Sakuu Announces Successful 3D Printing of Fully Functional High-Performance Patterned Batteries

February 16, 2023 5:00 PM EST

- **Sakuu is the first company of record to 3D print fully functional batteries in custom shapes and sizes with patterned openings for thermal management in a fully dry process**
- **The pioneering additive manufacturing company is on-track for commercial-scale production of printed batteries in major industries including E-mobility, aerospace, EVs, grid energy storage, and more**
- **Kavian™ platform can enable world-class energy and power densities of printed batteries, including Lithium Ion, Lithium Metal, and Solid-State batteries, at high-volume production speeds**

Sakuu Corporation ("Sakuu"), a transformative additive manufacturing and solid-state battery company, and inventor of the disruptive Kavian™ platform solution for the commercial-scale production of next-generation SwiftPrint™ batteries and other complex active devices, announces that since December 2022 it has successfully and consistently 3D printed fully functional performant batteries in custom shapes and sizes. These batteries were printed as patterned cells containing patterned openings for thermal management, in a fully dry process, at Sakuu's Silicon Valley battery pilot line facility.

This marks a first-of-its-kind recorded manufacturing achievement and is an important step towards Sakuu's planned commercial-scale production of next-generation SwiftPrint™ batteries, including solid-state batteries, from its Kavian™ platform in gigafactories worldwide

Karl Littau, Chief Technology Officer at Sakuu commented: "Our development shows that the Kavian™ platform can enable commercial-scale, sustainable production of a wide range of battery technologies from lithium-ion to lithium metal to even solid-state batteries—whereas traditional methods of advanced cell manufacturing continually run into core impediments that prevent mass-scale production. Further, our printing process can allow for substantial gains in energy density for a completed battery. Finally, our platform can customize the form factor of the battery—whereby the battery itself can become part of product design via customized shapes and sizes. This is a profound moment with enormous implications for advanced battery manufacturing."

Sakuu has invented a fully industrialized process for printing batteries using a proprietary multi-material, multi-layer approach in a parallel and dry process, instead of slow layer-on-layer printing or screen-printing—inherently wet processes that require significant energy to remove unwanted solvents and are susceptible to poor printing quality and unreliable production. The Sakuu invention can deliver low-cost high-speed manufacturing capability coupled with flexibility in shape and form, while also delivering batteries in core categories that matter most to clients and customers alike. For example, Sakuu's first printed batteries have demonstrated successful cycling performance at C/5, IC current rates, and expectations are to achieve high energy density at 800–1000 Wh/l.

Utilizing proprietary lithium metal battery chemistry, Sakuu's printing process starts with raw material and ends with a ready-to-use patterned battery, creating a new paradigm in manufacturing and energy storage. The achievement of patterned battery printing enables a more effective use of battery cell volume with new pathways in thermal dynamic regulation. This allows integration of fixturing, sensors, and thermal transport pathways, as well as regulation through the patterned design—especially when thin sub-cell battery structures are stacked with identical patterned openings for thermal management in alignment.

"We believe we have the only known solution for manufacturing solid-state batteries at scale with our novel Kavian platform. Collectively, our additive manufacturing and battery teams have accomplished what most thought impossible," said Sakuu Founder and CEO Robert Bagheri. "Printing custom patterned batteries using a dry process that starts with raw material and concludes with a fully functional high-performance battery is a breakthrough that has the potential to transform how batteries of the future are manufactured for all industries. This milestone advances integration between our Kavian platform and our commercial-scale battery production plans towards an energy output goal of 200GWh by 2030 via a network of global partner gigafactories."

Sakuu's Kavian™ platform will be sold to other battery manufacturers as well as leading automotive, e-mobility, and aerospace manufacturers. Those seeking to mass-produce batteries can shorten supply chain and gain key cell performance and safety attributes, as well as inherent material and energy savings, and sustainability benefits for maximum product design innovation. In addition, Sakuu plans on licensing its own battery chemistries, both Li-metal and solid-state, to be produced with either traditional roll-to-roll manufacturing or in gigafactories utilizing Kavian™ manufacturing.

About Sakuu

Sakuu is a pioneering manufacturing technology company introducing a disruptive additive manufacturing platform approach for commercial-scale production of batteries and other complex active devices. Initial efforts will focus on energy storage, using our Kavian™ platform to print a range of next-generation batteries—from lithium metal to all-solid-state—that can help reduce society's reliance on fossil fuels. Founded in 2016, Sakuu operates two facilities in Silicon Valley, California, where it is headquartered: a solid-state battery pilot line facility, and an additive manufacturing engineering facility. To learn more about Sakuu's advancements towards and dedication to a safer, more sustainable electrified future, please visit our website: Sakuu.com.

Media Contact

Pal Hollywood, Sterling Communications

+1 (860) 877-9670

press@sakuu.com