

Aircraft Fuel Cells Market by Fuel Type (Hydrogen, Hydrocarbon, Others), Power Output (0-100kW, 100 kW- 1MW, 1MW & Above), Aircraft Type (Fixed-Wing, Rotary Wing, UAVs, AAMs) and Region (North America, Europe, APAC, RoW) - Global Forecast to 2035

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Report description:

The aircraft fuel cell market is expected to grow from USD 1.6 billion at a CAGR of 10.8% during the forecast period, reaching USD 5.7 billion by 2035. Market expansion is likely to be driven by factors such as stringent environmental regulations, growing sustainability initiatives, increasing emphasis on reducing operational costs, advancements in fuel cell technology, and the need for enhanced energy efficiency and range in aircraft operations.

" Stringent Environment Regulations and need for sustainable aviation practices to increase the adoption of fuel cells."

Increasingly stringent environmental regulations, such as emission standards set by international bodies like the International Civil Aviation Organization (ICAO), are driving the market expansion of aircraft fuel cells. These regulations aim to reduce carbon emissions and address climate change concerns. Fuel cells, with their low or zero emissions profile, enable compliance with these regulations, making them an attractive choice for airlines and aircraft operators striving to meet environmental targets. The aviation industry's growing focus on sustainability and corporate social responsibility is a significant factor driving the expansion of the aircraft fuel cells market. Airlines and aviation stakeholders are actively adopting sustainable practices to minimize their environmental impact. Fuel cells offer a clean and green energy solution, aligning with sustainability initiatives and enhancing the industry's reputation for responsible and eco-friendly operations. This growing emphasis on sustainability drives the demand for aircraft fuel cells and contributes to their market expansion. Airlines and aircraft operators are increasingly focused on reducing operational costs to enhance profitability. Fuel is a significant expense for the aviation industry, and rising fuel prices impact

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operational budgets. Fuel cells, with their higher energy efficiency compared to traditional combustion engines, offer cost-saving potential. By reducing fuel consumption and dependency on conventional fuels, fuel cells can help airlines achieve operational cost savings, making them an attractive investment and driving market expansion.

"Based on Fuel Type, the Hydrogen Fuel Cell segment accounts for the largest market size during the forecast period."

Based on fuel type, the aircraft fuel cell market has been segmented into hydrogen fuel cells, hydrocarbon fuel cells, and others. The hydrogen fuel cell segment is expected to dominate the aircraft fuel cell market for several significant reasons. Firstly, hydrogen fuel cells offer a clean and sustainable energy source, aligning with the aviation industry's increasing focus on reducing carbon emissions and achieving environmental sustainability targets. By utilizing hydrogen as a fuel, fuel cells generate electricity without producing harmful emissions, supporting compliance with stringent emission regulations. Moreover, continuous advancements in hydrogen infrastructure and storage technologies have facilitated the integration of hydrogen fuel cells in aircraft, driving their market dominance. These factors make hydrogen fuel cells an attractive solution for aircraft propulsion, contributing to their leading position in the market.

"Based on the Power Output, the 0-100 kW segment is projected to hold the highest market share during the forecast period."

Based on power output, the aircraft fuel cell market has been segmented into 0-100 kW, 100 kW- 1 MW, and 1 MW & above. The 0-100kW segment is poised to hold a greater market share in the aircraft fuel cell market in the upcoming years, driven by several key factors. Firstly, the rising demand for smaller aircraft and unmanned aerial vehicles (UAVs) across various industries is fueling the need for compact and lightweight power solutions. The 0-100kW segment perfectly aligns with the power requirements of these aircraft, offering an optimal balance between power output and size. Moreover, advancements in fuel cell technology have improved the efficiency and performance of fuel cells within this power range, making them a reliable and cost-effective choice for auxiliary power units (APUs), emergency power systems, and other essential aircraft operations. As the market for smaller aircraft and UAVs continues to grow, the 0-100kW segment is expected to capture a larger market share in the aircraft fuel cell industry.

"Asia Pacific is projected to grow at the highest CAGR during the forecast period."

The APAC region is estimated to account for a larger share aircraft fuel cell market in 2023. In this region, the aircraft fuel cell market has been studied for China, India, Japan, Australia, South Korea, and the Rest of APAC. Countries in the Asia Pacific region are upgrading their capabilities by undergoing developments in the field of aircraft fuel cells. The APAC region is also one of the fastest-growing regions in the world for air travel. As the number of air passengers increases, so too will the demand for fuel-efficient aircraft. Fuel cells offer a significant advantage in terms of fuel efficiency, and as a result, they are seen as a promising technology for the future of air travel. The APAC region also has a strong manufacturing base that is capable of producing fuel cells at a competitive cost. This is another important factor, as the cost of fuel cells is a key factor in their adoption by the aviation industry. APAC is home to some of the world's fastest-growing aviation markets, with increasing air travel demand and a rising number of commercial aircraft. This growth presents a substantial opportunity for the adoption of aircraft fuel cells. The governments in APAC countries are actively investing in clean energy technologies and sustainable aviation initiatives. These initiatives include the development of hydrogen infrastructure, research and development programs, and supportive policies for the deployment of fuel cell technology.

The break-up of the profile of primary participants in the ultralight and light aircraft market:

- By Company Type: Tier 1 49%, Tier 2 37%, and Tier 3 14%
- By Designation: C Level 55%, Director Level 27%, and Others 18%
- By Region: North America 45%, Europe 26%, Asia Pacific -16%, Rest of the World- 13%.

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Major players operating in the aircraft fuel cell market are ZeroAvia Inc. (US), Intelligent Energy Limited (UK), Piasecki Aircraft Corporation (US), Doosan Mobility Innovation (South Korea), and H3 Dynamics (Singapore), among others.

