Lfp battery pack

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The Tesla LFP Model 3 is quite a landmark battery pack for Tesla. Up until now everything has revolved around chasing the energy density of cylindrical cells from 18650 to 21700. The 4680 cylindrical is a move to a larger and lower cost cell. This move to Lithium Iron Phosphate (LFP) is perhaps more significant and triggered by the success of BYD and their blade LFP based packs.

The weight optimisation of this battery pack is impressive.

Sandro Stock et al [1] have published a cell teardown and analysis. This gives an insight to the cell characteristics and design. The cell is made by CATL 161Ah BTF0.

While this article is from 2024, the 55 kWh generation only treats Gen1 of these cells, starting in the 2021 model year. With model year 2022, Tesla made some changes with Gen 2 cells: MY 2021: Gen1: Tesla Pack BTF0 : 55 kWh CATL 106s1p of 161-163 Ah. MY 2022: Gen 2: Tesla Pack BTF1 : 60 kWh CATL 108s1p (2 cells more: 26s 28s 28s 26s) of 172.5 Ah cells each of same dimensions.

Gen2 teardown by a person looking for second life cells: https://forums tomobile-propre /topic/les-caract%C3%A9ristiques-et-versions-des-tesla-model-3-et-y-7070/?&page=105 and https:// Gen2 cell itself: https://

This Gen2 BTF1 pack is still found in MY2024 Model 3 “Highland”.

Still missing from this page: the Model Y Pack with BYD LFP cells: Tesla BT01. That started in May 2023 in Gr?nheide and is supposed to be a structural pack with heavy glue/foam and potentially BYD prismatic blade cells.

At Auto China 2024, CATL unveiled Shenxing PLUS--the world's first LFP battery that achieves a range above 1,000 kilometers with 4C superfast charging. Within eight months after the launch of the Shenxing superfast charging battery in August 2023, CATL has once again pushed the boundaries of LFP battery technology, ushering in the era of superfast charging for the whole industry.

1,000-km Super-long Range Ensures Worry-free Travel

The Shenxing PLUS battery provides users with a super-long range driving experience, exceeding 1,000 kilometers, which means a trip from Beijing to Nanjing without recharging on the road. This allows new energy vehicles to not only meet commuting needs in urban areas but also accommodate long-distance inter-provincial travel.

Aside from offering long range, Shenxing PLUS also charges fast. It can deliver a 600-km range in just 10 minutes of charging, far surpassing the usual batteries available on the market and realizing a true superfast charging speed of one kilometer per second.

To achieve the leapfrogging of charging speed, Shenxing PLUS applies technologies including fast lithium-ion conductive coating, the addition of transition metal elements, and new nanometer encapsulation, rendering smoother and more efficient energy transmission between cathode and anode materials. CATL has expanded the overcurrent area and capacity of the terminals in the battery system to rapidly dissipate heat during high-current charging. In terms of BMS core algorithms, CATL's newly-developed AI polarization model can predict and control the charging current in real time, enabling faster and smarter energy replenishment.

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