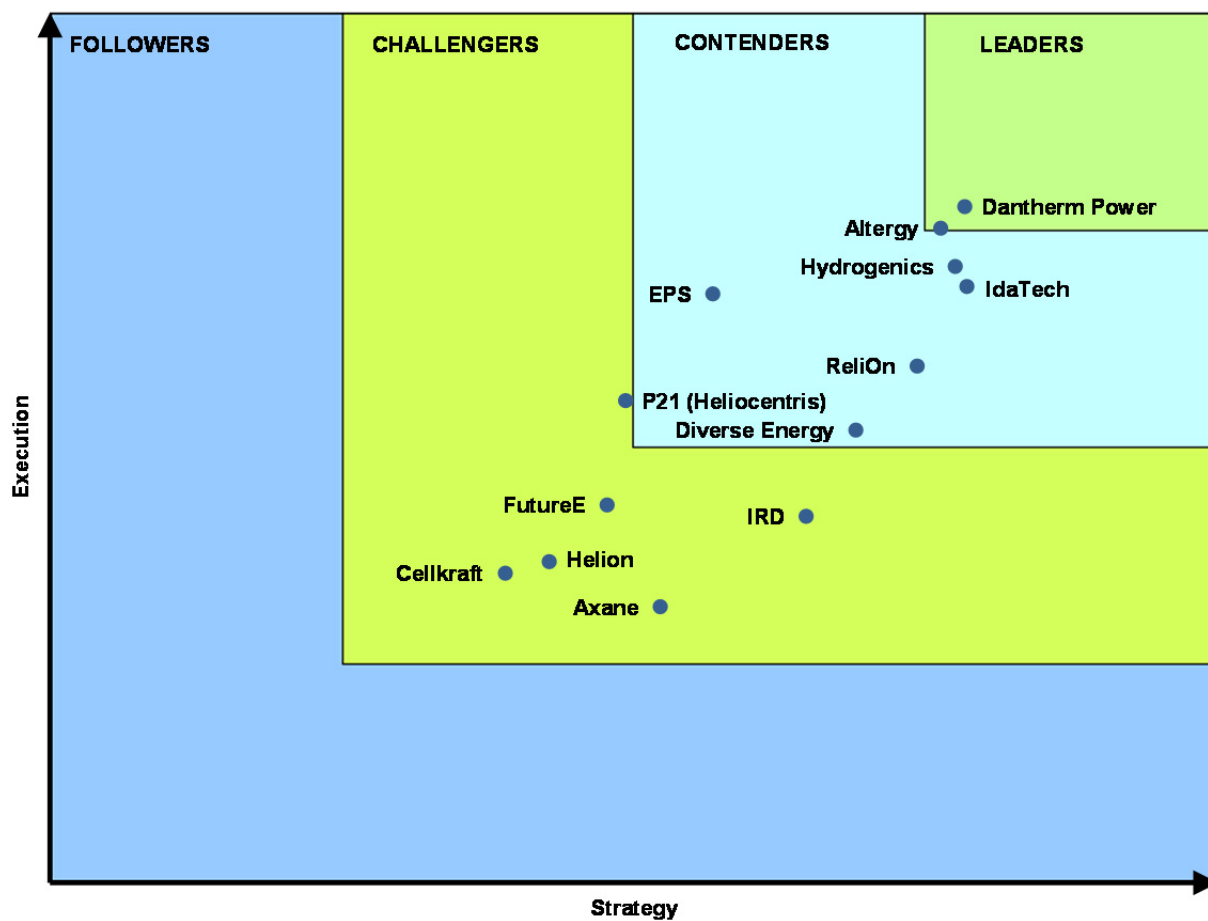
The criteria against which the UPS and backup power fuel cell companies were scored in this Pike Pulse report are:

- Vision
- Go-to-Market Strategy
- Partners
- Product Strategy and Roadmap
- Technical Innovation
- Geographic Reach
- Market Share
- Sales and Marketing
- Product Performance and Customer Support
- Pricing
- Staying Power
- Manufacturing

High levels of innovation are clearly apparent in the UPS and backup power markets, with a range of fuels increasingly available. This is opening up new markets, including those in Southern Africa and Indonesia. As with the prime power market, no one product size is becoming standard. Companies are divided between those developing building block units, which can be scaled up from low kW to tens of kW (or more) and those with multiple power units available at set sizes. Interestingly, this is one market area where Japan and South Korea are not playing a leading role, in either technology development or adoption. Instead, Indonesia, Singapore, and Australia are at the forefront in the Asia Pacific region.

