

Article for EV World

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The Triumph of Two Wheels + Battery

Here is an interesting thought: In 2016 we can expect that there will be more electric bicycles in use, world wide, than cars in use in the USA. That is just electric bikes, not including the many electric motor scooters / motor cycles that are coming soon.

It is clear to any thoughtful person that the world is close to the end of the time when personal transportation can rely on fossil fuels. Never mind the constraints in supply, rising price, environmental and political issues – it is no longer necessary. Battery electric works. More than 150 million humans now use battery electric vehicles on a daily basis.

And with oil prices headed north of \$100 / Bbl, and a number of successful battery electric and hybrid electric cars on the market, it seems that the EV business is looking at an even better future.

Be careful with that term “EV”. I thought it meant Electric Vehicle. But I was informed not long ago that, to Americans, it means an electric car.

Electric cars are still a tiny, and struggling business. Though rapidly becoming successful, electric cars are exactly the tiny, short ranged, and boring in concept, vehicles that have been presented for decades. While I think they are overdue, they are not very creative. And they do not own any transportation niche (yet).

And they have a cultural problem. They represent a reduction in utility for the user of a fossil fuel vehicle. While there may not be a real problem in accepting the reduced utility – it is not human nature to go in that direction. So in North America, (which is really the only totally-car culture) EVs will struggle for a while yet.

For very large parts of the human race, the gas-powered car is not, and never has been their primary transportation. For most humans, to walk, to ride a bike, take the metro, or ride an electric bicycle is their daily travel method. Owning a gas-powered car is regarded as an expensive and not very practical luxury by most humans.

These folks are actually making decisions based on utility, not affordability. A car, especially now, is simply not that expensive. But for most humans the most useful vehicles are two wheelers.

Consider that more than half of the human race now lives in cities. And the largest cities in the world are really, really big – and mostly in Asia. Those megacities are usually in flat, coastal terrain. And in many cases there are 40-50,000 people living in 20 plus story towers – per square kilometer!

One of the features of such a living environment is no room for parking, no room for roadways, and no need to go very far – a typical trip is measured in blocks or to the nearest metro station.

The perfect vehicle for such environments is the bicycle. No noise, no emissions, easy to park, no need for multi lane roadways.

It is important to realize that in China, Japan, Vietnam, India, Most of Africa, most of SE Asia, and much of South and Central America (That adds up to a LOT of people, far and away the majority of the humans on earth), a bicycle is regarded as primary transportation.

Even in Western Europe – home of many famous automakers – more than 33 million people claim bicycles as their primary mode of transportation. And yes, even in the USA, there are millions of people who depend on bicycles. (Look behind your local restaurants, hotels, and markets for the ever-present cluster of chained up bicycles used by the staff to get to work.)

Every year, humans buy something in the vicinity of 130 million bicycles. Far more bicycles than cars are in use.

But the world and most humans are getting richer. And one of the first things a human does when the pocket is full is buy new wheels. We like to travel, we want to be comfortable, and in many places our wheels are part of our image to the world.

For billions of humans, the upgrade from a bicycle is a motorcycle.

Motorcycles sell well in most of the places that have a bicycle culture, and in many more places that do not. While data varies, it seems that humans buy about 80 million gasoline powered two wheelers every year, worldwide.

Motorcycles have some disagreeable attributes. They are noisy, and the fuel is expensive. In some places, like India, Italy, and Taiwan, there have been experiments with programs to replace gas motorcycles with electric or alternative fuel bikes. In China, they are often banned outright in many cities. And the rising cost of fuel is hard on the owners, or in the case of nations where the government subsidizes the price of gasoline to keep the motorcyclists on the road, it is hard on the government budget.

However, the real growth in powered two wheelers is the electric bicycle. And it will soon be the electric motor scooter / light motorcycle.

