

Despite Hype, Hydrogen Moves Ahead
Hydrogen and Fuel Cell Industry Finds its Footing and Pushes Ahead
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Seventeen fuel cell vehicles were available for test-drives at this year's national hydrogen conference. They're still, however, a ways away from your own garage.

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Long Beach, California [RenewableEnergyAccess.com] This week the hydrogen energy industry convened in Los Angeles for its annual trade show and conference. A wide range of companies were on hand, from small manufacturers offering pressurized tanks all the way up to the world's leading automakers showing their latest hydrogen fuel cell vehicles. There's an unquestionable buzz and optimism surrounding this industry, yet a different one, arguably less hyped-up, than was in play a few years ago when President George W. Bush announced his support for hydrogen in his 2003 state of the Union Address. No, the veritable explosion of interest from companies, investors and entrepreneurs has mellowed out a bit since then. And it just might be a good thing.

"Sure, the hype has decreased but now we're focused on making the rubber meet the road. Now you see companies meeting targets towards commercialization. There's a lot of progress being made out here. The reality is starting to meet the level of the hype."

-- Patrick Serfass, Technical & Program Development Manager for the National Hydrogen Association

"There's a reality check going on, and not just this year but last year as well," said Steve Szymanski, Manager of Business Development for Proton Energy Systems, which specializes in hydrogen fuel cell backup systems for premium power markets like the telecom industry.

"There's a bit of a shakeout. The interest is here, the enthusiasm is here, but a lot of people don't have the luxury of a current, commercial product."

Szymanski's comment gets to the heart of one of the major challenges to the hydrogen energy industry. Its greatest strength and business opportunities lie predominantly in the longer-term play of a hydrogen economy, when hydrogen could become the dominant energy carrier -- particularly in the transportation sector.

That situation doesn't bother Jaun Avila, spokesman for Honda Motors, one bit.

"This is somewhat like the dotcom industry," Avila said. "Those who have a real product are still in the game and we are by no means done with the game."

Avila explained that while Honda is clearly a vast and profitable car company, it's a technology company at heart and will strive to explore and advance new technologies like this. The company is already on its third generation fuel cell car and he assures the company will be introducing some new breakthroughs in the next version.

For now, Honda's focus with respect to clean transportation is with its hybrid electric cars but Avila says they're looking ahead in stages including some of the nearer-term offerings such as natural gas powered vehicles and hybrid natural gas vehicles. These, Avila said, are likely to reach commercialization sooner than hydrogen fuel cell vehicles.

The very same hype and excitement that bubbled up three years ago following the President's announcement of his hydrogen energy initiatives was somewhat of a two-edged sword. It buoyed the industry like it had never seen but it also raised a lot of expectations for a technology that still has to battle the reality of being a long-term play.

"I don't think it was healthy to have people so excited," said Giorgio Zoia, Hydrogen Business Development Manager for BP. "It's not always a good thing to have everyone so excited or else people think it won't work."

Some of this hype, that reached its zenith in 2003, has led to heightened expectations in the general public that just can't be met. The typical consumer doesn't have the same patience for

a hydrogen economy as the industry folks who still see its vast attainable potential, even if it's a longer-term situation.

At the event's ride and drive, there were some sleek and rather peppy fuel cell cars from most of the major automobile manufacturers, but they're all the products of multi-million dollar research programs and hardly an available, commercial product a consumer could go out and buy. And if they could, there would still be precious few places to fill them up with hydrogen.

Experts at the event acknowledged that the market is deciding right now on hybrid electric vehicles but they're optimistic that the day of the mass-marketable hydrogen fuel cell car is down the road, and maybe not that far.

"Sure, the hype has decreased but now we're focused on making the rubber meet the road," said Patrick Serfass, Technical & Program Development Manager for the National Hydrogen Association, the industry group that put on the conference. "Now you see companies meeting targets towards commercialization. "There's a lot of progress being made out here. The reality is starting to meet the level of the hype."

