

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

1 September 2025

Archer strengthens biochip commercialisation path with dual technology approach

Highlights

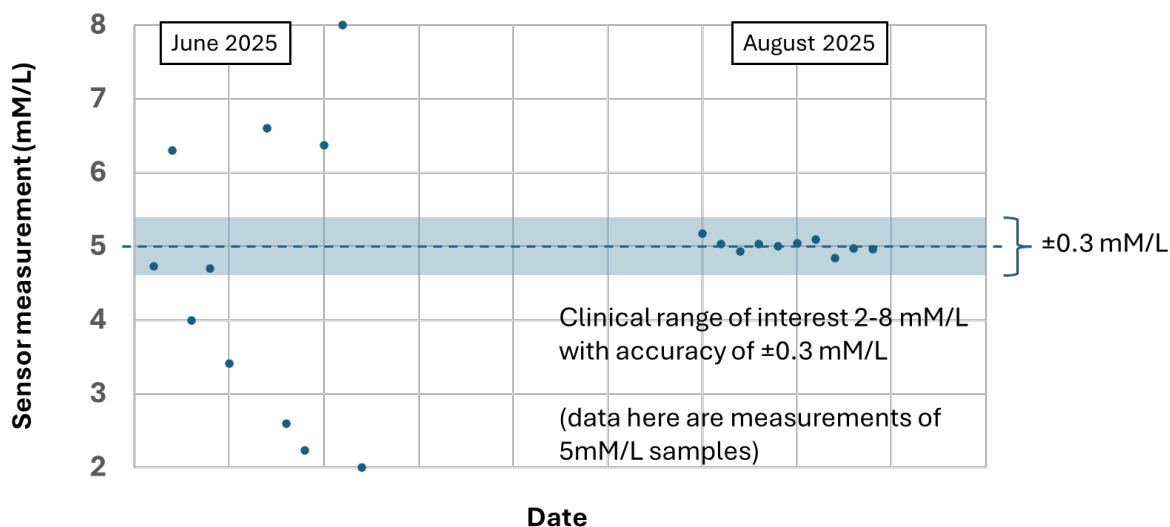
- Archer continues development of its Biochip with the testing of human blood and early prototype cartridge integration.
 - Recent engineering improvements have resulted in a significantly better Biosensor testing accuracy with potassium measurement precision within ± 0.3 mM/L, in alignment with the United States Clinical Laboratory Improvement Amendments (CLIA) requirements for equivalent testing in a pathology lab.
 - Silicon device development underway in collaboration with IMEC to enable faster, scalable manufacturing via established global supply chains.
 - Graphene-based Biochip remains a core part of Archer's long-term product roadmap, targeting a high-performance, next-generation model.
 - Silicon-based Biochip pathway expected to offer a quicker and more cost-effective route to initial commercialisation.
 - Both development streams enhance Archer's IP portfolio and provide flexibility in product rollout and market entry strategy.
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Archer Materials Limited ("Archer", the "Company", "ASX: AXE"), a semiconductor company advancing the quantum technology and medical diagnostics industries, is pleased to provide an update on the Company's biosensor product development.

Engineering improvements performed by the Archer team has led to a significant improvement in Biosensor testing accuracy. Current testing consistently demonstrates potassium measurement precision within ± 0.3 mM/L, in alignment with Clinical Laboratory Improvement Amendments (CLIA) requirements for equivalent testing in a pathology lab. The Sydney engineering team has made great progress over recent months, and as refinements continue over the remainder of the year, the next stage will shift towards developing a user-ready prototype that meets cost and ease-of-use benchmarks.

The chart below shows the improvement in potassium measurement accuracy due to the team's engineering efforts over the last few months.

Example sensing results for a 5 mM/L potassium test



Archer's graphene Biochip has already reached key technical milestones including improvement of variability between gFETs used for sensing (ASX announcement, 25 Feb 2025). The platform has since progressed to human blood testing and early prototype cartridge integration. This graphene-based approach (gFETs) remains central to Archer's vision of delivering a high-performance biosensor product, with clinical trials targeted to commence in 2026.

In addition to the Biosensor improvements highlighted above, Archer has commenced work with IMEC (ASX announcement 12 August 2025) for the design and testing of a silicon-based Biochip. IMEC, a global leader in semiconductor research and innovation. Silicon has long been the foundation of the global semiconductor industry, with extensive manufacturing infrastructure already in place. By leveraging this mature supply chain, the silicon version could be produced faster, at lower cost, and in higher volumes than would be possible in the near term with graphene manufacturing.

The first project with IMEC will be to apply much of Archer's functionalisation and processing methods to three types of silicon chip-based devices and benchmark against Archer's gFET sensors. Furthermore, IMEC will tailor these steps and establish manufacturable methods for making potassium sensors. This work is expected to take 4 months, during which planning will be done for a more detailed development project following this work to work towards final chips and sensor prototypes.

Graphene and Silicon based Biosensor Technologies

Archer is developing both a graphene-based and silicon-based Biosensor platform for a range of ion-sensing applications, with the lead and focus on potassium measurement in human blood. This medical device is designed to support the at-home management of chronic kidney disease.

A significant portion of the Company's existing intellectual property and technical know-how now centres on the functionalisation, processing of foundry manufactured gFETs, and chip design. These are a critical step in transforming gFETs into highly sensitive potassium sensors, but can also be applied to other base platforms like silicon-based devices.

Graphene and silicon-based platforms are complementary, and both are being developed to measure potassium levels in blood. As Archer transitions towards commercialisation and manufacturing, establishing robust and cost-effective supply chains will be essential. By pursuing development across multiple platforms, Archer is strategically de-risking the core of its sensor technology and strengthening the foundation for future scalability.

Both biochip versions are being developed in response to the same market need - a simple, reliable, low-cost, and accurate way to measure potassium levels in blood outside of a laboratory setting. For people with chronic kidney disease, such testing can be life-saving, enabling more frequent monitoring and faster intervention when potassium levels are abnormal.

The silicon pathway is expected to allow Archer to enter the market sooner, helping to generate early revenues, establish distribution channels, and build brand recognition. Meanwhile, the graphene pathway positions Archer for a next generation product release that could deliver enhanced sensitivity and performance, benefiting from ongoing materials science innovation.

By advancing both technologies in parallel, Archer is derisking its commercialisation strategy. This approach ensures that the Company is not solely dependent on a single manufacturing process or technology platform, while also maximising potential market coverage over both the short and long term.

Commenting on the Biochip progress, Dr Simon Ruffell, CEO of Archer, said,

"The Archer team has been working hard and recent engineering design changes have led to a significant increase in the Biosensor testing accuracy. The team has regularly achieved potassium measurement precision within ± 0.3 mM/L, in alignment with Clinical Laboratory Improvement Amendments (CLIA) requirements for equivalent testing in a pathology lab.

Our Biochip technology continues to progress strongly, and we see value in developing both graphene and silicon versions. Silicon offers an opportunity to reach market faster through existing manufacturing infrastructure, while graphene remains a key part of our future plans for a high-performance, next-generation device. This dual approach gives us the flexibility to meet market needs now and into the future."

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, sensing, and medical diagnostics. Archer utilises its global partnerships to develop these technologies for potential deployment and use across multiple industries.
www.archerx.com.au