

analyst view

The Fuel Cell Industry Review 2013

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Last week we launched our Fuel Cell Industry Review 2013 which reported annual fuel cell system shipments in 2012 reached 45,700, an increase of 86% compared to 2011, primarily due to increases in stationary fuel cell adoption. In term of megawatts, the fuel cell industry exceeded 150 MW for the first time in 2012 reaching a total of 166.7 MW. Our expectations for 2013 are also included and we anticipate both metrics will again break all previous records, with shipments growing by 46% compared with 2012 to reach 66,800 units worldwide and for more than 215 MW to be shipped, an increase of 29%.

Fuel cells are already well established in a number of markets where they are now recognised as a better technology option than conventional internal combustion engine generators or batteries. The stand-out performer for fuel cell technology by a significant margin is the stationary sector, where fuel cells find application in a range of sizes: from small-scale grid-connected micro-combined heat and power units for residential use, to off-grid backup power systems providing uninterruptible power supplies to critical infrastructure, to prime power for buildings and even to megawatt-scale installations designed as grid-connected power stations. In fact, according to energy consultants Delta-ee, fuel cell systems for micro-combined heat and power (micro-CHP) applications outsold conventional engine-based micro-CHP systems for the first time in 2012, accounting for 64% of global sales. The dominance of fuel cell technology for micro-CHP is led entirely by uptake under the Japanese Ene-Farm scheme, which plans to install around 50,000 systems in 2013.

The USA has long been a supporter of fuel cell technology and in the 2013 Review we also include a special feature on the Californian Self-Generation Incentive Program (SGIP) which was established in

2001 in response to the energy crisis experienced the previous year. Today the SGIP is recognised as one of the longest running distributed generation incentive programs in the USA and its funding programme has been extended to run until January 1st 2016 allocating a budget of around \$83 million (£53.8 million) per year. From 2011 there has been a significant shift towards fuel cell technology applications, accounting for more than 90% of projects and 76% of installed capacity.

Our 2012 Fuel Cell Industry Review included a significant increase in the shipment of portable fuel cell systems aimed at the consumer electronics market, which was never fully realised. While several of these systems were successfully launched during the year, a number of setbacks were also experienced meaning that overall around 30,000 fewer systems were shipped than we had anticipated.

Regionally, Asia has been the dominant adopter of fuel cell technology during the past five years, and this dominance has grown each year – 61% of units shipped in 2012 went to the region. This is not expected to change in 2013; in fact, we expect Asia's dominance to increase further, exceeding 75% of shipments for the full year. In terms of megawatts, the dominance is not so pronounced thanks to the sizeable market for large stationary fuel cells in North America. Nevertheless, Asia still accounted for 52% of megawatts shipped in 2012, and our expectations are for this to grow to 57% in 2013.

PEM fuel cell technology continues to prove the most popular type of fuel cell with regards to unit shipments. This can be attributed to its wide application across all applications, unlike other fuel cell types, and its suitability for use at both small and large scales. In terms of megawatts the picture is distributed more evenly between PEMFC, MCFC and SOFC. The contribution from the latter two is thanks to their use in the stationary sector for large-scale prime power deployments.

Interest in fuel cell technology has never been stronger – in the last year several high-level partnerships were forged, particularly in the automotive sector, and significant technology acquisitions took place. We saw several companies cease trading during the past year, but in a number of instances other businesses stepped in to acquire technology assets and strengthen their own positions within the industry. Mergers and acquisitions (M&A) can be considered positively, with successful technologies thriving, companies improving their technology portfolios and less feasible ideas being discarded. We expect to see an increasing amount of M&A activity in the future.

We are witnessing the beginning of an extremely exciting time for fuel cell and hydrogen technologies, driven primarily by three forces: the recognition of hydrogen as an attractive and important energy storage platform by energy utilities; the interest of major global telecoms in fuel cell backup power; and the commercialisation of fuel cell electric vehicles by the world's major automakers.

With an increasing number of truly global companies utilising and investing in fuel cell technology and with the supply chain improvements and technology recognition that will come with the mass-manufacture of passenger vehicles, the fuel cell industry is becoming increasingly well-aligned for global success.

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