Serfass, and other experts at the show, said the hydrogen industry is moving forward in three major directions, each with different timetables for commercialization. Small portable power applications are the first avenue and Serfass says they're already commercial with numerous products available and selling. Next will be home or business power units, such as backup systems. Those are commercial as well, but still cater to the premium power markets. Transportation will be the last.

"I think a lot of companies are struggling to become profitable," Serfass said. "For some companies, it's great that they'll have a ready product in three to five years, but they want to be around in three to five years. They've got to make sure they're smart about how they develop products in the right sequence to meet market demand."

It may seem like the auto manufacturers, with all their vast cash and resources, are best poised to weather the gradual market ramp-up, but Serfass says it's a real challenge for them to convince their investors to hang in there as the market slowly develops.

"How do you, as a large public company, convince your shareholders when the market may not be ready for years down the road," Serfass said. "But it is worth it, that's where they need to come together. It's worth the investment now."

Another theme that was evident at the conference was that hydrogen encompasses a vast, malleable range of technologies, applications and energy pathways. In two extreme cases, hydrogen can be cracked out of water through the energy from a solar panel or wind turbine, or harvested on a massive commercial scale from the waste products of a gasoline refinery, as BP is planning to do at one of its Los Angeles refineries.

Both examples, of course, highlight two very different pathways to the production and use of hydrogen. The solar approach is pure and clean, it could be said, yet the reality is that it's not very efficient or affordable if you need a lot of hydrogen. The BP process, on the other hand, is "less clean" by conventional reasoning, but a more cost-effective approach, and one that uses an existing waste product. This new facility BP is planning would generate enough hydrogen to run a 500 MW power plant.

Where hydrogen comes from has been perhaps the most contentious and hotly debated topic among those who follow the industry. Renewable energy advocates have grumbled, with some legitimacy, over claims of clean, emissions-free hydrogen, when sourcing that hydrogen is done through a process that does create emissions and pollution. Almost all hydrogen today is produced from a process of steam reforming natural gas.

In one of the more contentious examples of hydrogen's variability in terms of its source, there's considerable debate and planning at the U.S. Department of Energy about using a new breed of nuclear reactors to create hydrogen in the future. Whether for hydrogen or not, nuclear technologies spark great schisms between energy experts, politicians, environmentalists and others.

All the car companies' fuel cell teams, I was later assured, actually work quite closely, cooperatively and congenially together through the California Fuel Cell Partnership (CaFCP), where teams share workspace and work bays within the same facility.

The CaFCP is a collaboration of 32 member companies that are working together to promote the commercialization of hydrogen fuel cell vehicles. All the major automobile manufacturers with current research and development of fuel cell vehicles are involved in this collaboration, which is largely responsible for the 22nd hydrogen fueling station opening up just in time for the conference. Like other advanced energy technologies such as solar and wind, California, through the CaFCP will be a major test-bed technology incubator for the hydrogen economy. The Governor himself has been a very strong proponent. In fact, he meant to be there as a headlining speaker but instead had to settle for a live satellite teleconference as he was tied up wrangling with state lawmakers over his major infrastructure proposals.

One Californian who can take a lot of credit for advancing the hydrogen industry and fuel cell vehicles in California and beyond is Alan Lloyd, Secretary of the State's Environmental Protection Agency Secretary, and a speaker at the event. He had his own unique view of the some of the current debate over hydrogen, which he steadfastly believes will play a central role in the country's energy future.

"A lot of people tend to knock hydrogen these days," Lloyd said. "And it's a clear sign it's progressing. It's typical for people to knock the alternatives to oil and gas. I look at this as a sign of some success. It's very important to keep our eyes on where we need to go. There's a jump right now to the technology of the hour. If you look at hydrogen we need not be swayed

by these short-term solutions but at the same time we do not want to make hydrogen out as the fuel of the future, otherwise, it always will be that way."