

Watt's Happening? #100

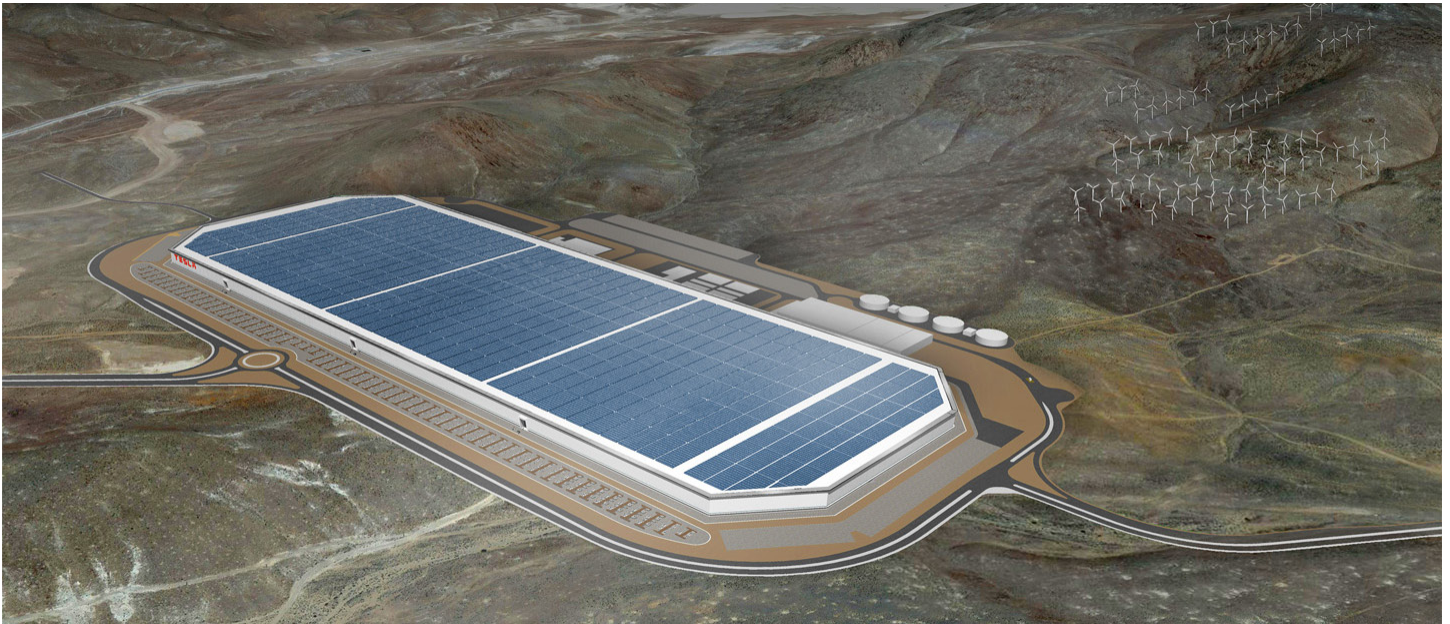
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The Gigafactory is activated



The world's largest factory, Tesla's Gigafactory, will be powered entirely by sunlight and wind when completed next year. It has now begun producing

lithium batteries for electric vehicles, solar powered homes and grid-scale energy storage. Watch out world, here comes Elon Musk.

Welcome to the 100th *Watt's Happening* column. I would like to dedicate it to one of my heroes, Elon Musk.

What will soon be the world's largest factory, Musk's Gigafactory, has begun producing its one and only product: lithium batteries. Batteries for electric cars, batteries for solar powered homes and batteries for grid-scale energy storage.

Nestled in the scrub lands near

Reno, Nevada, the Gigafactory is expected to be in full production by 2018, employing 6500 workers and revolutionizing the energy world as we know it.

The plant will be powered with sunlight from one of the largest solar arrays in the world on its 5 million square foot roof, a nearby dedicated wind farm and of course, to even out that solar and wind power, a big lithium battery bank.

The Gigafactory will almost overnight double the world's production of lithium batteries. Elon

Musk sees the high cost of energy storage as the single most important factor holding back electric cars and renewable energy, and he's right. The Gigafactory is his answer.

WHO IS THIS GUY?

Elon Musk is kind of a quiet, introverted version of Tony Stark, the techno-billionaire played by Robert Downey Jr. in the *Iron Man* movies. Except Musk is real!

Like Stark, Musk is not exactly risk averse. He first moved from a

chaotic divorced family in South Africa to Canada, then California in 1995. Just seven years later he sold PayPal to eBay for \$160 million.

Then without missing a beat, he took on single-handedly the aerospace industry plus the auto and energy industries, the largest, most entrenched and capital-intensive businesses in the world. In every case, he is winning the battle.

As it turned out, all of these companies were ripe for the picking. Their technologies were stale and their operations bloated.

Car companies didn't understand the new technologies and had abandoned electric vehicles as lacking in range and consumer appeal. As the economic crisis of 2008 brought them close to extinction, Musk's Tesla Motors introduced an electric car with plenty of range, high performance (zero to sixty in under four seconds) and rave reviews.

TESLA MOTORS

By 2015, Tesla Motors was producing 50,000 high-end cars a year, and its market value surpassed Chrysler's and was more than half of GM's.

Yet Musk wasn't satisfied. The transition to clean transportation wasn't happening fast enough. So in 2014 he released all of his patents for use by other automakers.

"Tesla Motors was created to accelerate the advent of sustainable vehicles," explained Musk. "Tesla will not initiate patent lawsuits against anyone who, in good faith, wants to use our technology."

It wasn't long before other car companies had taken Tesla up on his offer, and we are beginning to see the

results. Chevy's new Bolt just won North America Car of the Year and the 2017 Motor Trend Car of the Year. It cost \$31,000 Canadian (without incentives) and gets 400 kilometers on a charge. No more trips to the gas station.

SOLARCITY & SPACE X

Musk's concern about our impact on the environment inspired him to start Tesla and then a solar power company called SolarCity, transforming Tesla from a car company to a clean energy company. SolarCity has figured out how to make rooftop solar power quick, easy and affordable, and is aimed, like Tesla, at mobilizing market forces against climate change.

But just in case saving the Earth doesn't work out, or in case another large meteorite tries to wipe us out like the dinosaurs, Musk is looking beyond Earth to Mars.

His company Space X, after a rocky start and a lot of explosions, now regularly lifts supplies to the International Space Station, puts satellite into orbit and lands its booster safely back on

Earth tail-first, just like rockets are supposed to. Musk is aiming for ultra-cheap spaceflight and a million-strong colony on Mars, independent of its home planet, to be sure our species doesn't go extinct, ever.

Meanwhile, Musk hopes to sell 500,000 of his new Tesla Model 3's over the next year, a very slick consumer-priced electric car powered by his Gigafactory lithium batteries and launching a transportation and energy revolution that may save the world.

How cool is this guy? *Very.*

... he took on single-handedly the aerospace industry plus the auto and energy industries. In every case, he is winning the battle.



The new Tesla Model 3.

