12v lfp battery for tesla

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With the refreshed Model S/Model X, Tesla switched from conventional lead-acid to an all-new lithium-ion 12 V auxiliary battery (Model 3/Model Y still uses a conventional one).

Thanks to an outstanding, two-part presentation and teardown conducted by Ingineerix, we can take an in-depth look at this new solution, hinted at in early 2021 by Elon Musk and shown only briefly at the delivery event.

The video starts with a general overview of why EVs still use 12 V auxiliary batteries and why they continue to use lead-acid ones, while the main traction battery is lithium-ion.

The lead-acid batteries turned out to be problematic in EVs, due to a different use case than a starter battery and manufacturers are expected to switch to lithium-ion versions sooner or later (partially, with the potential transition to 48 V auxiliary systems). Some individual users were already replacing their 12 V batteries with a li-ion version on their own (like here).

In general, a lithium-ion battery should be smaller, lighter, more reliable and last longer. It could be a bit more expensive, but the total cost of ownership should be lower.

As we can see in the video, previously Tesla was using in the Model S/Model X a 12 V, 33 Ah lead-acid AGM battery. It stores about 0.4 kWh of energy, but weight is quite substantial: 27 lbs (12 kg).

According to Ingineerix, such batteries last in Teslas about 2-4 years, which is pretty low and sometimes causes unexpected problems if the car stops working.

The new,lithium-ion battery is much smaller and much lighter (only about 4 lbs / 1.8 kg). That"s because it"s much higher energy density, but also has a lower energy content. We assume that with a more reliable and "smart" solution, there is no need for 0.4 kWh.

As we can see in the second video (on the bottom of this post), the new battery consists of a BMS circuit board made by CATL and four prismatic NMC lithium-ion battery cells (6.9 Ah each), connected in series.

It means that not only are the entry-level Model 3/Model Y equipped with CATL batteries (LFP traction batteries), but also the all-new flagship Model S/Model X has CATL batteries (just the auxiliary, not traction ones).

There are no signs of a heating system for the battery, which indicates that it"s not required. According to the general CATL specs, the battery cells can accept charging at temperatures as low as -10?C. And they can

discharge at temperatures as lows as -20?C.

NEW and improved with redesigned slimmer case for easy installation, SAE terminals(adapters no longer needed), Bluetooth-enabled BMS, and Self-Heating technology.

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