

Watt's Happening? #108

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REVENGE OF THE ELECTRIC CAR!



Electric vehicles may be poised to sweep aside all conventional cars and trucks. The advantages of EVs are overwhelming, but the changes in the world this may bring are profound.

Cars and trucks that are maintenance-free, pollution-free, run on free fuel, are guaranteed for a million kilometers and perform like a high-end race car.

Sounds like a futuristic techno-dream. But no, this future is in the process of arriving, and it's shaking up big oil and big auto as never before.

Once poo-pooed as a passing fad or just plain impractical, electric transportation is poised to change everything, big time.

Let's face it, when electric vehicles (EVs) cost about \$20,000, when they reach 400-500 km range on a charge, come with a million-kilometer-plus guarantee, and run on free fuel supplied by charging stations that are springing up everywhere . . . fossil-based vehicles

will be obsolete. All of this may be only 4 to 5 years away.

"We are on the cusp of one of the fastest, deepest, most consequential disruptions of transportation in history," says Stanford University economist Tony Seba in his recent *Rethinking Transportation 2020-2030*.

"What the cost curve says is that by 2025 all new vehicles will be electric, all new buses, all new cars, all new tractors, all new vans, anything that moves on wheels will be electric, globally."

IT'S ALL ELECTRIC

Already 70% of all trucking destinations in the U.S. are within battery range, explains Seba. As batteries

improve, in a few years it will be 100%. Tesla is within a few years of bringing out the world's first heavy-haul long-range electric transport truck. Driverless.

Car ownership itself may see rapid decline, as people essentially stop driving altogether and switch to self-drive EV's on demand. Kind of an Uber world.

Only nostalgics will cling to the habit of owning and driving a conventional car, as it becomes harder to find gas stations, mechanics and spare parts. Car dealers will disappear as cars are ordered directly from the manufacturer. A mass stranding of existing vehicles will drive the value of used cars to near zero.

The average family will save about \$6000 a year when they buy an EV. It'll be a no-brainer. Everybody will just switch.

Existing stock will take some time to clear, says Seba, but by 2030 oil use for road transport will crash from 8 million barrels a day to one million. The \$10 trillion annual revenues in the existing vehicle and oil supply chains "will shrink dramatically." Stranded assets on a global scale.

ELON MUSK AGREES

This rapidly rising star in the automotive industry shows every sign of leaving all the major auto manufacturers far behind in the dust. (Think of what happened to Kodak when it didn't embrace the shift to digital imaging – the biggest player gone overnight!)

As Musk's Tesla Motors quickly ramps up production of his deluxe, no compromise EV's, costs are coming down quickly. The advantages are breathtaking.

It has long been known that EV's are at least four times more efficient than gas or diesel engines, which lose 80 percent of their power as heat. Fossil-vehicles have some 1800 moving parts, often requiring lubrication and frequent replacement or repair.

In comparison, a typical EV has 18 moving parts. Maintenance is essentially zero. That's why Tesla provides an infinite-mile warrantee (plus free fuel at his network of fast charging stations!). EV's will have the acceleration, power and performance of a Lamborghini but cost ten times less to buy and ten times less to run. Which would you choose?

MORE ELECTRICITY?

EV's are projected to increase electricity demand by about 18 percent, but that does not imply the need for more capacity. EV's will draw power at times of peak supply and release it back during peak demand, themselves becoming part of the energy storage reservoir, smoothing the effects of intermittent solar and wind power.

As solar energy spreads like crazy (which it is!), much of an electric car's energy will come from

sunlight, often at free charging stations or from solar arrays at work or home.

For sure, to some extent I grieve the loss of gas stations, automotive mechanics and car dealerships, but on the other hand, if this is how we bring about the rapid changes needed to prevent catastrophic climate change, or even just prevent a huge amount of pollution, then I'm in favour.

Plus, personally I'd rather ride around in a whisper quiet, emission-free space ship than a lumbering, polluting dinosaur.

(for more, I recommend the book "*Elon Musk: Tesla, SpaceX and the Quest for a Fantastic Future*" by Ashlee Vance. Amazing.)

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