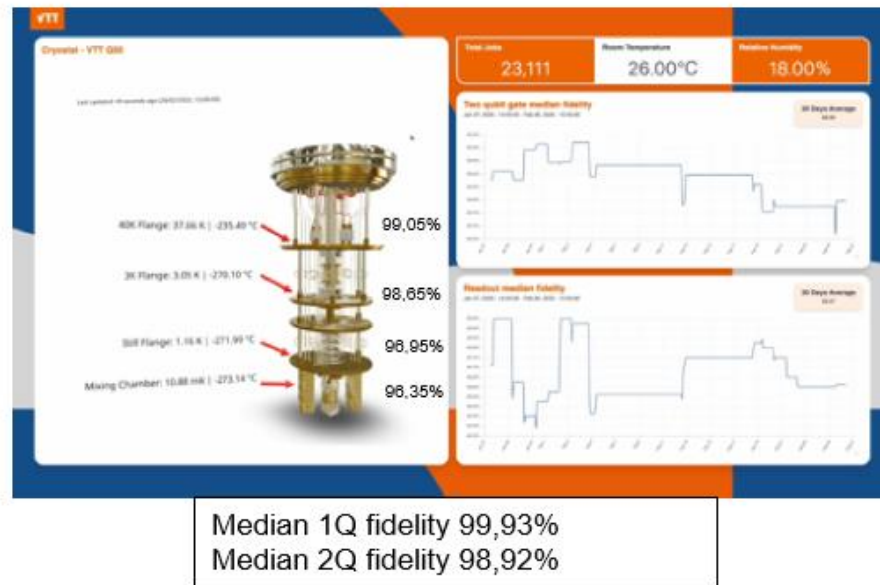


# VTT QX Quantum Cloud Service

# 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



# VTT QX

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

The screenshot displays the VTT QX dashboard with the following components:

- Navigation Bar:** Includes the VTT logo, tabs for DASHBOARD, JOBS, PROJECTS, and DOCS, and a user profile icon (GB).
- Device Status Panels:** Three panels for Demo, Q5, and Q50, each showing status (Online), queue length (0), and qubit count (54 for Demo and Q50, 5 for Q5).
- Bookings Panel:** Displays "No upcoming timeslots" and a "Schedule a slot" button.
- Recent jobs Table:** A table listing recent jobs with columns for Job ID, Status, Started, Completed, Device, and Action.
- API tokens Panel:** Shows a dropdown for the project (Personal project for gayuh.rahmad@vtt.fi) and a field for API tokens (No token found).
- News Panel:** Lists recent news items, including "Q50 Software Update v260325" and "VTT and IQM launch first 50-qubit quantum computer developed in Europe".

Job ID	Status	Started	Completed	Device	Action
b43a273c	Aborted	07.05.25 11:54:11	-	Q5	ⓘ
c948a5d1	Ready	07.05.25 11:54:03	07.05.25 11:54:09	Q5	ⓘ
174bafcb	Ready	07.05.25 11:53:56	07.05.25 11:54:01	Q5	ⓘ
9a7651ec	Ready	07.05.25 11:53:49	07.05.25 11:53:54	Q5	ⓘ
9c9ed8cd	Ready	07.05.25 11:53:41	07.05.25 11:53:47	Q5	ⓘ

