# New R&D partnership launched to tackle carbon storage and battery optimisation



The Technology Innovation Institute (TII) and Aspire, both under the Advanced Technology Research Council (ATRC), have forged their inaugural research and development (R&D) partnership with Adnoc, aimed primarily at tackling significant challenges in carbon storage monitoring and battery optimisation through advanced quantum technologies. This agreement signals the beginning of a comprehensive collaboration, which is set to include joint projects in various domains, such as autonomous robotics, propulsion systems, and cutting-edge technologies targeted at renewable and sustainable energy sources.

A core focus of this partnership is the enhancement of carbon capture and storage (CCS) initiatives, a vital aspect of efforts to mitigate CO₂ emissions. Monitoring the sites where carbon is stored has historically presented considerable challenges. By harnessing the quantum sensing expertise of TII, the collaboration is set to improve safety measures and reduce the risk of leaks by facilitating the detection of environmental changes, including alterations in magnetic and electrical properties. These advancements are expected to bolster the long-term reliability and operational efficiency of CCS systems.

Another significant goal of the partnership is to refine battery performance and recycling processes. As batteries are critical components within renewable energy systems, this initiative is focused on optimising lifecycle management and enhancing recycling efficiency. Through quantum sensing technology that measures the magnetic fields generated by batteries, researchers intend to create predictive models for assessing battery lifespans. This non-invasive approach will assist in the effective sorting of batteries for recycling, thereby promoting sustainability within energy storage solutions.

In addition to these initiatives, the agreement encompasses plans for unmanned robotic inspections and further robotic applications designed to address challenges within the energy and technology sectors. The collaboration aims to synergise the expertise and capabilities of TII, Aspire, and Adnoc, culminating in innovative and sustainable solutions.

Leaders from the respective organisations have expressed optimism regarding this collaboration. Dr. Najwa Aaraj, CEO of TII, acknowledged the significance of partnering with a major market player like Adnoc. She noted, "Collaborating with a market leader like Adnoc allows us to showcase the potential of advanced quantum sensing technologies. We are excited to develop solutions that optimise CCS processes and enhance battery energy storage systems."

Stephane Timpano, CEO of Aspire, also spoke to the collaboration's broader implications, stating, "This collaboration demonstrates our commitment to leveraging quantum sensing for sustainable solutions and turning bold ideas into technologies that benefit industries and communities."

Sophie Hildebrand, CTO of Adnoc, reiterated the company's commitment to innovation. "At Adnoc, we are proud to serve as a testbed for UAE-grown innovations. Collaborating with TII and Aspire enables us to accelerate technologies like quantum sensing, driving progress for a sustainable energy future," she remarked.

This new partnership highlights the UAE's ongoing efforts to elevate its role in the development of quantum technologies as a means to confront critical energy and sustainability issues while nurturing an environment of innovation and collaboration.

Source: [Noah Wire Services](https://www.noahwire.com)

## Bibliography

* <https://www.tii.ae/news/atrc-entities-and-adnoc-sign-landmark-rd-partnership-advance-sustainable-energy-solutions> - Corroborates the inaugural R&D partnership between TII, Aspire, and Adnoc, focusing on carbon storage monitoring and battery optimization using quantum technologies.
* <https://www.tii.ae/news/atrc-entities-and-adnoc-sign-landmark-rd-partnership-advance-sustainable-energy-solutions> - Details the comprehensive collaboration including joint projects in autonomous robotics, propulsion systems, and renewable energy technologies.
* <https://www.tii.ae/news/atrc-entities-and-adnoc-sign-landmark-rd-partnership-advance-sustainable-energy-solutions> - Explains the enhancement of carbon capture and storage (CCS) initiatives and the use of quantum sensing to improve safety and reduce the risk of leaks.
* <https://www.tii.ae/news/atrc-entities-and-adnoc-sign-landmark-rd-partnership-advance-sustainable-energy-solutions> - Describes the goal of refining battery performance and recycling processes through quantum sensing technology.
* <https://www.tii.ae/news/atrc-entities-and-adnoc-sign-landmark-rd-partnership-advance-sustainable-energy-solutions> - Mentions the plans for unmanned robotic inspections and further robotic applications to address energy and technology sector challenges.
* <https://www.tii.ae/news/atrc-entities-and-adnoc-sign-landmark-rd-partnership-advance-sustainable-energy-solutions> - Quotes Dr. Najwa Aaraj, CEO of TII, on the significance of partnering with Adnoc and the potential of advanced quantum sensing technologies.
* <https://www.tii.ae/news/atrc-entities-and-adnoc-sign-landmark-rd-partnership-advance-sustainable-energy-solutions> - Includes Stephane Timpano's statement on the collaboration's commitment to leveraging quantum sensing for sustainable solutions.
* <https://www.tii.ae/news/atrc-entities-and-adnoc-sign-landmark-rd-partnership-advance-sustainable-energy-solutions> - Quotes Sophie Hildebrand, CTO of Adnoc, on the company's commitment to innovation and accelerating UAE-grown technologies.
* <https://www.tii.ae/news/atrc-entities-and-adnoc-sign-landmark-rd-partnership-advance-sustainable-energy-solutions> - Highlights the UAE's efforts to elevate its role in developing quantum technologies for energy and sustainability issues.
* <https://www.tii.ae/news/atrc-entities-and-adnoc-sign-landmark-rd-partnership-advance-sustainable-energy-solutions> - Provides context on the broader collaboration framework and the synergy between TII, Aspire, and Adnoc.
* <https://energystoragepro.com/2025/01/20/adnoc-tii-and-aspire-partner-to-advance-carbon-storage-and-battery-optimisation-with-quantum-tech/> - Please view link - unable to able to access data