Research Coverage:

This research report categorizes the aircraft fuel cell market basis on Fuel Type (hydrogen fuel cells, hydrocarbon fuel cells, and others), By Power Output (0-100 kW, 100 kW - 1 MW, 1 MW & Above), Aircraft Type (Fixed Wing, Rotary Wing, UAVs, AAM), in these segments have been mapped across major Regions (North America, Europe, Asia Pacific, and Rest of the World). The scope of the report covers detailed information regarding the major factors, such as drivers, restraints, challenges, and opportunities, influencing the growth of the aircraft fuel cell market. A detailed analysis of the key industry players has been done to provide insights into their business overviews; solutions and services; key strategies; agreements, collaborations, new product launches, contracts, expansion, acquisitions, and partnerships associated with the aircraft fuel cell market. Competitive analysis of upcoming startups in the aircraft fuel cell market ecosystem is covered in this report.

Reasons to buy this report:

The report will help the market leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall aircraft fuel cell market and the subsegments. This report will help stakeholders understand the competitive landscape and gain more insights to position their businesses better and plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the market and provides them with information on key market drivers, restraints, challenges, and opportunities.

The report provides insights on the following pointers:

- Market Penetration: Comprehensive information on aircraft fuel cells offered by the top players in the market
- Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and new product & service launches in the aircraft fuel cell market
- Market Development: Comprehensive information about lucrative markets the report analyzes the aircraft fuel cell market across varied regions
- Market Diversification: Exhaustive information about new products & services, untapped geographies, recent developments, and investments in the aircraft fuel cell market.
- Competitive Assessment: In-depth assessment of market shares, growth strategies, and service offerings of leading players in the aircraft fuel cell market.

Table of Contents:

1□INTRODUCTION□26

- 1.1 STUDY OBJECTIVES 26
- 1.2 MARKET DEFINITION 26
- 1.3□STUDY SCOPE□27
- 1.3.1 ☐ AIRCRAFT FUEL CELL MARKET SEGMENTATION ☐ 27
- 1.3.2 REGIONAL SCOPE 27
- 1.3.3 YEARS CONSIDERED 28

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1.4 CURRENCY CONSIDERED 28

TABLE 1 USD EXCHANGE RATES 28

1.5∏STAKEHOLDERS∏29

1.6∏INCLUSIONS AND EXCLUSIONS∏29

TABLE 2 AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE 29

2⊓RESEARCH METHODOLOGY⊓30

2.1 RESEARCH DATA 30

FIGURE 1∏REPORT PROCESS FLOW∏30

FIGURE 2□AIRCRAFT FUEL CELL MARKET: RESEARCH DESIGN□31

2.1.1 SECONDARY DATA 31

2.1.1.1 Key data from secondary sources 32

2.1.2 PRIMARY DATA □ 32

2.1.2.1 Key primary sources: by company type, designation, and region 32

2.2∏FACTOR ANALYSIS∏33

2.2.1 INTRODUCTION 33

2.2.2 □ DEMAND-SIDE INDICATORS □ 33

2.2.2.1 Increasing environmental regulations 34

2.2.2.2 Rising fuel costs 34

2.2.2.3 Increasing focus on sustainable aviation 34

2.2.3 □ SUPPLY-SIDE ANALYSIS □ 34

2.2.3.1 Advancements in technology 34

2.2.3.2 Increasing fuel cell manufacturing 34

2.2.3.3 Cost reduction initiatives 35

2.2.3.4 Collaboration between industry stakeholders 35

2.3 MARKET DEFINITION AND SCOPE 35

2.3.1 SEGMENTS AND SUBSEGMENTS ☐ 36

2.3.2∏EXCLUSIONS∏36

2.3.3 PRIMARY INTERVIEWEE DETAILS 37

2.4 MARKET SIZE ESTIMATION AND METHODOLOGY 37

2.4.1 BOTTOM-UP APPROACH 37

2.4.1.1 Aircraft fuel cell market for aircraft type 1 38

2.4.1.2

∏Aircraft fuel cell market for aircraft type 2

☐38

FIGURE 3 MARKET SIZE ESTIMATION METHODOLOGY: BOTTOM-UP APPROACH 39

2.4.2 TOP-DOWN APPROACH 39

FIGURE 4 MARKET SIZE ESTIMATION METHODOLOGY: TOP-DOWN APPROACH 39

2.5 TRIANGULATION AND VALIDATION 40

FIGURE 5 DATA TRIANGULATION 40

2.5.1 TRIANGULATION THROUGH PRIMARY AND SECONDARY RESEARCH 40

2.6 MARKET SIZING AND FORECASTING 41

2.7 ⊓RECESSION IMPACT ANALYSIS □41

2.7.1 RESEARCH ASSUMPTIONS 42

 $2.8 \square RESEARCH\ LIMITATIONS \square 42$

2.9∏RISKS∏42

2.10 GROWTH FORECAST 43

3∏EXECUTIVE SUMMARY∏44

FIGURE 6 PEMFC SEGMENT TO HAVE LARGEST MARKET SHARE FROM 2023 TO 2035 44

FIGURE 7[10 KW-100 KW SEGMENT TO DOMINATE MARKET DURING FORECAST PERIOD[45]

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FIGURE 8 NORTH AMERICA ACCOUNTED FOR LARGEST MARKET SHARE IN 2023 45

