

QUICK for Energy

Preparing today for the energy modeling of tomorrow with quantum computing



The energy sector relies on highly complex physical simulations (heat transfer, multiphase flows, electromagnetic or neutron interactions) that require **massive computing power** and **high precision**, particularly in the nuclear field.

QUICK is a hybrid quantum-classical simulation platform designed to solve large-scale partial differential equations (PDEs) while ensuring a high level of accuracy. Based on our proprietary H-DES algorithm, QUICK enables **experimentation** today with quantum approaches applied to energy challenges, anticipating the transition to industrial quantum computing.




Use cases of energy simulations with quantum computing

Reactor simulation and optimization

Reactors (nuclear or thermal) rely on complex transport equations (heat, fluids, fission), the solving of which requires enormous computing resources.

With QUICK: Fast solving of thermal transfer and neutron transport PDEs to test and optimize efficiency and safety parameters.

Impact




-  Reduced multiphysics simulation time
-  Optimization and validation of design and performance
-  Better understanding of critical transient behaviors

Modeling of flows in reservoirs and porous media

Multiphase flows in oil, gas, or geothermal reservoirs require precise and stable solvers.

With QUICK: H-DES enables modeling of fluid dynamics and diffusion in complex environments across multiple scales.

Impact




-  More accurate predictions of flow rates and recovery
-  Optimization of extraction or injection strategies
-  Reduction of experimentation and computing costs

Optimization and stability of energy networks

The rise of renewable energy and storage requires new dynamic models to ensure the stability of electrical grids.

With QUICK: Simulation of PDEs representing power flows, voltage wave propagation, and thermal effects in lines and transformers.

Impact

-  Rapid analysis of grid stability under different scenarios
-  Optimization of energy distribution and balancing
-  Improved resilience of critical infrastructure

Why adopt QUICK now?



Hardware-agnostic



Ready for the quantum era



Accessible and integrated

Our Vision

We are preparing energy stakeholders for the transition to industrial quantum computing. By combining advanced physical solvers with an open architecture and multi-hardware compatibility, we enable companies to test today the scenarios that will shape tomorrow's performance and energy efficiency.

