tesla-megapack-update

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Tesla Megapack Update as of November 2023

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Current status of Lathrop megapack factory at Tesla as of November 2023.

PDF Version of the webpage (first pages)

Megapack Update from Lathrop Tesla Factory

In a recent 16 November 2023 interview of Bradford Ferguson on the Randy Kirk YouTube channel, and update was given on the status of the Tesla Megapack manufacturing.

Bradford personally went to Lathrop (California) to visually count the number of Megapacks coming off the production line. In March of 2023, he spent a week there observing the units coming out of the factory and counted about 10 per day. Recently, he was there again, and counted 27 per day, but then estimated that the actual number was about 18-19 per day, and at times 10 per day.

The capacity is thought to be 27 per day. Or 4 GW hours of production.

He surmised the limitation was the availability of batteries and more important, the power electronics, which are comprised of silicon carbide. Power electronics are the conversion of DC power to AC power, and typically are built from power semiconductor devices which include silicon carbide, gallium nitride field effect transistors (FETs), and power diodes. The power supply would be the inverter, charge controller, etc.

He thought that the cost of batteries in each Megapack to be around $300,000 plus the cost of the power electronics. The price of the 3 MWh Megapack is around $1.9 million.

CATL is one supplier of batteries.

With an almost unlimited number of sales, the question of capacity is not only the battery supply chain, but power electronics supply chain.

One would think that they would rapidly be expanding the Megapack factories, like the Tesla car Gigafactories, but there seems to be a bottleneck in the supply chain which is preventing this. Until they can figure out the power electronics (think vertical integration), they will throttle back production, as well as rapidly expanding Megapack factories.

The Tesla car Gigafactory is a winner, but the same business model for the Energy sector of Tesla is on wait-and-see mode.

The sales per year based on a conservative production of 10 units per day is (10 x 365) 3,650 Megapacks at 3 MWh, or 10,950 MWh (11 GWh). At $1.9 million (as of 20231116) x 3, 650 = $6,935 million per year. Even at 50 percent cost of goods, that's still $3,468 million per year net profit.

It is estimated that they are at 40 percent capacity at 10 units production per day, with max at 27 per day.

The sales per year based on at capacity production of 27 units per day is (27 x 365) 9,855 Megapacks at 3 MWh, or 29,565 MWh (30 GWh). At $1.9 million (as of 20231116) x 9,855 = $18,725 million per year. Even at 50 percent cost of goods, that's still $9,362 million per year net profit.

In the interview, they surmised the production would be between 10,000 units per year (now), to 20,000 units per year (at capacity).

With the battery supply and power electronics supply chain solved, they would then do the cookie-cutter business model and rapidly number up Tesla Megapack factories around the world.

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Summary of Tesla Megapack Lathrop Production Facility as of November 2023

In a November 16, 2023 interview on the Randy Kirk YouTube channel, Bradford Ferguson provided an update on Tesla's Megapack manufacturing. He visited Lathrop, California, and observed the production rate of Megapacks. In March 2023, he counted about 10 Megapacks produced per day. On a recent visit, he noted an increase to 27 per day, but estimated the actual rate to be around 18-19, occasionally dropping to 10 per day. The production capacity is believed to be 27 units per day, equating to 4 GW hours.

Ferguson identified the primary production limitations as the availability of batteries and power electronics, specifically silicon carbide. Power electronics are crucial for converting DC to AC power and include devices like gallium nitride FETs and power diodes. The cost of batteries in each Megapack is around $300,000, with the total price of a 3 MWh Megapack being approximately $1.9 million.

The interview concluded that with the resolution of battery and power electronics supply chain issues, Tesla could adopt a rapid expansion model for Megapack factories worldwide, potentially producing between 10,000 to 20,000 units annually. At full capacity (27 units per day), the output could reach 9,855 Megapacks (30 GWh) annually, yielding $18.725 billion in revenue and $9.362 billion in net profit.

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Salgenx Saltwater Battery Potential

Given the success of the Tesla Megapack business model, the introduction of a easily replicable grid-scale battery, like Salgenx, would provide opportunities for customers to have a good alternative choice.

Cementing a solid alternative choice, would include the following features that are only available on the Salgenx saltwater battery:

- Non flammable
- Ability to desalinate saltwater to make freshwater while charging
- Ability to produce graphene while charging
- Ability to store thermal energy in the saltwater bulk liquid storage tank using heat pumps or other devices
- Ability to perform grid-based rate arbitrage and thermal storage arbitrage

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