4 PREMIUM INSIGHTS 46

4.1∏ATTRACTIVE OPPORTUNITIES FOR PLAYERS IN AIRCRAFT FUEL CELL MARKET∏46

FIGURE 9∏INCREASE IN RETROFITTING OF FUEL CELLS IN AIRCRAFT TO DRIVE MARKET∏46

4.2 AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE 146

FIGURE 10 UAV SEGMENT TO ACCOUNT FOR LARGEST MARKET SHARE DURING FORECAST PERIOD 46

4.3 ☐ AIRCRAFT FUEL CELL MARKET, BY COUNTRY/REGION ☐ 47

FIGURE 11 CANADA TO REGISTER HIGHEST CAGR FROM 2023 TO 2035 47

5∏MARKET OVERVIEW∏48

5.1∏INTRODUCTION∏48

5.2 MARKET DYNAMICS 149

FIGURE 12∏AIRCRAFT FUEL CELL MARKET: DRIVERS, RESTRAINTS, OPPORTUNITIES, AND CHALLENGES∏49

5.2.1 □ DRIVERS □ 49

5.2.1.1 Rising conventional fuel prices 49

5.2.1.2 Rising focus on sustainable aviation 50

5.2.1.3 Technological advancements and cost reductions in aircraft fuel cells 50

5.2.2 RESTRAINTS 51

5.2.2.1 Hydrogen storage and cooling 51

5.2.2.2 Premium charge for fuel cells hinders widespread adoption 51

5.2.3∏OPPORTUNITIES∏52

5.2.3.1 Innovation in HTPEM technology 52

5.2.3.2 Reduced noise levels 52

5.2.3.3 Leveraging fuel cell technology to power smaller aircraft ☐53

5.2.4 CHALLENGES 53

5.2.4.1 Overcoming commercial feasibility challenges of hydrogen for fuel cell adoption 53

5.2.4.2 Overcoming architectural challenges for fuel cell integration in larger aircraft 54

5.2.4.3∏Improving heat removal capabilities of LTPEM fuel cells for effective integration in aircraft systems □54

5.3 PRICING ANALYSIS 55

TABLE 3 AVERAGE SELLING PRICE RANGE: AIRCRAFT FUEL CELLS, BY TYPE (USD) 55

5.4∏VALUE CHAIN∏55

FIGURE 13 AIRCRAFT FUEL CELL MARKET: VALUE CHAIN ANALYSIS 55

5.5∏AIRCRAFT FUEL CELL MARKET ECOSYSTEM∏56

5.5.1□PROMINENT COMPANIES□56

5.5.2 PRIVATE AND SMALL ENTERPRISES 57

5.5.3 END USERS 57

TABLE 4□AIRCRAFT FUEL CELL MARKET ECOSYSTEM MAP□57

FIGURE 14 AIRCRAFT FUEL CELL MARKET ECOSYSTEM 58

5.6 TRADE DATA STATISTICS 58

TABLE 5 TRADE DATA TABLE FOR AIRCRAFT FUEL CELLS 58

5.7 TECHNOLOGY TRENDS IN AIRCRAFT FUEL CELL MARKET 59

5.7.1 ADVANCEMENTS IN FUEL CELL TECHNOLOGY 59

5.7.2 FUEL CELL HYBRID SYSTEMS 59

5.7.3∏UTILIZATION OF ALTERNATIVE FUELS∏59

5.8∏CASE STUDY ANALYSIS∏60

5.8.1 ZEROAVIA: HYDROGEN-ELECTRIC AIRCRAFT 60

5.8.2 BOEING: FUEL-CELL POWERED UAV 60

5.8.3∏AIRBUS: E-FAN X HYBRID-ELECTRIC AIRCRAFT∏60

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5.9 TRENDS/DISRUPTIONS IMPACTING CUSTOMER BUSINESS 60

5.9.1□REVENUE SHIFT AND NEW REVENUE POCKETS FOR AIRCRAFT FUEL CELL PRODUCT AND SOLUTION MANUFACTURERS□60 FIGURE 15□REVENUE SHIFT IN AIRCRAFT FUEL CELL MARKET□61

5.10 PORTER'S FIVE FORCES ANALYSIS 61

TABLE 6 | AIRCRAFT FUEL CELL MARKET: PORTER'S FIVE FORCES ANALYSIS | 61

FIGURE 16 AIRCRAFT FUEL CELL MARKET: PORTER'S FIVE FORCES ANALYSIS 62

5.10.1 THREAT OF NEW ENTRANTS 62

5.10.2 THREAT OF SUBSTITUTES 62

5.10.3 BARGAINING POWER OF SUPPLIERS 63

5.10.4 BARGAINING POWER OF BUYERS 63

5.10.5 INTENSITY OF COMPETITIVE RIVALRY ☐ 63

5.11 KEY STAKEHOLDERS AND BUYING CRITERIA 63

5.11.1 KEY STAKEHOLDERS IN BUYING PROCESS 64

FIGURE 17 INFLUENCE OF STAKEHOLDERS ON BUYING PROCESS OF AIRCRAFT FUEL CELL PRODUCTS AND SYSTEMS [64 TABLE 7 INFLUENCE OF STAKEHOLDERS ON BUYING PROCESS OF AIRCRAFT FUEL CELL PRODUCTS AND SYSTEMS (%) [64 5.11.2 | BUYING CRITERIA [65]

FIGURE 18 KEY BUYING CRITERIA FOR AIRCRAFT FUEL CELL PRODUCTS AND SYSTEMS 65

TABLE 8 KEY BUYING CRITERIA FOR AIRCRAFT FUEL CELL PRODUCTS AND SYSTEMS 65

5.12 KEY CONFERENCES AND EVENTS IN 2023-2024 66

TABLE 9

| AIRCRAFT FUEL CELL MARKET: DETAILED LIST OF CONFERENCES AND EVENTS

| 66

5.13 TARIFF AND REGULATORY LANDSCAPE FOR AEROSPACE INDUSTRY 67

TABLE 10 NORTH AMERICA: LIST OF REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS 67

TABLE 11 EUROPE: LIST OF REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS 68

TABLE 12∏ASIA PACIFIC: LIST OF REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS∏69

