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Quantinuum and BMW Group extend quantum computing partnership for advanced materials and mobility

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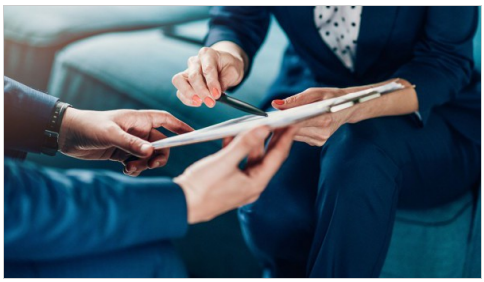
The multi-year agreement deepens joint research on quantum-powered simulations of molecular systems, catalysis, and electrochemical processes to support future, sustainable vehicle technologies



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Quantinuum has expanded its collaboration with BMW Group into a multiyear partnership focused on applying quantum computing to advanced materials science to unlock future mobility. The two companies have been working together since 2021 on joint research aimed at addressing complex challenges in industrial chemistry to support the advancement of next-generation mobility.

Their work has progressed from foundational algorithm development to advanced simulations of molecular systems, enabling insights into catalytic activity, reaction pathways, and material performance in energy-relevant environments. They have now agreed to extend this work, positioning their alliance to become one of the longest-sustained commitments between a commercial enterprise and a quantum computing provider to date.

"Quantinuum is focused on driving commercial adoption of quantum computing through close collaboration with industry leaders on high-impact applications," said Dr. Rajeeb Hazra, president and CEO of Quantinuum. "Our expanded partnership with the BMW Group underscores this focus, and we're excited to scale the meaningful work we've been advancing together."

Researchers at BMW Group are using Quantinuum's trapped-ion architecture, which provides high-fidelity operations used to accurately simulate molecular systems, particularly electrochemical processes that are important for sustainable mobility and for the design and optimization of fuel cells.

Under the terms of the agreement, BMW Group will use successive generations of Quantinuum's quantum computers, including the current Helios system and future generations Sol, planned for 2027, and Apollo, planned for 2029. This staged approach is intended to allow the teams to validate progress at each step while working toward industrially meaningful solutions.

"We have been exploring quantum computing for many years," said Dr. Martin Tietze, vice president of New Technologies at BMW Group. "Together with partners such as Quantinuum, we translate advances in quantum hardware into real-world applications, including materials optimization, supporting the development of future vehicle generations."

Quantinuum's progress toward large-scale, fault-tolerant systems is described as helping to ensure that as hardware performance improves, BMW Group can apply that computational power to catalyst chemistry research. This includes targeting critical oxygen reduction reaction processes at platinum catalysts with the potential to lower costs and improve energy efficiency.

In 2024, the companies, together with another commercial partner, were the first to simulate catalytic performance using a quantum computer. The collaboration has developed into a cross-disciplinary effort that brings together quantum scientists, chemists, and engineers in a sustained partnership reflecting both the complexity of the challenge and the scale of the ambition.

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