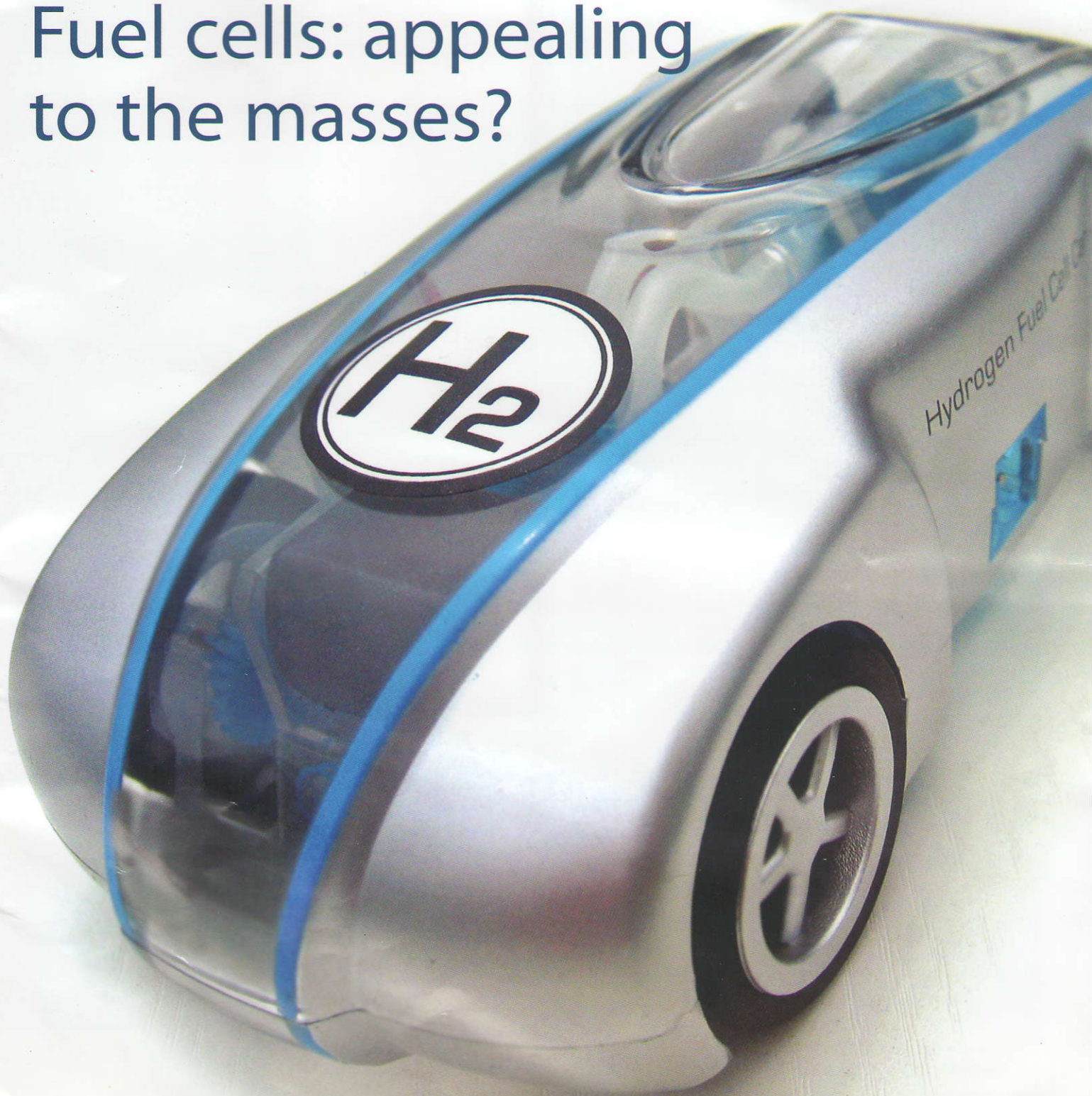


fuel cell focus

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Fuel cells: appealing to the masses?





Shanghai-based Horizon came to the attention of the wider public in 2006 with the release of a toy-scale, six-inch long fuel cell car, called the H-racer (pictured, here and cover), which circumvents the need for an external refuelling infrastructure by coming complete with a miniature hydrogen production plant powered by a solar cell.

Fuel cells: appealing to the masses?

THE FUEL CELL TODAY INDUSTRY REVIEW 2008 WAS LAUNCHED ON 30 JANUARY 2008, AND EXAMINES THE SITUATION THE GLOBAL FUEL CELL INDUSTRY FINDS ITSELF IN. IN THIS ARTICLE, FUEL CELL FOCUS PUBLISHES AN EXCLUSIVE SYNOPSIS OF THE KEY FINDINGS.