TABLE 13 REST OF THE WORLD: LIST OF REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS 170 6 NDUSTRY TRENDS 171

6.1□INTRODUCTION□71

6.2 TECHNOLOGICAL ADVANCEMENTS IN AIRCRAFT FUEL CELLS 71

6.2.1☐HIGH POWER DENSITY OFFERED BY SOLID-OXIDE FUEL CELLS TO EXPAND OPPORTUNITIES IN FUTURISTIC AIR MOBILITY SOLUTIONS☐71

6.2.2 BLOCKCHAIN 72

6.2.3 HYDROGEN INFRASTRUCTURE DEVELOPMENT 72

6.2.4 LOW-TEMPERATURE PROTON EXCHANGE MEMBRANE FUEL CELLS 172

6.3 EMERGING TRENDS IN AIRCRAFT FUEL CELL MANUFACTURING 73

6.3.1□3D PRINTING□73

6.3.2 BIG DATA 74

6.3.3 PREDICTIVE MAINTENANCE 74

6.4 SUPPLY CHAIN ANALYSIS 74

FIGURE 19∏SUPPLY CHAIN ANALYSIS∏75

6.5 USE CASES 75

6.5.1 AIRBUS DEVELOPS HYBRID COMMERCIAL AIRLINERS RUN BY FUEL CELLS 75

6.5.2☐HYPOINT AND PIASECKI AIRCRAFT CORPORATION: COLLABORATION ON ZERO CARBON-EMISSION HYDROGEN FUEL CELL SYSTEMS FOR EVTOLS∏76

6.5.3 ZEROAVIA AND ALASKA AIRLINES: COLLABORATION ON HYDROGEN-ELECTRIC POWERTRAIN FOR REGIONAL AIRCRAFT 76 6.6 PATENT ANALYSIS 77

TABLE 14 INNOVATIONS AND PATENT REGISTRATIONS 77

7□AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE□80

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7.1 INTRODUCTION 81

FIGURE 20 AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION) 81

TABLE 15

AIRCRAFT FUEL CELL MARKET FOR HYDROGEN FUEL CELLS, BY FUEL TYPE, 2019-2022 (USD MILLION)

TABLE 16

AIRCRAFT FUEL CELL MARKET FOR HYDROGEN FUEL CELLS, BY FUEL TYPE, 2023-2035 (USD MILLION)

