Archer Materials Technology

Archer Materials Limited (ACN: 123 993 233)
Lot Fourteen, Frome Road, Adelaide SA 5000
www.archerx.com.au

ASX Announcement (ASX: **AXE**) 10 July 2025

Archer demonstrates cryogenic TMR Sensor functionality for potential use across quantum computing platforms

Highlights

- Archer has successfully demonstrated magnetic field measurement at cryogenic temperatures using its tunnel magnetoresistance (TMR) sensor technology.
- This milestone bolsters quantum readout capabilities for its ^{12}CQ project and noise characterisation in low temperature environments.
- TMR sensors have the potential to be platform-agnostic, with possible use beyond Archer's quantum platform. They are being developed to function at cryogenic temperatures, which could make them suitable for a range of quantum computing technologies, including superconducting, spin-based, and hybrid quantum systems. This creates opportunities to supply sensor technology more broadly across the industry.
- The sensors were fabricated by Archer's foundry partner and integrated into a cryo-compatible test system leveraging Archer's in-house quantum, semiconductor, and cryogenics engineering expertise.
- TMR sensors unlock commercial opportunities across quantum computing (including magnetic noise monitoring) and advanced sensing markets.
- Archer is actively engaging with potential partners and customers to explore and validate bespoke TMR sensor applications.

Archer Materials Limited ("Archer", the "Company", "ASX: AXE"), a semiconductor company advancing the quantum technology and medical diagnostics industries, announces the successful demonstration of highly sensitive magnetic field measurements at cryogenic temperatures using TMR sensors.

The sensors were fabricated by the Company's foundry partner and integrated into a cryogenic-compatible test platform leveraging Archer's in-house expertise in quantum technology, cryogenics, and semiconductor device integration.

The TMR sensor work is part of the ^{12}CQ quantum project in developing magnetic sensors that are highly sensitive, have high bandwidth, and low power consumption to replace traditional sensing technology.

Archer Materials Limited (ACN: 123 993 233)
Lot Fourteen, Frome Road, Adelaide SA 5000
www.archerx.com.au

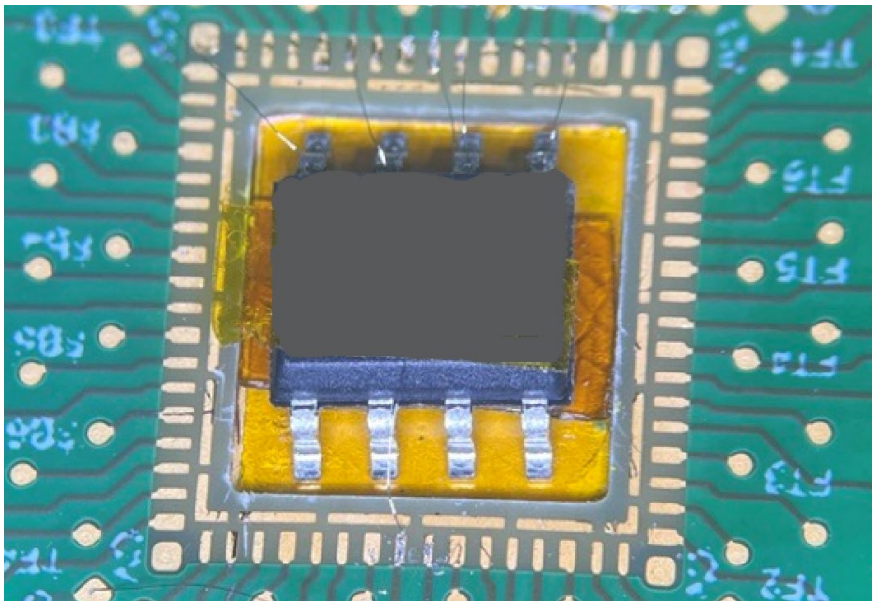

Image 1: TMR sensor on cryogenic test board

Commenting on the TMR sensor development, Simon Ruffell, CEO of Archer, said,

"The achievement of this milestone confirms that our TMR sensor technology can operate in the extreme conditions needed for quantum applications. It is a major enabler for integrating advanced capabilities into cryogenic systems for applications like magnetic noise cancelling for quantum computing or sensing conditions like those in space.

Potential application across different quantum computing platforms

Ambient magnetic field fluctuations are a primary source of decoherence in quantum systems, degrading qubit fidelity and limiting device performance. Currently, this is overcome by magnetic shielding in cryogenic systems. As quantum computing systems scale, there will be more of a need to also add active magnetic field cancelling. Sensors like Archer's TMR devices can be used to monitor and characterise this magnetic noise in real time, enabling the potential for better noise mitigation strategies and ultimately improving quantum coherence times. Archer anticipates that the TMR sensors have the potential to outperform incumbent sensing solutions.

Operation of TMR sensors at cryogenic temperatures has significant implications for next-generation quantum computing and sensing technologies. It also lays the foundation for further development of cryogenic-compatible semiconductor platforms with potential uses in advanced sensing, aerospace, space exploration, and cryogenics research.

By providing a pathway to high-resolution magnetic field sensing in cryogenic environments, Archer's technology will be designed to support essential diagnostics and stabilisation processes for quantum hardware development. This functionality is increasingly important as the quantum industry scales and moves toward more error-resilient architectures.

Archer Materials Limited (ACN: 123 993 233)
Lot Fourteen, Frome Road, Adelaide SA 5000
www.archerx.com.au

Next Steps

The Company is also exploring strategic partnerships and customer engagements with the aim to address emerging markets in quantum instrumentation, cryogenic hardware systems, research and development tools for low-temperature physics, and custom sensor modules for space and defence applications.

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

Investor enquiries

Howard Marks
+61 402 438 019
howard.marks@automicgroup.com.au

Media enquiries

Dylan Mark
+61 475 783 675
dylan.mark@automicgroup.com.au

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