Dr Kerry-Ann Adamson

The Fuel Cell Today team believe that the commercialisation of the fuel cell industry started in 2007 (see box, 'assumptions in the report' opposite). Last year saw a step change in the fuel cell industry with the focus starting to switch from research, development and demonstration to adoption. This trend spilled over into areas such as policy, subsidies, certification and codes and standards.

Over the last 12 months key developments include the US adoption of the International Civil Aviation Organisation's ruling, which

allows passengers to carry up to two methanol fuel cartridges on board planes in hand luggage. This effectively removed one of the major non-technical barriers to the diffusion of portable fuel cells.

Another hugely significant indicator has been the Japanese Government, which has changed its approach in its drive to commercialise residential fuel cells; away from subsidising fuel cell companies working on the technologies, to providing potential adopters with direct financial incentives.

And the International Standards Organisation (ISO), the Underwriters Laboratory (UL) and TÜV all provide internationally recognised certification of products and the past year has witnessed a new tranche of products receiving certification.

Fuel cell market drivers

Fuel cell technology is being pulled into the market by increasing concerns over climate change, air pollution and dependence on imported fuel. These government-led drivers



The increased need for power in some cutting-edge portable consumer devices is causing the battery industry problems; could the fuel cell fill the gap? And in Europe an increasing number of campervans, also known as Recreational Vehicles (RVs) or motorhomes, have fuel cell APUs installed as standard or offered as optional extras. Many analysts and the press disregard this market but the campervan market is highly lucrative.

In the European Union, the European Commission has taken a big step by stating that hydrogen powered cars will be cleared for sale in a uniform way throughout the EU. In other words, the Commission will work on common codes and standards for hydrogen ICE and fuel cell cars in the EU.

This 'type approval' system will allow vehicles to be sold across different Member States in the same way as conventional vehicles. It should be noted that the potential market in Europe for hydrogen ICE and FCVs is actually bigger than that in North America.

Case study: Horizon Fuel Cells

A success story in the portable sector

Horizon Fuel Cell Technologies is a portable PEM developer, registered in Singapore, but whose main operations are based in Shanghai. Horizon came to the attention of the wider public in 2006 with the release of a toy-scale, six-inch long fuel cell car, called the *H-racer* (pictured on page 10, and cover image), which circumvents the need for an external refuelling infrastructure by coming complete with a miniature hydrogen production plant powered by a solar cell. The total package retails at around £56 (US\$112).

Boosted by a global viral marketing campaign, the Horizon-branded *H-racer* proved to be a commercial hit – arguably the first of the fuel

cell industry. It has sold tens of thousands of units internationally and won a number of awards, notably being named as one of Time Magazine's Inventions of the Year 2006.

Part of the reason for the *H-Racer's* success is the broad spectrum of consumers to which it appeals – from typical tech-toy customers to automotive and technology devotees, educationalists, environmentalists, business and Government leaders.

In April 2007, Horizon signed an agreement with Wah Shing Toys, the world's third largest toy manufacturer, to scale up manufacturing of future fuel cell powered toys such as the *H-racer* and broaden the sales base still further through a number of product upgrades (so-called 'Harry Potter' marketing, where the product matures with the consumer).

The success of the *H-racer* has taken both the fuel cell and toy industries by surprise, partly because they found Horizon an unknown quantity. To many in the fuel cell industry, Horizon was thought of primarily as a toy company, whilst in the toy industry it was considered to be a technical fuel cell developer. The success of the *H-racer* as a manufactured and certified consumer product (and the revenue it has generated) have allowed the company to expand its activities into more traditional fuel cell industry pursuits, from portable power products to power systems for small unmanned aerial vehicles (UAVs).

And the success of the *H-racer* has had far wider implications for the industry as a whole. Horizon's recent foray into the consumer world has led to more fuel cell products entering established, traditional industries, retail networks and distribution channels.

Summary

In summary, Fuel Cell Today's experts believe that we witnessed the start of the full commercialisation of fuel cells in 2007. A number of applications are now cost competitive, a growing number of products hold international certification, are available on the open market and are doing the job that they were designed to do.

Whilst some applications, such as light duty vehicles and aerospace, still face significant technical and commercial challenges, others, such as APUs; UPS systems; CHP units; power plants; toys; submarines; and materials handling vehicles are proving that fuel cells are no longer just about hype but are now, increasingly, a market reality.

About the report

The Fuel Cell Today Industry Review is politically, geographically and technologically neutral and supports the development of the industry as a whole. Copies of the Review, which include data on the period 2005–2009 broken down by application, region and electrolyte and a section on fuel cell finance, company profiles and three special feature reports can be purchased from Fuel Cell Today at <http://www.fuelcelltoday.com/events/industry-review> for a price of £500 (US\$1000).