



Electric Commercial Vehicles - A Few More Thoughts

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A few days ago, I posted [an article](#) about electric commercial vehicles by Alan Searchwell from Kingston, Jamaica (known as *islandboy*). After I posted the article, I discovered that the version I posted wasn't the final version, and didn't include some important discussion related to commercial electric vehicles. This post includes the additional thoughts that were inadvertently omitted.



Electric Vehicle Pros and Cons

Battery powered electric vehicles have restricted range. Overcoming the range restriction carries significant penalties in terms of battery pack size, weight and/or cost. For commercial vehicles, the range limits are not an insurmountable problem as a large percentage of delivery vehicles operate on fixed routes and schedules so their use and charging cycles can be planned with more certainty than an individual's personal transportation. In addition, larger commercial vehicles tend to have more space that can accommodate larger battery packs without impacting the cargo or passenger areas. Smaller delivery vehicles tend to do shorter range trips so smaller battery pack sizes offering limited range are not a big issue. In any case, routes can be planned so that vehicles return to base long before they run out of juice and the fleet operation bases can be equipped with high power, fast charging stations or battery swap stations if fast turnaround times are more important than the cost of spare battery packs. In some cases the loading bays at destinations could be equipped with fast charging stations so that batteries could be topped up for the onward or return trip while the vehicle is being loaded or unloaded. School buses, airport shuttles and other passenger moving operations that frequently move people on routes that are

less than 50 miles round trip also present opportunities.

Although Electric drive systems attract a higher initial capital cost of at least 30% more than a similar conventional vehicle, they should be able to gain some serious traction in the commercial vehicle market since electric drive in commercial vehicles results in significantly lower operating costs in the form of reduced fueling costs and lower maintenance costs. The only parts that can really wear out in an electric motor are the two motor shaft bearings. One only need look at electric motors used in industry and commerce for an indication of how much maintenance will be required there. For battery electric vehicles, the only oil changes that are required relate to transmissions and final drives. These oil changes are less frequent than the oil changes required by an ICE.

If regenerative braking is used, the vehicles are able to go more than twice as far between brake lining replacements. In series hybrids, clutches and complex transmissions are not required, so drive train maintenance can be greatly reduced while the ICE used to generate power is usually set up to operate under optimum conditions, extending service intervals and the useful life of the engine.

What Should We Be Doing Next?

The fact is that while electric drive systems are being produced by the hundreds, internal combustion engines and their related transmissions are being produced by the hundreds of thousands. Component costs will not come down as long as this relatively minuscule number of electrically driven vehicles are being manufactured and sold. It is the classic cache 22. For prices to come down volumes must go up--but for volumes to go up, prices must come down. In this situation, something must happen tip the scales and make the new technology irresistible, like the fuel price shocks of 2008.

In this post shock recessionary climate, fuel prices have plummeted. The new, more efficient, but initially more expensive technology has lost its luster, resulting in buyers returning to the safe haven of buying what they've always bought. It is still quite remarkable that many of the electrically driven commercial vehicles have sold in the numbers that they have. The high sales figures lend credence to the thinking that the long term savings from their use are quite significant. According to Electrorides' [numbers](#), it would appear that electric commercial vehicles are not hard to justify in terms of the savings compared to the additional cost of going electric.

If we wait for the next fuel price spike to stimulate demand for electric vehicles, several of the key players may fail and disappear in the meantime. Tax incentives, purchase rebates, increased fuel taxes are all tools governments can use to stimulate demand during hard times. If, as many readers of The Oil Drum believe, we are perilously close to if not past the peak of world oil production, we are going to need alternatives to the almost exclusively fossil fuel powered transportation infrastructure that exists today. Hopefully the stimulus packages being devised around the world will help to provide an opportunity to this nascent industry, so that it will survive and provide a basis for a new generation of trucks and buses that will provide both a reliable and cost effective option for the transportation needs of industry and commerce as we enter a post peak world.



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