



Jim Spoonhower

Electric Cars Next Year? NAH

Can you imagine how blacksmiths reacted to the “horseless carriage” at the turn of the century? I’m sure some saw the new fangled things as just a passing fancy, and thought they would never replace the horse for transportation—so why worry. Some probably saw the horseless carriage as the wave of the future and began looking for ways to adapt their business. And there were obviously those who decided the trend to horseless carriages was real, but there would always be a need for blacksmiths and kept doing business as usual.

Here we are at a similar point in time a hundred years later. For years we have heard predictions that the internal combustion engine (ICE) was doomed and would be replaced. The recent past has seen great strides in improving the ICE, making it more efficient, less polluting and more powerful. Most recently we’ve seen various types of ICEs combined with electric motors to form hybrid vehicles.



Now like the blacksmiths of a hundred years ago we are faced with a decision. If the trend toward electric vehicles is real, how will we respond? The evidence is mounting that ready or not, electric cars are poised to take the automotive market by storm. CAFÉ, Stimulus Bill tax credits, rising fuel costs and climate change fears are all converging to push car companies and consumers alike toward electric cars. Expect to see at least 20 new electric vehicles introduced during the next 4 years alone.



Here are a few that have already been unveiled: Tesla Roadster, BYD Electric E6, Miles XS500, Mitsubishi i MiEV, Subaru R1E, REVA (G-Wiz), Zenn, Tango, Aptera 2e, GM Volt, Fisker Karma, Dodge EV, Chrysler EV, Jeep EV, Toyota RAV4 EV, THINK City, Lightning GT, Kewet Buddy, Nissan Leaf, Smart fortwo EV, ZAP Xebra, Mini e, Pininfarina Bluecar and Mercedes BlueZERO.



Some arguably are concepts, but they show where the car companies and automotive designers are headed, and from here it looks like most will be in production by next year--2010.

The world electric vehicle market generated \$31.1 billion in 2005 and according to IDTechEx by 2015 will be 7.3 times bigger—in only 10 years.

The US government goal of 1 million plug-in electric vehicles on US roads by 2015.

Germany wants 1 million EVs on roads by 2020.

Think the government's goal is impossible? Consider that there have been more than a million hybrid electric vehicles sold in the US in the last 4 years (and notice that sales haven't dropped off like other new vehicle sales have).

Hybrid Electric Vehicle Sales by Year

<i>Year</i>	<i>Units</i>
2005	209,711
2006	246,642
2007	324,318
2008	315,688
2009	268,652 (thru Nov)

Source: Electric Drive Transportation Association

A few more facts:

- Stimulated by incentives, manufacturers are racing to turn plug-in electric vehicles into reality and be the first to satisfy eco-drivers and fuel price sensitive mainstream drivers.
- The top ten contenders include the Norwegian Th!nk, Toyota Prius PHEV, BMW's MINI E, Chevrolet Volt, Fisker Karma, GM's Opel Ampera, Mitsubishi iMiEV, Nissan Leaf, Tesla Roadster, Pininfarina Bluecar and the ZENN.
- Some are already available in the U.S.; most have set a 2011 deadline.
- Infrastructure start-up Better Place plans to build plug-in stations, buy electric batteries and offer mileage plans to car owners, like minutes for cell-phone users.
- 2.5% of new cars sales sold in the US in 2008 were hybrids

Even old guard big names are getting on board the electric car bandwagon. As electric cars continue to gain momentum, Pininfarina and Bolloré's electric Bluecar is finally being released in Europe. Able to go 100 kilometers for about the cost of \$1, the 50 kW (68hp) motor can take passengers up to 250 km (155 miles) on a single charge. Planned production rates are for 10,000 cars in 2010, with plans to increase to 20,000 in 2011 and 30,000 in 2012.



During the 2009 Center for Automotive Research conference in Traverse City, Akio Toyoda, President of Toyota said:

“Twelve years ago, we developed the first 21st century car...the hybrid Prius. So far, we have sold 2 million hybrid vehicles around the world ...and more are coming.

Late this year, we will launch a plug-in hybrid for fleet customers...followed by a pure electric vehicle in 2012.

We're also making great progress on hydrogen fuel cell vehicles and hope to make this technology available and affordable for customers within the next half dozen years.

As to alternative fuels, we have extensive research projects under way...in house...and with outside partners...and will not rest until we find a suitable substitute for oil.”

What Does This Mean To Me?

So how will this affect the automotive specialty equipment industry? Obviously, whatever the effect, the impact will not be felt for several years. But, in today's business environment we no longer have the luxury of ignoring challenges that are not immediate. Changing course takes time and resources so looking out several years and planning has become necessary for business survival. Like the blacksmiths at the turn of the century, existing firms in the industry will have a number of options which include but are not limited to:

- Continue to produce, sell and install products for gasoline/diesel powered vehicles. After all there are more than 300 million of them on US roads today.
- Develop accessories and performance parts for electric vehicles. Diversification is always a good way to grow and protect a business.
- Develop conversion kits and products for transforming gasoline/diesel powered vehicles to electric.
- Find a completely different industry to produce product for.

Much depends on the current strength of the individual company, the products it is involved with and the niche market within the industry that the firm targets. Some products are just not needed on electric vehicles, while others will see continued demand but may need some redesigning.

The same is true of the niche markets that make up the industry. Some will be changed drastically while others will hardly feel the change. For instance, the racing market, restoration market and hot rod market will probably be among the last to see the impact of electric vehicles.