With the commercial UPS and backup power fuel cell product offerings increasingly becoming standard, factory-installed options for many telecoms providers, we have entered a vibrant and fluid phase of company developments. Although realistically there are only 12 companies capable of producing fully functioning fuel cell systems with integrated fuel storage for the UPS and backup power markets, another tranche of companies is waiting in the wings. In 18 months' time, these companies will likely be on the Pike Pulse Grid. Moreover, it has to be understood that some of the current companies will no longer exist, as they either will be fully integrated into a much larger telecoms provider or will have exited the market completely. This study therefore provides a snapshot of this point in time, at this point in the development cycle of fuel cells for UPS and backup power.

Chart 1.1 The Pike Pulse Grid



(Source: Pike Research)

In the UPS and backup power fuel cells arena, two companies attained the “Leaders” classification: Dantherm Power and Alteryg. Hydrogenics, IdaTech, Electro Power Systems (EPS), Diverse Energy, ReliOn, and P21 (Heliocentris) came in as “Contenders.”

Dantherm Power and Alteryg gained the highest scores because both companies clearly exhibit a strong supply chain and high quality, high volume manufacturing. In addition, each company is less than 50% dependent on government funding (project funding, R&D funding, or direct government support).

Table 1.1 Vendor Overall Scores

Rank	Vendor	Total Score
1	Dantherm Power	78.0
2	Alteryg	75.7
3	Hydrogenics	74.2
4	IdaTech	73.7
5	ReliOn	67.0
6	Electro Power	62.4
7	Diverse Energy	61.1
8	P21	54.6
9	IRD	52.4
10	FutureE	45.6
11	Axane	43.2
12	Helion	39.9
13	Cellkraft	37.3

(Source: Pike Research)

The UPS and backup power fuel cell markets have been global markets right from the start, with recent American Recovery and Reinvestment Act (ARRA) funding being a somewhat temporary blip in market development. Unlike the fuel cell prime power market, none of the companies covered in this Pike Pulse have systems installed in only one country. Many are focusing on developing two or three different countries, usually also in two or three regions, but have positioned themselves so that their systems can be employed and deployed across a range of countries. The key market barrier to the continued development of the UPS and backup power markets, where the technology is good enough, is the time and cost for multiple certification processes. Understandably, once a company has a commercial product, it needs to be fully certified in each country in which the company is operating. As this costs time and a not insignificant amount of money, companies are being forced to adopt a somewhat cautious approach.

As with the prime power market, the staying power of the companies is a very interesting area to consider. The companies can be categorized as “Explorer” and “Settler” companies, discussed in more depth in Section 2.2.1. Explorer companies are those that have developed not just the technology but also the understanding of the telecoms companies and industry of fuel cell technology and its potential. The impact of this dual nature, both technology and market development, has created a cash drain that some of these companies have only recently been able to somewhat address. The Settler companies have had, comparatively, a much easier time since the market awareness created by the Explorer companies, and increasingly interest, already exists. Even so, developing a product that meets the requirements of the industry has been challenging. Due to the cash burn rates of some companies, both Explorer and Settler, this means that the next 12 months will be critical to survival.

One note here is that, in addition to companies that manufacture fuel cell systems for the UPS and backup power markets, this is an area with increasingly healthy distributor partnerships. Companies such as Logan Energy and UPS Systems offer fuel cell systems from a range of manufacturers. This additional market channel is critical and shows that this market is increasingly becoming what can only be described as normalized.