181

7.2 HYDROGEN FUEL CELLS 182

7.2.1 PROTON EXCHANGE MEMBRANE FUEL CELLS 82

7.2.1.1 Favorable characteristics to drive demand for PEM Fuel Cells 82

7.2.2 SOLID OXIDE FUEL CELLS 83

7.2.2.1 Potential applications of SOFC in aircraft fuel cells to drive market 83

7.2.3 OTHERS 83

7.3∏HYDROCARBON FUEL CELLS∏84

7.3.1∏VERSATILITY AND EASE OF USE WITH ADVANCEMENTS IN TECHNOLOGY TO DRIVE DEMAND∏84

7.4□OTHERS□85

8∏AIRCRAFT FUEL CELL MARKET, BY POWER OUTPUT∏86

8.1□INTRODUCTION□87

FIGURE 21 AIRCRAFT FUEL CELL MARKET, BY POWER OUTPUT, 2023-2035 (USD MILLION) 87

TABLE 17∏AIRCRAFT FUEL CELL MARKET, BY POWER OUTPUT, 2019-2022 (USD MILLION)∏87

TABLE 18 AIRCRAFT FUEL CELL MARKET, BY POWER OUTPUT, 2023-2035 (USD MILLION) 87

8.2₀10 KW-100 KW₀88

8.2.1 INCREASING DEMAND FOR FUEL CELL SYSTEMS FOR SMALL AIRCRAFT TO DRIVE SEGMENT 88

8.3 □ 100 KW-1 MW □ 88

8.3.1 Requirement for fuel cell systems for larger aircraft to drive segment 188

8.4∏1 MW & ABOVE∏88

8.4.1 TECHNOLOGICAL ADVANCEMENTS AND HIGH-POWER OUTPUT REQUIREMENTS TO DRIVE DEMAND ↑88

9□AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE□89

9.1□INTRODUCTION□90

FIGURE 22∏AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION)∏90

TABLE 19∏AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION)∏90

TABLE 20 AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION) 91

9.2∏FIXED-WING∏91

9.2.1 ONGOING DEVELOPMENTS TO DRIVE FIXED-WING SEGMENT 91

TABLE 21 | FIXED-WING: AIRCRAFT FUEL CELL MARKET, BY TYPE, 2019-2022 (USD MILLION) | 191

TABLE 22 FIXED-WING: AIRCRAFT FUEL CELL MARKET, BY TYPE, 2023-2035 (USD MILLION) 92

9.3 ROTARY-WING 92

9.3.1 UNDERDEVELOPMENT PROJECTS, ONCE COMPLETED, TO DRIVE ROTARY-WING SEGMENT 192

TABLE 23 TROTARY-WING: AIRCRAFT FUEL CELL MARKET, BY TYPE, 2019-2022 (USD MILLION) 192

TABLE 24 TOTARY-WING: AIRCRAFT FUEL CELL MARKET, BY TYPE, 2023-2035 (USD MILLION) 93

9.4 UNMANNED AERIAL VEHICLE 93

9.4.1 EXPANDING CAPABILITIES TO DRIVE DEMAND FOR UNMANNED AERIAL VEHICLES 93

9.5∏ADVANCED AIR MOBILITY∏93

9.5.1 INTEGRATION OF FUEL CELL TECHNOLOGY TO DRIVE MARKET FOR ADVANCED AIR MOBILITY 193

TABLE 25 \square ADVANCED AIR MOBILITY: AIRCRAFT FUEL CELL MARKET, BY TYPE, 2019-2022 (USD MILLION) \square 94

TABLE 26 \square ADVANCED AIR MOBILITY: AIRCRAFT FUEL CELL MARKET, BY TYPE, 2023-2035 (USD MILLION) \square 94

10 ☐ AIRCRAFT FUEL CELL MARKET, BY REGION ☐ 95

10.1□INTRODUCTION□96

FIGURE 23 AIRCRAFT FUEL CELL MARKET: REGIONAL SNAPSHOT 96

TABLE 27 AIRCRAFT FUEL CELL MARKET, BY REGION, 2019-2022 (USD MILLION) 96

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```
TABLE 28 AIRCRAFT FUEL CELL MARKET, BY REGION, 2023-2035 (USD MILLION) 97
```

10.2 NORTH AMERICA 97

FIGURE 24 NORTH AMERICA: AIRCRAFT FUEL CELL MARKET SNAPSHOT 98

10.2.1 PESTLE ANALYSIS: NORTH AMERICA 98

TABLE 29 NORTH AMERICA: AIRCRAFT FUEL CELL MARKET, BY COUNTRY, 2019-2022 (USD MILLION) 99 TABLE 30 NORTH AMERICA: AIRCRAFT FUEL CELL MARKET, BY COUNTRY, 2023-2035 (USD MILLION) 100

 $TABLE\ 31 _NORTH\ AMERICA:\ AIRCRAFT\ FUEL\ CELL\ MARKET,\ BY\ HYDROGEN\ FUEL\ CELL\ TYPE,\ \ 2019-2022\ (USD\ MILLION) \\ \boxed{100}$

 $TABLE \ 32 @NORTH \ AMERICA: AIRCRAFT \ FUEL \ CELL \ MARKET, \ BY \ HYDROGEN \ FUEL \ CELL \ TYPE, \ 2023-2035 \ (USD \ MILLION) @100 \ AIRCRAFT \ FUEL \ CELL \ MARKET, \ BY \ HYDROGEN \ FUEL \ CELL \ TYPE, \ 2023-2035 \ (USD \ MILLION) @100 \ AIRCRAFT \ FUEL \ CELL \ MARKET, \ BY \ HYDROGEN \ FUEL \ CELL \ TYPE, \ 2023-2035 \ (USD \ MILLION) @100 \ AIRCRAFT \ FUEL \ CELL \ MARKET, \ BY \ HYDROGEN \ FUEL \ CELL \ TYPE, \ 2023-2035 \ (USD \ MILLION) @100 \ AIRCRAFT \ FUEL \ CELL \ MARKET, \ BY \ HYDROGEN \ FUEL \ CELL \ TYPE, \ 2023-2035 \ (USD \ MILLION) \ AIRCRAFT \ FUEL \ CELL \ MARKET, \ BY \ HYDROGEN \ FUEL \ CELL \ TYPE, \ 2023-2035 \ (USD \ MILLION) \ AIRCRAFT \ FUEL \ CELL \ MARKET, \ BY \ HYDROGEN \ FUEL \ CELL \ TYPE, \ 2023-2035 \ (USD \ MILLION) \ AIRCRAFT \ FUEL \ CELL \ MARKET, \ BY \ HYDROGEN \ FUEL \ CELL \ TYPE, \ 2023-2035 \ (USD \ MILLION) \ AIRCRAFT \ FUEL \ CELL \ MARKET, \ BY \ HYDROGEN \ FUEL \ CELL \ TYPE, \ 2023-2035 \ (USD \ MILLION) \ AIRCRAFT \ FUEL \ CELL \ MARKET, \ BY \ HYDROGEN \ FUEL \ CELL \ TYPE, \ 2023-2035 \ (USD \ MILLION) \ AIRCRAFT \ FUEL \ CELL \ MARKET, \ BY \ HYDROGEN \ FUEL \ CELL \ TYPE, \ 2023-2035 \ (USD \ MILLION) \ AIRCRAFT \ FUEL \ CELL \ MARKET, \ BY \ HYDROGEN \ FUEL \ CELL \ TYPE, \ 2023-2035 \ (USD \ MILLION) \ AIRCRAFT \ FUEL \ CELL \ MARKET, \ BY \ HYDROGEN \ FUEL \ CELL \ TYPE, \ 2023-2035 \ (USD \ MILLION) \ AIRCRAFT \ FUEL \ CELL \ MARKET, \ BY \ HYDROGEN \ FUEL \ CELL \ TYPE, \ 2023-2035 \ (USD \ MILLION) \ AIRCRAFT \ FUEL \ CELL \ MARKET, \ BY \ HYDROGEN \ FUEL \ CELL \ TYPE, \ AIRCRAFT \ FUEL \ CELL \ MARKET, \ BY \ HYDROGEN \ FUEL \ CELL \ TYPE, \ AIRCRAFT \ FUEL \ FUEL$

TABLE 33□NORTH AMERICA: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION)□100