China Bicycle Association (which is really a semi government body that governs the two wheeler business of China, says that 2010 saw 29 million electric bikes sold in China. Constraints of battery supplies in 2011 may have kept major growth from happening – not a lack of customers. (It is widely commented in China that while a car is wonderful, there is no place to park it, traffic jams are always a problem. Thus even for car owners in China, an electric bike is better for nearly every daily function.)

Major bicycle brands and OEMs, world wide are placing more and more R&D and design effort on electric. The near legendary Fairly

Bike Manufacturing of Taipei is now a well established ODM as well as OEM builder of electric bikes for more than 17 years.

In Europe, the Sparta Bicycle Brand of the Accell Group recently celebrated shipping their 400,000th electric bike. There are more than 100 models of electric bicycles sold in the EU, and the total sales are thought to be more than 1.4 million in 2011.

The largest builder of two wheelers in the world, Hero Group of India, just bought a worldwide electric bike brand, and announced intentions to distribute in North America, India, and Europe. Since hundreds of thousands (soon to be in the millions) of ebikes and e motor scooters are selling in India now, that is not surprising.

Japan buys between 300 and 400, 000 electric bikes each year – and please remember that Japan is actually a pretty small place, one that is famous for....cars and motorcycles! Yamaha announced in 2009 that their best selling single model, alongside all the many successful motorcycles they sell, is the PAS electric bicycle!

KYMCO, the 5th largest motorcycle maker in the world, and the nemesis of established brands worldwide (KYMCO motor scooters simply work very well, inexpensively, for many years, and are less expensive to buy.) has just established an electric bicycle brand.

The big Domestic Chinese builders of ebikes and components are now reaching out to build their brands in the west. Some of the Chinese companies enjoy millions of units in annual sales. Companies like 8Fun motor company of Suzhou, Lishen Battery Company of Tianjin, and the famous Flying Pigeon Bicycle Company of Tianjin are significant and powerful, international players.

Add to this the explorations of the ebike industry that many car and car parts makers:

Ford debuted an ebike at the Frankfurt Motor Show in 2011, Honda is not only showing the Moto Compo, but has an electric motor scooter in test in Barcelona. Peugeot, BMW, SMART, VW, Hyundai, Piaggio,

and GM / Segway, are all showing concepts or approaching production.

The big parts makers, Mando of Korea, Bosch, Matra of France, and Magna of Canada are already in the electric bike / scooter or component business. As are LG Chem, LG Innotek, Panasonic, Sony, and nearly every other battery maker.

The significance of these actions is that it shows that many capable organizations and executives are seeing and reacting to the importance of the electric powered two wheeler.

It is my belief that not only will battery electric motor scooters become a favorite with consumers on their own merits, but also that many governments will ban fossil fuel scooters once acceptable electric ones are available.

Given the clear trends and forces described above, my prediction is that the electric bicycle business will rise to a world wide volume of about 65 million units – or one in two normal bicycle will be replaced with an electric version. (Which is the case today in China. And appears to be the trend in Holland, Germany, and Switzerland.)

And I predict that the electric motor scooter, even more attractive to much of the world, will replace all gasoline light motorcycles and motor scooters – a volume of about 65 million or more.

Thus the number of 130 million units per year, by the year 2025 is predicted.

However, unlike the staid electric car category, there is great creativity being applied to the electric two-wheeler.

Electric two wheelers with weather protection, gyro stabilized fully enclosed two wheelers, mono wheelers, side by side (Segway / GM) transporters, sleek aero two and three wheelers, retro motorcycle / bicycle looks that are electric powered, and more are all being explored, or manufactured. And “connected” electric two wheelers are still another dimension yet to be explored.

The billions of urban dwellers who will need and use battery electric personal mobility will inevitably shape the products into machines that I may not be able to imagine today.

So my predictions may be wrong – since I am writing this in the age of the “electric bicycle” which is strikingly similar to an old term for an auto “horseless carriage”.

But I do believe they will have a battery and a couple of wheels.

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