Section 7

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Section 9

METHODOLOGY

9.1 Scope of Study

Pike Research has prepared this report to provide participants involved in the rapidly growing UPS and backup power fuel cell markets, including manufacturers, utilities, gas companies, energy storage companies, and policy makers, with a study of the landscape of the major providers of stationary fuel cells for UPS and backup power applications.

This Pike Pulse report focuses on companies that have commercial products in the marketplace today or are projected to have products available within the next 18 months. Included are companies that have set 2012 release dates that, when independently analyzed, are unlikely to happen. The report is not exhaustive in scope, as the market is fragmented into many more companies that are either still in early R&D phase or have projected release dates beyond 2012.

The report's major objective is to provide a timely overview of the companies involved, as well as their strategy and execution in building out the UPS and backup power fuel cell markets. Note that the company ratings capture the vendor's standing at the time of the report and are not a retrospective of past accomplishments or an indication of future success. The ratings are likely to change rapidly in this shifting market as new entrants gain a foothold, companies switch focus and direction, and business models continue to evolve.

9.2 Sources and Methodology

Pike Research's industry analysts utilize a variety of research sources in preparing Research Reports. The key component of Pike 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 Pike Research's analysts and the firm's 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 Pike 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.

Pike Research is an independent market research firm whose goal is to present an objective, unbiased view of market opportunities within its coverage areas. The firm 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.

9.2.1 Vendor Selection

This report only looks at original equipment manufacturers (OEMs); that is, companies looking to sell the UPS and backup power fuel cell products. There are a number of companies doing interesting development work on fuel cells for UPS and backup power applications. However, this Pike Pulse report analyzes only those companies that have a commercial product now or are projected to have a product available in the next 18 months. The latter companies have been included because they could challenge the current Leaders and Contenders between now and the publication of any updated Pike Pulse reports.

9.2.2 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 - 36
- Weak 11 - 20
- Very Weak 1 - 10

9.2.2.1 *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.

9.2.3 Criteria Definitions

9.2.3.1 *Strategy*

- **Vision:** Evaluates the company's stated goals in designing market solutions against the actual needs of customers based on the entire environment in which they will operate. Clear and compelling visions that are effectively communicated to the industry result in higher scores.
- **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 the brand differentiation and unique product value.
- **Partners:** Measures the company's established partnerships with key organizations that will provide an advantage in sales, business, and product development, as well as assist in the implementation of the product for the customers.
- **Product Strategy and Roadmap:** Evaluates the long-term competitiveness of the product plan, both as an effective solution that satisfies market requirements and as a profitable line for the company to merit continued product development investment.

- **Technical Innovation:** 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 impact on its success. Higher scores are given if the company's technology creates functionality that enables customers to solve problems and enhance operations in new ways. Additional points are scored if the products are compatible with other technologies that customers are likely to also implement.
- **Geographic Reach:** Gives higher scores to companies with national and international networks of distributors and resellers and sales in multiple regions. Scores are lower if the company's products are not designed to be suitable for multiple regions.

9.2.3.2 Execution

- **Market Share:** Evaluates the company's current share of the UPS and backup power fuel cell markets as defined above, including recent sales agreements and key customer accounts that are likely to impact sales during the next calendar year.
- **Sales and Marketing:** Evaluates the capabilities of the company's existing sales and marketing resources, the company's understanding of the most suitable target markets, and its ability to successfully influence customer perceptions and purchases.
- **Product Performance and Customer Support:** Addresses the products' relative competitiveness and ability to enable customers to meet their own requirements while minimizing added cost.
- **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. Companies that have not announced pricing for their products are scored as "weak."
- **Staying Power:** Evaluates whether the companies have ready access to the capital needed to deliver the expected volumes based on short-term market growth projections. Also analyzes whether the companies have access to capital for long-term investment in product development and can scale up to enable volume production (and lower costs) as the market transitions to a commodity market. Higher scores are given to companies with management teams with experience and proven track records of success.
- **Manufacturing:** Evaluates whether a company can currently meet a high level of order with quality products in a timely fashion, according to the needs of the market (i.e., no long backorders, which have an impact on finance and risk).

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