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THE ELECTRIC TRUCK MARKET

The trucking and transportation industry has been in transition to alternative drive systems since the inclusion of advanced computer technology in trucking systems. From the implementation of automated processes to electronic logging devices, the use of technology is fast becoming meshed into the industry. As a natural progression, electric trucks are viewed as instrumental in providing vital cost savings and meeting more rigorous ecological standards.

MANUFACTURERS OF ELECTRIC TRUCKS

Companies that have already unveiled plans, prototypes, or productions of electric semi trucks, specifically Class 8 tractors, include:

- The Tesla Semi to be produced in 2019, while several national trucking companies including UPS, Walmart, JB Hunt, and PepsiCo have reserved this electric truck pre-production.
- The Thor ET-One is available as a demo and will be in production in 2019 following pre-ordering.
- Cummins has released the Concept Class 7 Aeos Urban Hauler EV that will offer a 100-mile range and be destined for local and regional short hauls. Production will start in 2019 under the leadership of third-party OEM production partners.
- Daimler Trucks has produced an all-electric straight truck, the Mercedes-Benz Urban eTruck, that hauls less than 26,000 lbs. to the European market. The truck is being tested and expected to go into production after 2020.
- For the Class 8 truck market, Daimler Trucks has unveiled the E-FUSO Vision ONE. Pending infrastructure and regulatory amendments, Daimler expects to see the Vision ONE truck operating in US markets by 2022.
- The Toyota-Kenworth electric truck is powered by a hydrogen fuel cell and already in operation in California. This Class 8 truck is being used to haul drayage for CA ports for data collection purposes. Expectations are to expand production pending these test results.
- Nikola Motor Company and Bosch have collaborated to create two fully electric tractors—the Class 8 Nikola One and the straight truck Nikola Two. Production of the trucks is expected for 2020.

DISTRIBUTION CHANNEL

Currently, those trucks that are in production are only available directly from the manufacturer. These trucks must be pre-ordered or reserved, which involves putting a deposit down for each tractor to be manufactured. In the future, Thor Trucks has stated it will sell the ET-One online while also authorizing dealerships to sell this tractor. When companies begin producing their electric trucks in mass production mode, the method of distribution will be more transparent.

COST FOR FULLY ELECTRIC SEMIS

The overall costs for fully electric semi trucks range from $150,000 to $200,000. Truck owners and trucking company owners will likely compare this to the cost of a new diesel-powered semi truck in the same class, which ranges from $80,000 to $150,000.

While electric semis are more expensive, the cost savings on fuel are expected to exceed $200,000 over two years of operation according to Tesla. Theoretically, it will half as much to power an electric truck in comparison to a diesel truck.

For companies including Tesla and Nikola that require a pre-order reservation, deposits vary. Tesla is charging customers $5,000 per reserved Semi, and Nikola is charging $1,500 per Nikola One or Nikola Two.

USE AND RANGE

- For the Class 8 semis and short-haul trucks, the range varies while providing a full load capacity of 80,000 lbs. Tesla Semi has a range of 300 or 500 miles, a differential likely dealing with variations in the final model. This truck consumes less than 2-kilowatt hours of energy per mile and achieves 0 to 60 mph in 20 seconds.
- ET-One by Thor Trucks has a range of up to 300 miles, making this model ideal for regional loads or short hauls. Thor Trucks feature a powertrain of 300 to 700 horsepower and is expected to include a 100-mile range truck.
- Another short haul semi is the Cummins Aeos has a 100-mile power range. Aeos is anticipated to have a total battery charge time of 20 minutes by 2020, while the standard charge is 90 minutes for a full charge.
- Daimler Trucks Vision One is a mid-range product with 200 miles of power per charge. Meanwhile, the Daimler Mercedes-Benz Electric Truck has a max power of 100 miles, which is ideal for a single delivery for a short haul driver.
- The longest range of the existing electric Class 8 trucks comes with the Nikola One. This truck has 1,000 HP and a range of 800 to 1,200 miles.

LIFE EXPECTANCY

This data has not been released to date. However, taking into consideration the lifespan of electric automobiles, Tesla electric car customers report 400,000-mile lifespan for an electric-powered engine. This is twice that of a gas-powered vehicle. In terms of the body, electric semis constructed from aluminum are resistant to rusting, which also extends the lifespan.

ESTIMATED SALES

According to Bloomberg estimated sales are at 940,000 units for semi trucks over the next decade. The total addressable truck market is at 1 million units, of which electric truck sales are expected to comprise 90 percent.

CURRENT OWNERS AND OPERATORS

For the Class 8 all-electric semis, none of the aforementioned manufacturers have gone into full production with their models.

CHALLENGES FACED ELECTRIC TRUCKS

While there are approximately 17,000 electric charging stations in the US presently, according to the US Department of Energy, these do not accommodate electric semis. Infrastructure for semi charging stations must be implemented in a timely manner for trucks to be able to maintain a steady power supply. Companies that have reserved electric semis from Tesla are building charging stations at their facilities. However, this is an added cost, upfront and ongoing, that companies must factor in.

Along the same lines, the costs of maintenance and repair of electric semis will pose both a threat and a setback for owners. They will either have to depend on limited shop facilities or hire technicians who are trained to maintain and repair electric trucks. Reliability is another concern since these electric semis are new to the market. Potential customers may shy away at the onset due to a lack of confidence in the trucks. Customers may also worry about resell value and long-term value. This can hamper interest in investing in this type of truck, at least until a value is determined.

A final issue, and possibly the most concerning, is the ability for the current pool of truck drivers to be willing and able to operate these new electric trucks. These vehicles have an entirely new interior design and operating system under the hood. Everything truck drivers know and trust about trucks will no longer qualify them as an experienced and trained commercial vehicle operator. There may be an unwillingness to learn how to drive an electric truck. Additionally, drivers already show concern that electric semis are moving to automation, which they fear will take away their trucking jobs.

These challenges must be overcome in order to see the long-term use of electric trucks in the US trucking industry.