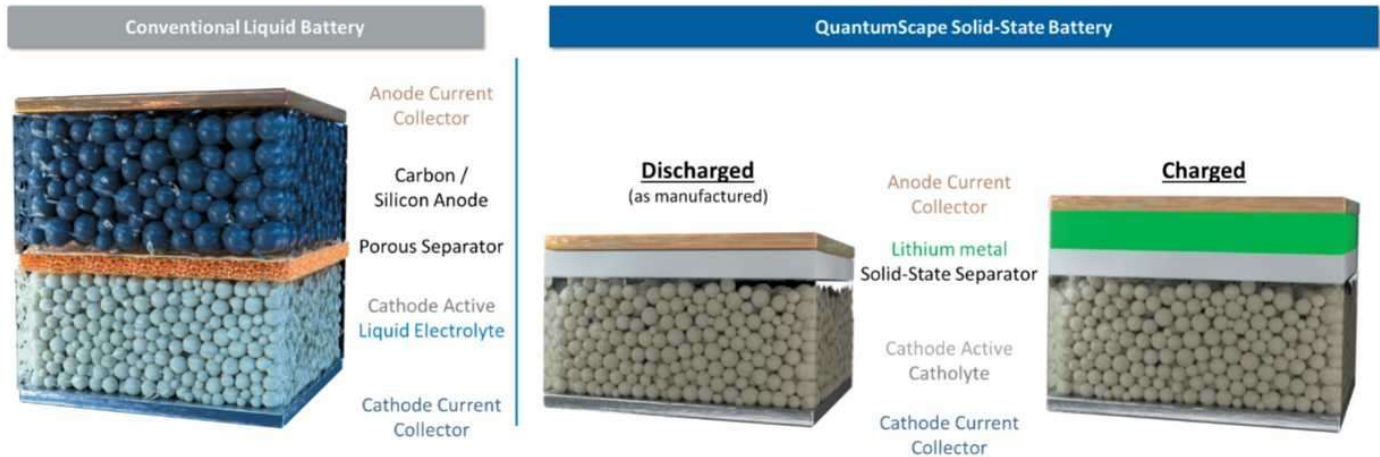


QuantumScape: Only We Have A Viable Solid-State Lithium Metal Battery



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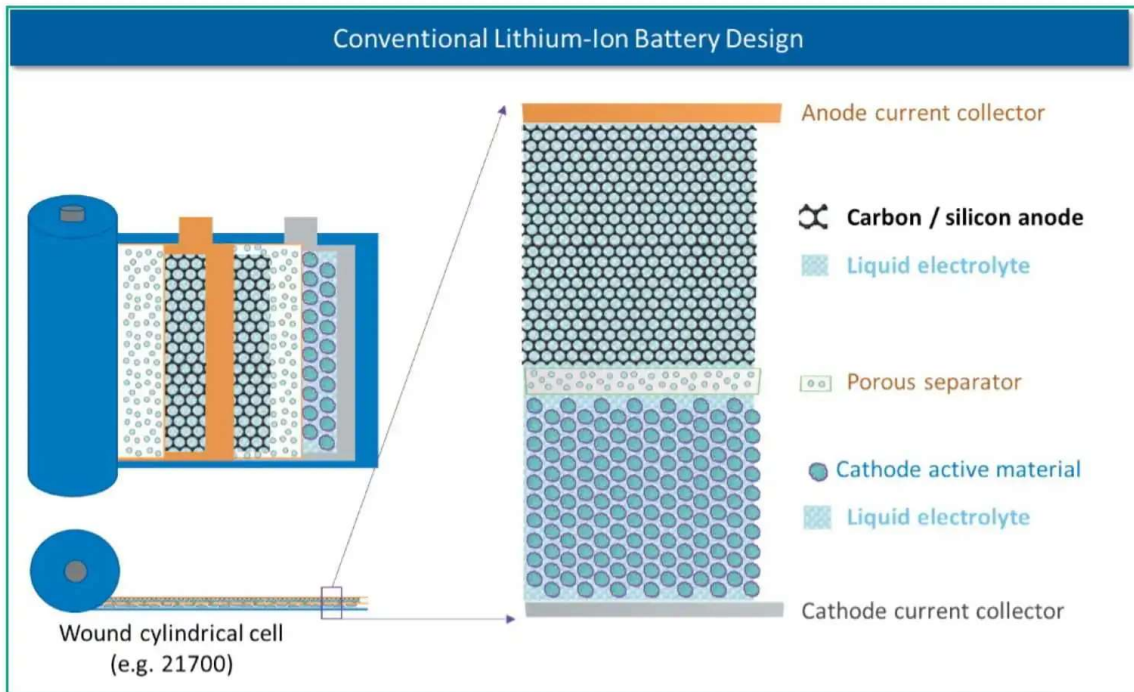
By: **GUSTAVO HENRIQUE RUFFO**

At least until now, it claims no competitor has met the key requirements for one.

QuantumScape did not have a single surprise at its Q4 and full-year 2020 earnings call. Apart from telling it has built a successful multi-layer cell and that it will have a pre-pilot line facility in San Jose, California, Jagdeep Singh also said QuantumScape is the only company so far to have presented a viable solid-state lithium metal battery to meet all key requirements expected from them.

These requirements would be a long cycle life, high energy density, and unelevated temperatures. All other solid-state cells so far would have only worked at high temperatures.

“It does not help to have a multi-layer cell that uses a single-layer building block that does not work. It would be the equivalent of trying to put up a multi-story building when you haven’t been able to make a single-story building without collapsing on itself. We haven’t seen any data from any of the competitors that has shown a solid-state separator capable of delivering long cycle lives and high current densities without requiring elevated temperatures.”



QuantumScape’s CEO also classified what its competitors must have achieved so far with their multi-layer cell prototypes.

“As a result, the players you just mentioned fall into one of two categories: those that have reverted back to carbon-based anodes, which of course results in the loss of many of the key benefits of the solid-state lithium metal architecture, including energy density fast charge, and cost, and those that use lithium metal but can only work under compromised test conditions that make these cells not commercially viable.”

That leads to his conclusion regarding what other companies have achieved so far with solid-state batteries.

“We believe we’re the only player to have shown a solid-state lithium metal single-layer building block capable of meeting the key requirements of long cycle life, high turn density, and unelevated temperatures.”

By the end of the earnings call, Singh said the main advantage QuantumScape has is the solid-state separator, which would make the lithium metal solid-state battery “relatively cathode-agnostic” because their separator provides electrical isolation. In other words, we could probably see studies with sulfur and other promising materials shortly.