I can hear the racing market guys right now; they would argue that racing would be the last to go electric. Not too long ago, there was an item published on the Internet by *TreeHugger.com* that had the headline “5 Eco-Cars Faster Than The Porsche 911”. In the article they compared the Porsche 911 that goes 0 to 60 in 4.7 seconds to the:

1. TZero by AC Propulsion – 0 to 60 in 3.6 seconds
2. Tesla Motors Roadster – 0 to 60 in 2.78 seconds
3. Ultimate Aero EV by Shelby SuperCars – 0 to 60 in 2.78 seconds
4. Tango Electric Car – 0 to 60 in 4 seconds
5. Wrightspeed X1 – 0 to 60 in 3.07 seconds

That kind of acceleration is much of what automotive racing enthusiasts are passionate about. Never mind that there is dead silence instead of the addictive roar. If you weren't aware, there is now a **National Electric Drag Racing Association (NEDRA)**. Can you visualize 8 second dragsters powered solely by electric motors? How about 7 second motorcycles? Check out NEDRA's website www.nedra.com for more info.

There is even an electric car being prepared to compete in Le Mans. The Green GT is projected to hit a top speed of 170 mph. It comes equipped with 2 liquid-cooled 100-kilowatt motors that are projected to generate 1,475 pound-feet of torque to the ground at up to 100 mph.

Examples Of How Some Companies Are Reacting

One company, *AC Propulsion*, is converting gasoline powered production vehicles to electric powered.

Shown in the pictures here is the eBox. AC Propulsion converts gasoline powered Scions to pure electric vehicles.

The power plant is Lithium Ion batteries combined with AC's tzero™ technology. It goes 120 miles on a charge, and can be

plugged in anywhere. A fast charge takes 2 hours, while a normal charge is completed in 5 hours. Top speed for the eBox is 95 mph.



The system works so well that AC Propulsion has received a contract from BMW to provide the power plants for the Mini E.

Electric Motors Corp. (NASDAQ:EMCO) and Gulf Stream Coach are teaming to build electric pickup trucks in Indiana. The aim is to produce 50,000 battery-powered pickups by 2013 by retrofitting light-duty trucks with a plug-in serial hybrid electric powertrain. Gulf Stream chief information officer Mark Smith told pickuptrucks.com



the companies will acquire pickups such as the Chevrolet Silverado and the Ford F-150 and then "pull the engine and install the hybrid electric engine."

The companies plan to invest \$80 million in what they say will be the first facility to mass-produce light-duty battery-powered pickups. The venture is getting [an assist](#) from the state of Indiana, which is providing \$4.6 million in tax credits and up to \$200,000 in training grants. EMC is also seeking funding through the U.S. Department of Energy.

Using the same "miles-per-charge," or miles-per-gallon system that GM used to show that its Chevy Volt could achieve 230 miles before its electric hybrid Volt would need to be recharged, Raser Technologies Inc., Provo, Utah, conducted a test drive that saw a Hummer H3E achieve more than 50 miles of all-electric range.

"Battery range of this innovative vehicle was more than sufficient to exceed our performance target of 40 miles in all-electric mode," said Jim Spellman, Raser's vice president of business development. "In fact, the H3E drove over 50 miles using only approximately 60% of the battery pack.

"This initial test indicates that the vehicle should easily achieve over 100 miles per gallon in typical local daily driving. The positive results from this test indicate that we can downsize our battery pack, reducing cost and weight of the vehicle, and still achieve the 40-mile all-electric range needed for optimized typical driving."

The course used for the test included a combination of city and highway driving with an average speed of 45 mph, with speeds up to 60 mph. The 40-mile electric-only range test is significant because a majority of Americans drive fewer than 40 miles a day. When driving beyond 40 miles, the vehicle's range extender would automatically generate the electricity needed to drive up to 400 miles. The range extender consists of a small gas-powered engine that kicks in only to re-charge the batteries.

"It's important to note that Raser's electric Hummer H3E can achieve similar results to the Chevy Volt," Spellman noted. "The main difference is that our electric powertrain can be used in larger vehicles, such as SUVs and trucks. In fact, if we were to employ the method we believe was used recently by GM to estimate city fuel economy for the Volt, the electric Hummer H3E could achieve more than 190 mpg in city driving using about 70% of the battery pack."

So When?

So when will electric vehicles become a major force in the US? The short answer is 5 to 10 years. The real wild card in this answer is the cost of gasoline. If gasoline stays relatively in expensive we are looking at 2020, but if as it has in the past, gasoline prices resume their escalation, it could be as soon as 2015. Here's a number to think about: electric vehicles would enter the mainstream if about 10 percent of all cars on the roads were battery-electric or plug-in vehicles, running solely on electric power. That would mean sales of between six and eight million electric vehicles a year by 2020, which would change whole sectors of the US economy dramatically.

Conclusion

Think back to the '30s and the early days of our industry. It was all about making cars go faster—taking production vehicles and making them better. Then it was all about flat-head engines, which over time evolved to V8s. Here we go again!! Now the cycle is about to repeat itself, this time with an electric engine at the core. It will be exciting seeing the automotive performance parts and accessories industry go to work on electric vehicles, but I must admit I will personally miss the sound of a well tuned internal combustion engine through a throaty exhaust.

The US fleet will not become electric drive overnight. It will take time, but the momentum is building and the tipping point is fast approaching, so automotive specialty product industry firms need to be thinking about how they will respond. How long will it take you to transform your business? Do you have the capital, the people and the product ideas? Will it take you 5 years to adapt? Only you can answer those questions.