

ASX Announcement ([ASX: AXE](#))

29 May 2025

Archer's gFET Biochip integrates with electrical readout circuitry on a silicon chip

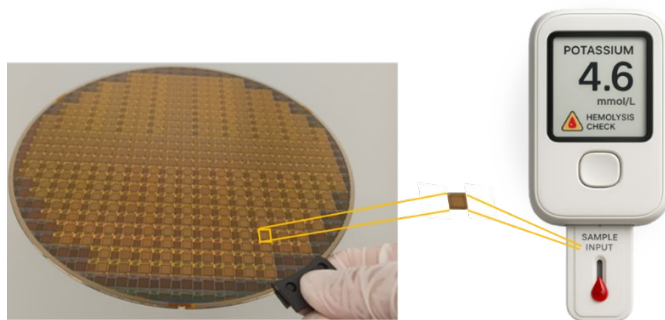
Highlights

- Archer Materials has completed a key step in the integration of the Biochip into an at-home potassium monitor prototype.
 - Archer's graphene field effect transistor (gFET) sensors have been integrated with readout circuitry miniaturised in a silicon chip. This combined chip provides rapid control and reading of many gFET devices.
 - This work is the first step in packaging the Biochip into a cartridge system suitable for receiving blood samples and being interfaced with a handheld reader.
 - Archer plans to use this first integrated Biochip as part of the Hylid Diagnostics joint development project to begin developing first version test cartridges.
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Archer Materials Limited ("Archer", the "Company", "ASX: AXE"), a semiconductor company advancing the quantum technology and medical diagnostics industries, has manufactured its first chip that combines the Company's gFET sensors with electrical readout circuitry, an important milestone for the integration of the Biochip into an at-home testing device for chronic kidney disease.

The chips were fabricated at foundry partner VTT Technical Research Centre of Finland Ltd ("VTT") via a multi-project wafer run (MPW) on a 200mm wafer (see ASX announcement 16 August 2024). Chips from the wafer are being packaged for testing at Archer.

The image below shows a conceptual rendering of Archer's at-home potassium tester. It comprises of a hand-held digital reader in which a cartridge is inserted. The heart of the cartridge is the Biochip, which needs to be integrated with cartridge fluidics for delivery of the blood sample for sensing. Integrating the Biochip with miniaturised electronics, as Archer has done with VTT, is a key step to integrating the Biochip into the cartridge.



(Left) is a wafer full of Archer's biochips. (Right) is a conceptual drawing of our handheld reader with a sample cartridge inserted. The Biochip will be integrated into the cartridge where it receives the blood sample and measures the potassium levels in the blood.

This integration work will continue in parallel with the ongoing development of the Biochip itself. The Biochip development and integration activities will be targeted at having early prototypes of the system and demonstration of initial potassium testing accuracy performance early in 2026.

Archer plans to verify the operation of these new integrated chips in Sydney. The design of these integrated chips will feed into the development work with Hyliid Diagnostics (see ASX announcement 31 March 2025) to begin integrating the Biochip sensor with homolysis sensors and cartridge designs to house the sensors, and interface with fluidics and a hand-held reader.

Commenting on the chips from VTT, Dr Simon Ruffell, CEO of Archer, said,

“One path to producing a cost effective, small sensing product for wide electronic application is to integrate our gFET sensors with a silicon readout chip. This work is a big step forward to show that it is possible. The team now looks forward to validating its functionality and evaluating sensing performance.

“This work is an enabler for our ion-sensing technology, helps integrate our Biochip into an at-home potassium monitor, and builds a platform for more product applications beyond the testing of chronic kidney disease.”

The Board of Archer authorised this announcement to be given to ASX.

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About Archer

Archer is a technology company that operates within the semiconductor industry. The Company is developing advanced semiconductor devices, including chips relevant to quantum computing and medical diagnostics. Archer utilises its global partnerships to develop these technologies for potential deployment and use across multiple industries.
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