TABLE 34 \square NORTH AMERICA: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION) \square 101

 $10.2.2 \verb||US||101$

 $10.2.2.1 \verb||Presence of leading aircraft fuel cell manufacturers to drive market|| 101$

TABLE 35[]US: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2019-2022 (USD MILLION)[]101

TABLE 36[IUS: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION)[102

TABLE 37 US: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION) 102

TABLE 38 \square US: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION) \square 102

10.2.3 CANADA 102

10.2.3.1 Investments in R&D of new materials to drive market 102

TABLE 39 CANADA: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2019-2022 (USD MILLION) 103

TABLE 40 CANADA: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION) 103

TABLE 41 \square CANADA: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION) \square 103

TABLE 42 CANADA: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION) 104

10.3 EUROPE 104

10.3.1 PESTLE ANALYSIS: EUROPE 104

FIGURE 25 EUROPE: AIRCRAFT FUEL CELL MARKET SNAPSHOT 106

TABLE 43 EUROPE: AIRCRAFT FUEL CELL MARKET, BY COUNTRY, 2019-2022 (USD MILLION) 106

TABLE 44∏EUROPE: AIRCRAFT FUEL CELL MARKET, BY COUNTRY, 2023-2035 (USD MILLION)∏107

TABLE 45∏EUROPE: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2019-2022 (USD MILLION)∏107

TABLE 46 EUROPE: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION) 107

TABLE 47 EUROPE: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION) 107

TABLE 48 EUROPE: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION) 108

10.3.2∏UK∏108

10.3.2.1 □Increase in air travel to drive market □108

TABLE 49 UK: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2019-2022 (USD MILLION) 108

TABLE 50∏UK: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION)∏109

TABLE 51∏UK: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION)∏109

TABLE 52 UK: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION) 109

10.3.3 FRANCE 109

10.3.3.1 Considerable investments in aerospace systems and components to drive market 109

TABLE 53[]FRANCE: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2019-2022 (USD MILLION)[]110

TABLE 54∏FRANCE: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION)∏110

TABLE 55 FRANCE: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION) 111

TABLE 56 FRANCE: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION) 111

10.3.4 GERMANY 111

10.3.4.1 Growing investment in aerospace technology and air connectivity to drive market 111

TABLE 57 GERMANY: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2019-2022 (USD MILLION) 112

TABLE 58 GERMANY: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION) 112

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TABLE 59 GERMANY: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION) 112 TABLE 60 GERMANY: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION) 112 10.3.5 EREST OF EUROPE 113

TABLE 61 REST OF EUROPE: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2019-2022 (USD MILLION) 113
TABLE 62 REST OF EUROPE: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION) 113
TABLE 63 REST OF EUROPE: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION) 113
TABLE 64 REST OF EUROPE: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION) 114
10.4 ASIA PACIFIC 114

10.4.1 ASIA PACIFIC: PESTLE ANALYSIS 115

FIGURE 26 ASIA PACIFIC: AIRCRAFT FUEL CELL MARKET SNAPSHOT 116

TABLE 65
ASIA PACIFIC: AIRCRAFT FUEL CELL MARKET, BY COUNTRY, 2019-2022 (USD MILLION)
116
TABLE 66
ASIA PACIFIC: AIRCRAFT FUEL CELLS MARKET, BY COUNTRY, 2023-2035 (USD MILLION)
117
TABLE 67
ASIA PACIFIC: AIRCRAFT FUEL CELLS MARKET, BY FUEL TYPE, 2019-2022 (USD MILLION)
117
TABLE 68
ASIA PACIFIC: AIRCRAFT FUEL CELLS MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION)
117
TABLE 69
ASIA PACIFIC: AIRCRAFT FUEL CELLS MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION)
117
TABLE 70
ASIA PACIFIC: AIRCRAFT FUEL CELLS MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION)
118
10.4.2
CHINA
118

10.4.2.1 Large-scale domestic manufacturing to boost market 118

TABLE 71 \square CHINA: AIRCRAFT FUEL CELLS MARKET, BY FUEL TYPE, 2019-2022 (USD MILLION) \square 118 TABLE 72 \square CHINA: AIRCRAFT FUEL CELLS MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION) \square 119 TABLE 73 \square CHINA: AIRCRAFT FUEL CELLS MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION) \square 119 TABLE 74 \square CHINA: AIRCRAFT FUEL CELLS MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION) \square 119 10.4.3 \square INDIA \square 119

10.4.3.1 Rising government focus on military and defense to propel market 119

