SAFETY MATTERS IN ELECTRIC VEHICLES

WHY SAFER SOLID STATE CELLS WILL YIELD LIGHTER PACKS AND ELECTRIC VEHICLES WITH HIGHER RANGE AND POWER

Designing for Safety

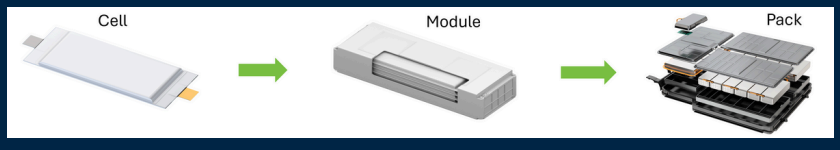
Electric vehicles (EV) are statistically safer than internal combustion engine ones despite well-publicised fire events. For EV maufacturers, safety is non-negotiable. It is ensured through integration of a cooling system in the battery pack, alongside advanced thermal management features and mechanical protection structures. This is why battery packs in EVs are so heavy.

Cell-To-Pack Ratio (CTPR)

Battery packs comprise of cells packaged in modules, themselves slotted into a pack structure. Any component added to the cells can be considered as parasitic weight or volume. The level of optimisation of a battery pack is given by its CTPR (the same calculation exist for volume):

Weight of cells / Total weight of pack

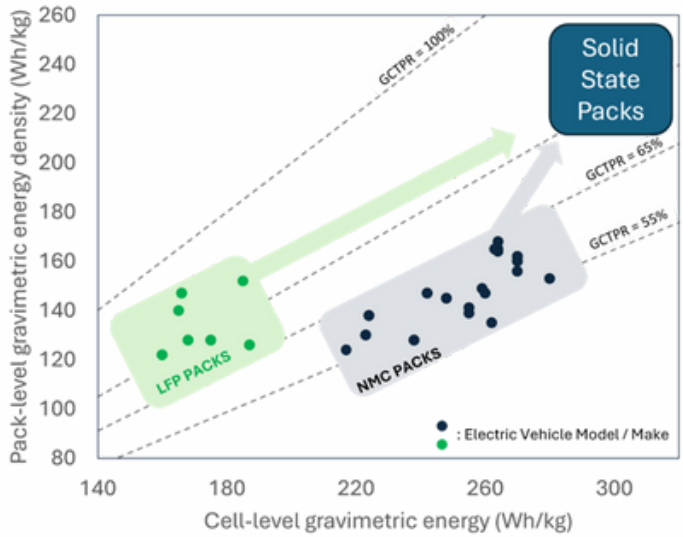
- Current NMC lithium-ion cells have high cell-level energy density but are not very safe so the added weight leads to a low CTPR (see graph on the right)
- Current LFP lithium-ion cells are safer (high CTPR) but with low energy density



Optimised Pack Design with SSB

Ilika's Goliath solid state battery cell design enables the best of both chemistries:

- Goliath cells use a high-nickel NMC cathode material with high cell-level energy density
- Goliath cells use a non-flammable solid electrolyte enabling simplification of the cooling system and removal of mechanical structures



At Ilika, we are developing solid state cells with the

Performance of NMC and Safety of LFP

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