

Triton Fun Company

Science Newsletter November 2007

# Science Newsletter

## November 2007

### The Coming Age of Electric Vehicles

T. Dockweiler



#### Special points of interest:

Electric Cars !

Triton Fun stuff

Superfluous questions

A world with transportation provided by electricity-independent vehicles was the dream and proposed future of two visionaries: one, a father of science fiction, Jules Verne, and the other, the prolific and prophetic inventor Nikola Tesla. Both would be quite pleased with recent developments in this area that have great potential to benefit the average person.

Nikola Tesla, a boyhood hero of mine, was most visionary in many futuristic concepts, including electro-magnetic engineering. He is not well known by the general public in the United States, except amongst engineers, for his significant contributions to humankind. He is responsible for many new ideas: the advent of alternating current power generation and long distance transmission of electricity, the father of radio transmission [not Marconi], and plasma-fluorescent lighting. He was the person that Thomas Edison went to for help in solving electrical problems. The oil and petroleum based automotive industries tried to discredit him because some of his technologies were considered a direct threat to them. He wanted free electricity for everyone on the planet.

Petroleum combustion engines contribute to air pollution which chokes world cities with their own

various chemical-physical types of smog atmospheres. This results in the underlying cause of significant health problems and diseases.

Battery technology has improved significantly on a commercial basis since 1991. Such improvements now make viable the production of practical electric vehicles. Such vehicles have been limited until now by the battery capacity which limits the distance a vehicle can travel. Various battery improvements are still in progress but the most significant is that of the **lithium-ion battery**. It is most commonly found now in portable electronic devices and laptop computers. It can either be in cylindrical or prismatic (square-edged) form. It runs in the same operating temperature zone as your standard lead acid battery in a gasoline car.

Rather than deal with further battery improvements to the housing, cathode, anode, and electrolyte solutions, a California company, *Tesla Motors*, has taken the existing lithium-ion battery, about the same size as the common AA battery, and configured it on a patentable large-scale configuration, utilizing batteries in both series and parallel, for use as the fuel source for its *Tesla Roadster*, aptly named after the famous inventor.

Tesla Motors now appears to be the first company that may actually bring about a viable electric car. This coming Spring (2008), deliveries of its first cars (a two seat sports car version) will be made. They were given code names during development: **Dark Star** (for the first version) and **White Star** (the improved version). The car was unveiled at an invitation-only event in Santa Monica, California in August, 2006. California Governor Arnold Schwarzenegger purchased one and will be recipient of new car number 10. Each car costs U.S. \$100,000.

The company is currently wooing the wealthy end of the market at its start (which has sometime led companies to their downfall). However, the market need for electric cars is tremendous. The production capacity at this point is clearly limited. The petroleum-based auto industry has, for a century, actively suppressed successful electrical car production and electrical public transportation systems, which, if Tesla Motors is successful, will only leave them out in the cold to get a late start.

We are always looking for **contributors** to the Science Newsletter. If you would like to write an article about a science subject you are excited about, or contribute a superfluous question, or if you would like to be on our **mailing list** for future newsletters, please e-mail us at:

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## The Coming Age of Electric Vehicles

Photos/Info: [Tesla Motors](#)/ [Wikipedia](#)/[Howstuffworks.com](#)

What is absolutely fantastic is that these little electric sports cars have a range of 245 miles to a charge, that cost being about \$3 (\$1 in government run power cities like Los Angeles). The maintenance cost is significantly less than a typical gasoline combustion engine as it has very few moving parts. These electric cars can accelerate to 60 mph in under 4 seconds, faster than a gasoline car. They can go over 130 mph, but are typically limited electronically to 120 (still pretty fast !). One can charge it up with a converter unit directly from the electric grid in about 3 hours (while you are sleeping - - no extra runs to the gas station). With additional cost, one can arrange for solar panel recharging which means it is off the "grid" and energy positive! The battery system weighs half that of a gasoline engine. Its energy efficiency is 4 times that of a gasoline engine. Its range would be equivalent to 200 miles per gallon, or if one uses a government mathematical calculation, would yield 400 miles per gallon!

A more reasonable cost and greater seating capacity *sedan version* is in the works for 2009. It will cost around \$50,000. This makes it possible for regular use to visit remote observatories and other distant places. It would behoove astronomical observatories to consider this for long term transportation cost reduction.

I have wanted one of these futuristic electric vehicles since I was very young. It may eventually become a reality for all of us!

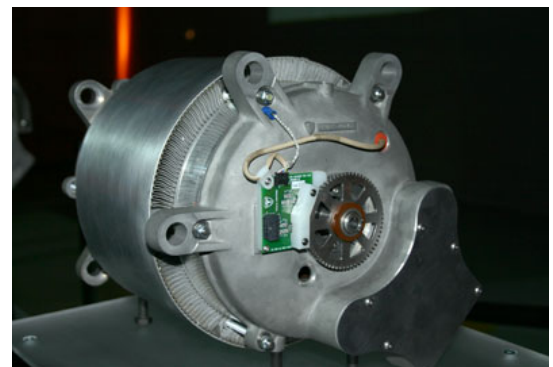


### The Tesla Roadster

Clearly, style was not sacrificed for battery power; a very sporty car !

### The Tesla Induction Motor

Runs on battery power !



### Technical Specifications

- **Acceleration:** zero to 60 in about 4 seconds
- **Dimensions:** 155.4 inches long, 73.7 inches wide, 44.4 inches tall with a 92.6-inch wheelbase
- **Weight:** 2,500 pounds
- **Top Speed:** Over 130 mph
- **Range:** 250 miles EPA highway
- **Battery Life:** Useful battery life in excess of 100,000 miles



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*Pluto:*  
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Get over it !

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Magnetosphere hats



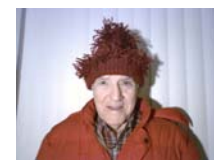
Sun visors -flippable



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\*\* Send us your superfluous questions for a future issue ! They can be on any subject. The funnier, the better. M.D., our editor, appreciates the help and will send you a free Triton Fun coffee mug as compensation for your question. Or write an article for us and be read by professional and amateur astronomers and scientists in the U.S. and Canada ! \*\*

## Superfluous Questions:

- 6EQUJ5 is the code indicating *what* ?  
 a) Bill Clinton's ham radio sign    b) Mr Spock's computer password    c) the "Wow" signal received by a radiotelescope in 1977, possibly sent by extraterrestrial life    d) my license plate
- Mathematicians estimate that there are how many possible chess moves (i.e. variations in the positions of chess pieces) ?  
 a)  $10^{20}$     b)  $10^{75}$     c)  $10^{120}$     d)  $10^{300}$
- Scientists estimate that there are how many atoms in the universe ?  
 a)  $10^{20}$     b)  $10^{75}$     c)  $10^{120}$     d)  $10^{300}$
- Where is *Lost Lagoon* ?  
 a) Bristol, England    b) St Paul, Minnesota    c) Vancouver, British Columbia    d) Secaucus, New Jersey

—> ANSWERS in next months issue of the Science Newsletter ! <---

\*\* ANSWERS to October's Superfluous Questions: 1. a) Curl, et. al 2. d) eardrums 3. d) astronauts 4. c) condiment