# Use Case examples run with VTT Q50

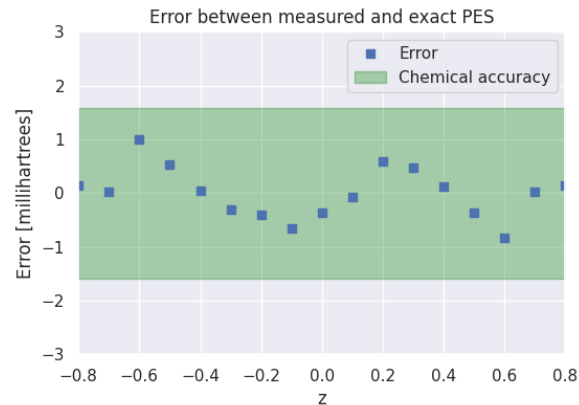
VTT

VTT

## Ammonia molecule simulation

### Result:

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



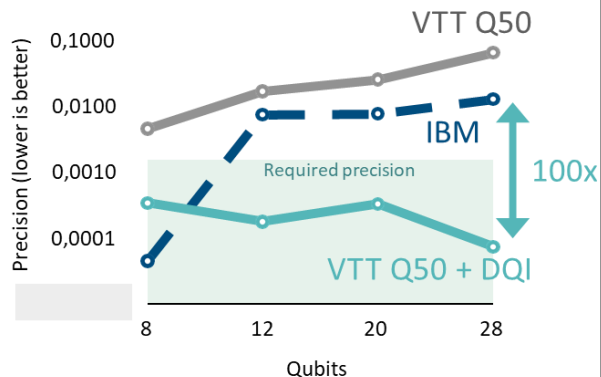
11/11/2025 VTT – beyond the obvious

algorithmiq

## Energy gaps for BODIPY molecules

### Result:

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



QUANSCIENT

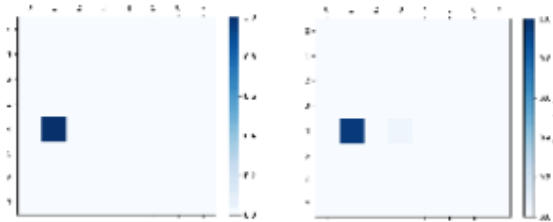
## Advection-diffusion equation execution

### Result:

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

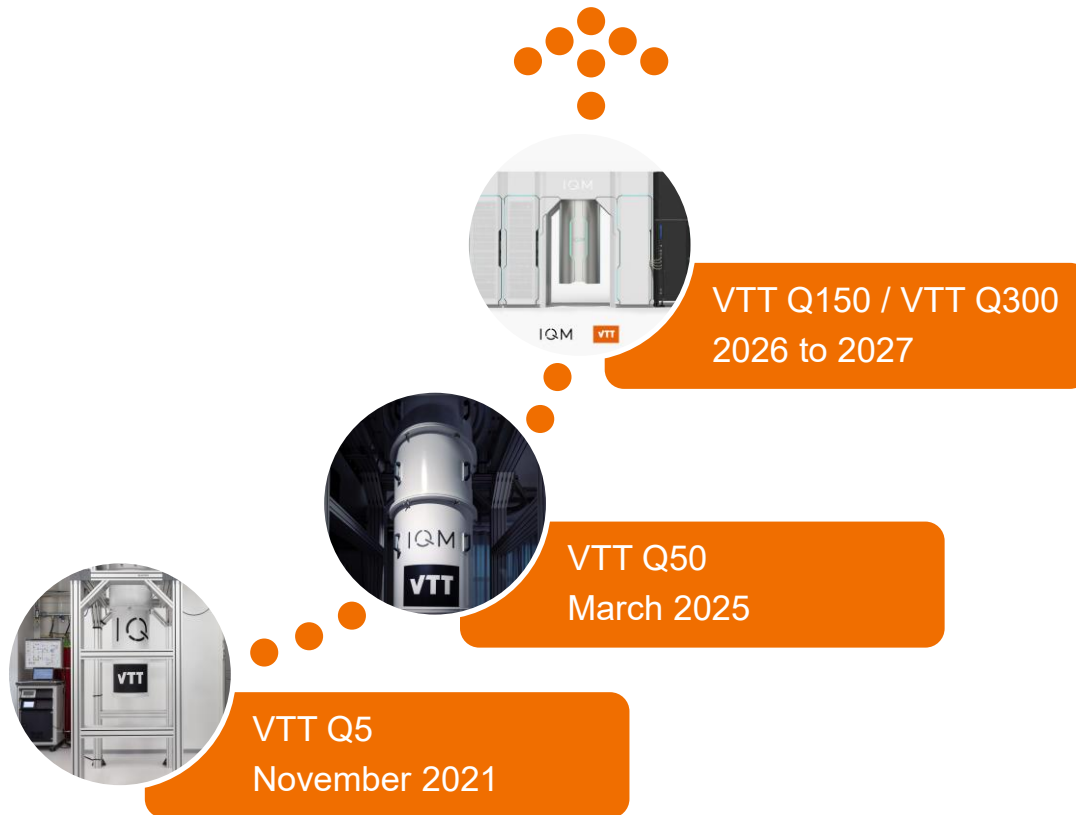
Valtteri Lahtinen, Chief Scientist and Co-Founder:

"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



# 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](mailto:matti.palomaki@vtt.fi)



# bey<sup>0</sup>nd

## the obvious

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