TABLE 75 INDIA: AIRCRAFT FUEL CELLS MARKET, BY FUEL TYPE, 2019-2022 (USD MILLION) 119 TABLE 76 INDIA: AIRCRAFT FUEL CELLS MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION) 120 TABLE 77 INDIA: AIRCRAFT FUEL CELLS MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION) 120 TABLE 78 INDIA: AIRCRAFT FUEL CELLS MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION) 120 10.4.4 APAN 120

10.4.4.1 \square Increased demand from air force to support market growth \square 120

TABLE 79 APAN: AIRCRAFT FUEL CELLS MARKET, BY FUEL TYPE, 2019-2022 (USD MILLION) 121 TABLE 80 ARCRAFT FUEL CELLS MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION) 121 TABLE 81 ARCRAFT FUEL CELLS MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION) 121 TABLE 82 ARCRAFT FUEL CELLS MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION) 121 10.4.5 AUSTRALIA 122

10.4.5.1 ☐Increasing demand from airlines to boost market ☐ 122

TABLE 83
AUSTRALIA: AIRCRAFT FUEL CELLS MARKET, BY FUEL TYPE, 2019-2022 (USD MILLION)
122
TABLE 84
AUSTRALIA: AIRCRAFT FUEL CELLS MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION)
122
TABLE 85
AUSTRALIA: AIRCRAFT FUEL CELLS MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION)
122
TABLE 86
AUSTRALIA: AIRCRAFT FUEL CELLS MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION)
123
10.4.6
SOUTH KOREA
123

 $10.4.6.1 \verb||Rising security concerns from neighboring countries to drive market \verb||| 123$

TABLE 87 SOUTH KOREA: AIRCRAFT FUEL CELLS MARKET, BY FUEL TYPE, 2019-2022 (USD MILLION) 123 TABLE 88 SOUTH KOREA: AIRCRAFT FUEL CELLS MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION) 123 TABLE 89 SOUTH KOREA: AIRCRAFT FUEL CELLS MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION) 124 TABLE 90 SOUTH KOREA: AIRCRAFT FUEL CELLS MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION) 124 10.4.7 REST OF ASIA PACIFIC 124

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TABLE 91 REST OF ASIA PACIFIC: AIRCRAFT FUEL CELLS MARKET, BY FUEL TYPE, 2019-2022 (USD MILLION) 124
TABLE 92 REST OF ASIA PACIFIC: AIRCRAFT FUEL CELLS MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION) 125
TABLE 93 REST OF ASIA PACIFIC: AIRCRAFT FUEL CELLS MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION) 125
TABLE 94 REST OF ASIA PACIFIC: AIRCRAFT FUEL CELLS MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION) 125
10.5 REST OF THE WORLD 125

10.5.1 PESTLE ANALYSIS: REST OF THE WORLD 126

FIGURE 27 REST OF THE WORLD: AIRCRAFT FUEL CELL MARKET SNAPSHOT 127

TABLE 95 REST OF THE WORLD: AIRCRAFT FUEL CELL MARKET, BY REGION, 2019-2022 (USD MILLION) 128

TABLE 96 \square REST OF THE WORLD: AIRCRAFT FUEL CELL MARKET, BY REGION, 2023-2035 (USD MILLION) \square 128

TABLE 97□REST OF THE WORLD: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2019-2022 (USD MILLION)□128 TABLE 98□REST OF THE WORLD: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION)□128

TABLE 99∏REST OF THE WORLD: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION)∏129

TABLE 100 REST OF THE WORLD: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION) 129

10.5.2 MIDDLE EAST 129

10.5.2.1 New start-ups to drive market 129

TABLE 101□MIDDLE EAST: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2019-2022 (USD MILLION)□129

TABLE 102∏MIDDLE EAST: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION)∏130

TABLE 103∏MIDDLE EAST: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION)∏130

TABLE $104 \square \text{MIDDLE EAST}$: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION) $\square 130$

10.5.3∏AFRICA∏130

10.5.3.1 Government support to drive market 130

TABLE 105 AFRICA: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2019-2022 (USD MILLION) 131

TABLE 106 AFRICA: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION) 131

TABLE 107 AFRICA: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION) 131

TABLE 108 AFRICA: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION) 131

10.5.4 LATIN AMERICA 132

10.5.4.1 Growing focus on sustainability to drive market 132

TABLE 109∏LATIN AMERICA: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2019-2022 (USD MILLION)∏132

TABLE 110 LATIN AMERICA: AIRCRAFT FUEL CELL MARKET, BY FUEL TYPE, 2023-2035 (USD MILLION) 132

TABLE 111 \square LATIN AMERICA: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2019-2022 (USD MILLION) \square 133

TABLE 112□LATIN AMERICA: AIRCRAFT FUEL CELL MARKET, BY AIRCRAFT TYPE, 2023-2035 (USD MILLION)□133

11 COMPETITIVE LANDSCAPE 134

11.1 INTRODUCTION I 134

11.2 RANKING OF LEADING PLAYERS, 2023 134

FIGURE 28 MARKET RANKING OF LEADING PLAYERS IN AIRCRAFT FUEL CELL MARKET, 2023 134

11.3 MARKET SHARE ANALYSIS, 2023 135

FIGURE 29 MARKET SHARE OF TOP PLAYERS IN AIRCRAFT FUEL CELL MARKET, 2023 135

11.4 REVENUE ANALYSIS OF TOP 5 MARKET PLAYERS, 2023 136

FIGURE 30 REVENUE ANALYSIS OF TOP FIVE MARKET PLAYERS IN AIRCRAFT FUEL CELLS MARKET 136

11.5 COMPETITIVE OVERVIEW 137

TABLE 113 KEY DEVELOPMENTS BY LEADING PLAYERS IN AIRCRAFT FUEL CELL MARKET BETWEEN 2021 AND 2023 137

