VTT QX Quantum Cloud Service

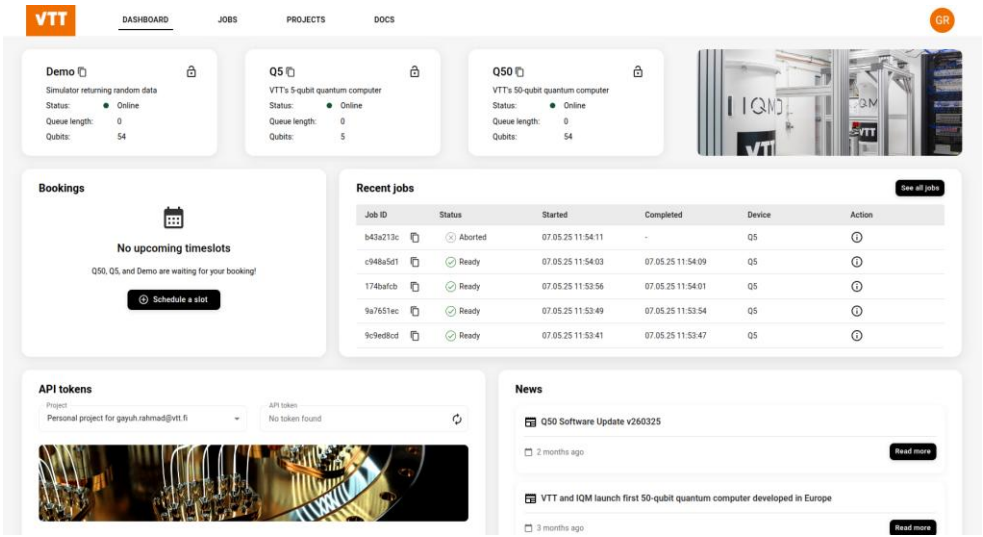
VTT Q50 Quantum Computer

- Launched in March 2025 – Europe's first 50 qubit superconducting quantum computer
- VTT Q50 was a co-development project between VTT and IQM
- Connected to CSC LUMI+AI supercomputer
- Circuit and Pulse level programming options
- Available through VTT QX computing service for companies and researchers

Median 1Q fidelity 99,93%
Median 2Q fidelity 98,92%

VTT QX

- Cloud service access to run circuits
- Job management
- Device access
- Dashboard
- Resource accounting

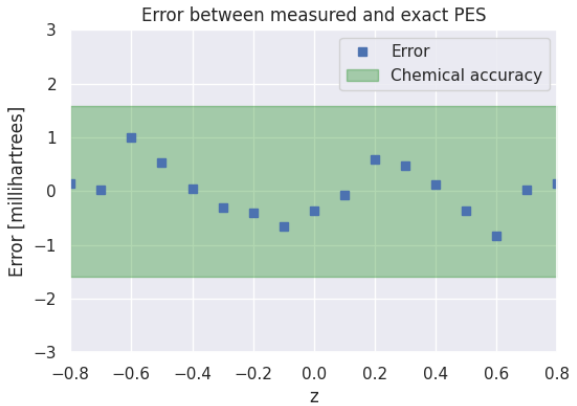


Use Case examples run with VTT Q50

Ammonia molecule simulation

Result:

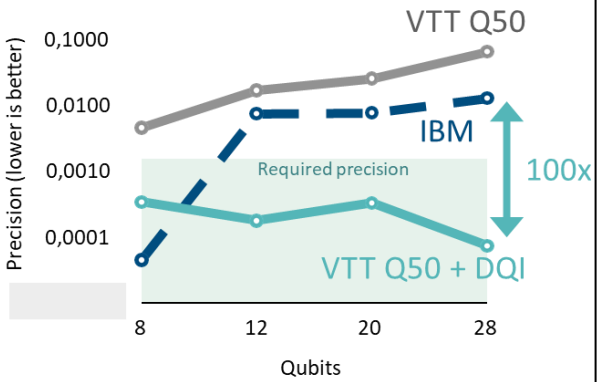
- **Chemical accuracy**: results inside chemical accuracy (±1.59 millihartrees) are considered accurate enough for practical chemical predictions



Energy gaps for BODIPY molecules

Result:

- We improve **precision 100x times** over our results obtained on IBM System One at Cleveland Clinic



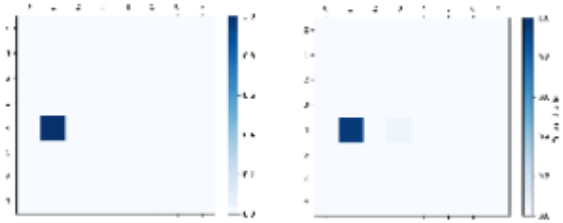
Advection-diffusion equation execution

Result:

- First end-to-end execution of repeated 2D QLBM steps on superconducting QC

Valtteri Lahtinen, Chief Scientist and Co-Founder:

"The launch of the VTT Q50 quantum computer in March 2025 was an important milestone for the European ecosystem. We have achieved the best results that have been achieved with any competing technology."



Ideal simulation (left) and results (right) after noise mitigation

VTT Quantum Computer Roadmap

VTT Q150 / VTT Q300
2026 to 2027

VTT Q50
March 2025

VTT Q5
November 2021

Quantum computing time for companies
A special campaign

Apply for quantum computing time for public research

- Application period: 20.10.2025 – 30.11.2025
- Max. QPU time 20h / company
- Main criteria: Scientific level, contribution to the Finnish ecosystem and publication of results
- Companies in Europe
- More info and applications: Matti Palomäki matti.palomaki@vtt.fi

beyond

the obvious

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