

analyst view

Fuel Cell Vehicles: Not a Dream but a Plan

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Photo: BOC

The [European Hydrogen Road Tour 2012](#) has had a clear message: ‘hydrogen vehicles are already here and ready for mass production from 2014/15 onwards’. Seven vehicles – from Daimler, Honda, Hyundai and Toyota – participated in a number of events during the tour, with the most buzz generated around the Paris Motor Show. The tour culminates in Copenhagen today amid a flurry of announcements from the automakers about their fuel cell plans.

The reaction of some parts of the media to these is perhaps best encapsulated by an article published in the MIT Technology Review on Monday. Titled [‘Hydrogen Cars: A Dream That Won’t Die’](#) it discusses the renewed interest of automakers in hydrogen fuel cell cars “as the auto industry wrestles with the limitations of battery-powered electric vehicles”.

Automakers are rather less whimsical than that. Interest has certainly been revived – but it is the interest of the press and the consumers, not that of the automakers, that needed reviving. For the most part, automakers’ investment in fuel cell technology over the last few years has been relatively steadfast. To call this a ‘dream’ is to mischaracterise long-term strategic planning.

It is true, however, that plans sometimes have to change. While battery electric vehicles have been effective in demonstrating the reality of the electric car, they are not yet living up to expectations. [Talking to Reuters](#) ahead of the Paris Motor Show, Hyundai’s fuel cell group director Tae Won Lim said, “Battery electric car makers entered the market too early without resolving problems such as range anxiety and costs. It was a hasty approach”. Few can really dispute that. Nissan executive Andy Palmer [told reporters](#) last week that sales of the all-electric Nissan Leaf continue to disappoint: “The uptake isn’t as strong as we first hoped”. GM saw record sales of its Chevrolet Volt in August, shifting 2,800 – but [it appears](#) this is off the back of steep discounts, cutting the cost of the car by almost 25%. Sales still fall well short of expectations: GM [hoped to sell](#) 45,000 this year.

Toyota, meanwhile, has dramatically scaled back its plans for battery vehicles. The eQ, Toyota’s all-electric version of the iQ initially slated for mass production, will now see a very limited production run of about 100. “The current capabilities of electric vehicles do not meet society’s needs, whether it may be the distance the cars can run, or the costs, or how it takes a long time to charge,” Takeshi Uchiyamada, Toyota’s Vice Chairman [commented](#) on the 24th of September.

Enter the fuel cell electric vehicle (FCEV). In [an interview](#) five days later, Gerald Killmann of Toyota Europe said that the company is planning to begin series production of a fuel cell Toyota Prius in 2014, and from 2015 to market the car in Japan, the US and Europe. Of course challenges remain; Toyota is relying on policy support to ensure these early markets have sufficient hydrogen refuelling

infrastructure, while the company itself needs to bring the cost of the car down substantially, cutting 30 to 40% off the current 'price' of just under €100,000 – but this is clearly considered achievable. As for pure electric vehicles, Toyota, Killmann said, will revisit battery cars “when better batteries become available”.

In fact, in the space of the week leading up to the Paris Motor Show, Toyota, Hyundai and Honda all reconfirmed their long-stated intentions to commercially launch FCEV in the very near future. Toyota [announced](#) an improved stack, to be used in the sedan-type FCV scheduled for launch around 2015 (exactly how this fits in with plans for the fuel cell Prius must still be clarified – Toyota has also been [seen road testing](#) its fuel cell technology using its existing Lexus platform).

At a press conference Honda's President and CEO, Takano Ito, [reiterated the company's plans](#) to release its next-generation FCEV “sequentially in Japan, the US and Europe starting in 2015”. He also said the company regards FCEV as “the ultimate environmentally-responsible vehicle”. And Hyundai [announced](#) it will begin small series production of its fuel cell ix35 in December of this year, building up to 1,000 ix35 FCEV on the road by 2015 and mass production beyond that. Hyundai's fuel cell programme was launched in 1998, targeting series production of fuel cell vehicles by the end of 2012 and consumer sales by 2015, and it has kept a remarkably steady eye on this target.

Daimler has been no less committed to fuel cell technology, and is something of a veteran of taking it on the road: in the first half of 2011 the [Mercedes F-Cell World Drive](#) took three Mercedes-Benz B-Class F-CELL fuel cell vehicles around the globe. It was a convincing demonstration of the readiness of the technology – and the need for hydrogen refuelling infrastructure. Daimler has also been targeting a 2014/15 commercial release date and appears to be on-track. During the course of the 2012 European Hydrogen Road Tour, a Daimler representative again confirmed in a panel discussion that the company plans to commercially launch its fuel cell vehicle around 2015, although this was not accompanied by an official statement.

Daimler has since early 2010 had a strategic partnership with Renault–Nissan, and [rumours emerged](#) in the German press last week that this collaboration may now be extended to fuel cell technology. If so, it wouldn't be a first for Daimler: the company has been working closely with Ford on fuel cell development in the form of the Automotive Fuel Cell Cooperation Corp. (AFCC). Ford's FCEV commercialisation plans are longer term, but Nissan has been more prominent of late, [announcing](#) a next-generation fuel cell stack last year and [showing](#) its TeRRA fuel cell concept car at the Paris Motor Show this year.

Battery electric vehicles in their current incarnation are less than practical for most drivers on three counts: range, 'refuelling' time, and cost. Fuel cell technology will solve the first two of those problems. As for the third, costs of both batteries and fuel cells will come down and [are expected](#) to converge with the costs of other drivetrain technologies around 2025. Why pursue electromobility at all? Increased efficiency of the internal combustion engine, biofuels and hybrids will take us a considerable way towards decarbonising transportation, but a completely new form of propulsion will be needed to take us all the way. Automakers invest in fuel cell technology to ensure they stay in the game in coming decades.

(For an overview of automotive fuel cell technology development and the various automakers' plans for commercialisation, have a look at our recent report '[Fuel Cell Electric Vehicles: The Road Ahead](#)'.)

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