TABLE 114 COMPANY AIRCRAFT TYPE FOOTPRINT 138

TABLE 115 COMPANY REGION FOOTPRINT 139

11.6 COMPANY EVALUATION MATRIX 140

11.6.1 STARS 140

11.6.2 \square EMERGING LEADERS \square 140

11.6.3 PERVASIVE PLAYERS 140

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11.6.4 PARTICIPANTS 140

FIGURE 31 AIRCRAFT FUEL CELL MARKET: COMPANY EVALUATION MATRIX, 2023 141

11.7 COMPANY PRODUCT FOOTPRINT ANALYSIS 142

TABLE 116 COMPANY FOOTPRINT 142

11.8 START-UP/SME EVALUATION MATRIX 143

11.8.1 □ PROGRESSIVE COMPANIES □ 143

11.8.2 RESPONSIVE COMPANIES 143

11.8.3 DYNAMIC COMPANIES 143

11.8.4 STARTING BLOCKS 143

FIGURE 32 AIRCRAFT FUEL CELL MARKET: START-UP/SME EVALUATION MATRIX, 2023 144

11.8.5 COMPETITIVE BENCHMARKING 145

TABLE 117 AIRCRAFT FUEL CELL MARKET: DETAILED LIST OF KEY START-UPS/SMES 145

11.9 COMPETITIVE SCENARIO 145

11.9.1 DEALS 145

TABLE 118 DEALS, 2021-2023 145

12 COMPANY PROFILES 154

(Business Overview, Products Offered, Recent Developments, MnM View Right to win, Strategic choices made, Weaknesses and competitive threats) *

12.1 KEY PLAYERS 154

12.1.1 DOOSAN MOBILITY INNOVATION 154

TABLE 119 DOOSAN MOBILITY INNOVATION: COMPANY OVERVIEW 154
TABLE 120 DOOSAN MOBILITY INNOVATION: PRODUCTS OFFERED 154

TABLE 121 DOOSAN MOBILITY INNOVATION: DEALS 155

12.1.2 ZEROAVIA, INC. 158

TABLE 122 ZEROAVIA, INC.: COMPANY OVERVIEW 158
TABLE 123 ZEROAVIA, INC.: PRODUCTS OFFERED? 158

TABLE 124□ZEROAVIA, INC.: DEALS□159

12.1.3 AIRBUS 163

TABLE 125

AIRBUS: COMPANY OVERVIEW

163

FIGURE 33

AIRBUS: COMPANY SNAPSHOT

164

TABLE 126

TABLE 126

AIRBUS: PRODUCTS OFFERED

TABLE 127

AIRBUS: DEALS

12.1.4

AEROVIRONMENT, INC.

167

TABLE 128 AEROVIRONMENT, INC.: COMPANY OVERVIEW 167
FIGURE 34 AEROVIRONMENT, INC.: COMPANY SNAPSHOT 168
TABLE 129 AEROVIRONMENT, INC.: PRODUCTS OFFERED 168

TABLE 130 AEROVIRONMENT, INC.: DEALS 169

12.1.5 POWERCELL SWEDEN AB 170

TABLE 131 POWERCELL SWEDEN AB: COMPANY OVERVIEW 170 FIGURE 35 POWERCELL SWEDEN AB: COMPANY SNAPSHOT 171 TABLE 132 POWERCELL SWEDEN AB: PRODUCTS OFFERED? 171

TABLE 133 POWERCELL SWEDEN AB: DEALS 172

12.1.6 APUS GROUP 174

TABLE 134 APUS GROUP: COMPANY OVERVIEW 174
TABLE 135 APUS GROUP: PRODUCTS OFFERED 174

12.1.7 UNIVERSAL HYDROGEN CO. 175

TABLE 136 UNIVERSAL HYDROGEN CO.: COMPANY OVERVIEW 175

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TABLE 137 UNIVERSAL HYDROGEN CO.: PRODUCTS OFFERED? 175

TABLE 138 UNIVERSAL HYDROGEN CO.: DEALS 176

12.1.8 INTELLIGENT ENERGY LIMITED 178

TABLE 139 INTELLIGENT ENERGY LIMITED: COMPANY OVERVIEW 178
TABLE 140 INTELLIGENT ENERGY LIMITED: PRODUCTS OFFERED 178

TABLE 141 INTELLIGENT ENERGY LIMITED: DEALS 179

12.1.9 | EMBRAER | 181

TABLE 142 EMBRAER: COMPANY OVERVIEW 181
FIGURE 36 EMBRAER: COMPANY SNAPSHOT 182
TABLE 143 EMBRAER: PRODUCTS OFFERED 182

TABLE 144∏EMBRAER: DEALS∏183

12.1.10 GKN AEROSPACE SERVICES LIMITED 184

TABLE 145 GKN AEROSPACE SERVICES LIMITED: COMPANY OVERVIEW 184
TABLE 146 GKN AEROSPACE SERVICES LIMITED: PRODUCTS OFFERED 184

TABLE 147 GKN AEROSPACE SERVICES LIMITED: DEALS 185

12.1.11 ☐ HYPOINT INC. ☐ 186

TABLE 148 HYPOINT INC.: COMPANY OVERVIEW 186
TABLE 149 HYPOINT INC.: PRODUCTS OFFERED 186

TABLE 150 HYPOINT INC.: DEALS 187

12.1.12 PIASECKI AIRCRAFT CORPORATION 188

TABLE 151 PIASECKI AIRCRAFT CORPORATION: COMPANY OVERVIEW 188 TABLE 152 PIASECKI AIRCRAFT CORPORATION: PRODUCTS OFFERED 188

TABLE 153 PIASECKI AIRCRAFT CORPORATION: DEALS 189

12.1.13 | H3 DYNAMICS | 190

TABLE 154\(\text{DH3}\) DYNAMICS: COMPANY OVERVIEW\(\text{D190}\) TABLE 155\(\text{DH3}\) DYNAMICS: PRODUCTS OFFERED?\(\text{D190}\)

TABLE 156 \square H3 DYNAMICS: DEALS \square 192

12.1.14 PLUG POWER INC. 193

TABLE 157 PLUG POWER INC.: COMPANY OVERVIEW 193
FIGURE 37 PLUG POWER INC.: COMPANY SNAPSHOT 193
TABLE 158 PLUG POWER INC.: PRODUCTS OFFERED 194

12.1.15 \ AVIO AERO \ 195

TABLE 159

AVIO AERO: COMPANY OVERVIEW

195

TABLE 160

AVIO AERO: PRODUCTS OFFERED

195

12.2 OTHER PLAYERS 196
12.2.1 FUEL CELL STORE 196

12.2.2∏FLYKA∏197

12.2.3 HONEYWELL INTERNATIONAL INC. 197

12.2.4 SHANGHAI PEARL HYDROGEN ENERGY TECHNOLOGY CO., LTD. 198

12.2.5 URBAN AERONAUTICS LTD. 198

12.2.6 PIPISTREL D.O.O. 199

12.2.7 ALAKA? I TECHNOLOGIES 199

 $12.2.8 \square AERODELFT \square 200$

12.2.9∏ACCELERA∏200

12.2.10 SFC ENERGY AG 201

*Details on Business Overview, Products Offered, Recent Developments, MnM View, Right to win, Strategic choices made, Weaknesses and competitive threats might not be captured in case of unlisted companies.

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- $13 \square APPENDIX \square 202$
- 13.1 DISCUSSION GUIDE 202
- $13.2 \verb|||KNOWLEDGESTORE: MARKETSANDMARKETS? SUBSCRIPTION PORTAL|||206$
- 13.3 CUSTOMIZATION OPTIONS 208
- 13.4 RELATED REPORTS 208
- 13.5 AUTHOR DETAILS 209

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