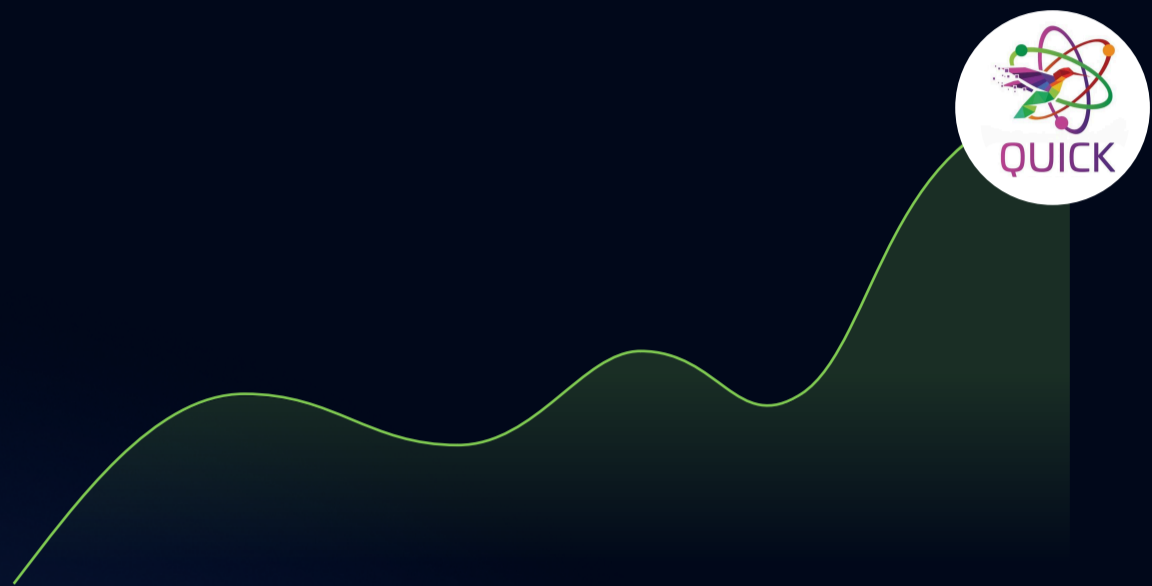


# QUICK for Automobile

Prepare today the physical simulation of tomorrow with quantum computing



Automotive engineers, particularly in Formula 1, must handle extremely complex physical simulations, where computing time and aerodynamic gains are crucial. These multiphysics models (fluid, structural, and thermal) require massive computing resources and demand **high reliability**.

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**, **prototyping**, and preparation today for the upcoming quantum computing revolution.

## Use cases of automotive simulations with quantum computing

### Aerodynamic optimization of vehicles and single-seaters

Maximize aerodynamic downforce while reducing drag, within extremely time-constrained development contexts (F1, hypercars, electric vehicles).

With QUICK: Acceleration and increased accuracy in solving the Navier–Stokes equations to virtually test bodywork, wing, or diffuser configurations.

#### Impact

- Reduced CFD simulation and prototyping time
- Improved energy efficiency and stability
- Seamless integration into rapid design cycles (digital wind tunnel)

### Thermal simulation and energy optimization

Optimize heat exchanges in hybrid engines, high-performance batteries, and compact cooling systems.

With QUICK: Detailed modeling of heat transfers and internal/external convection to optimize energy flows.

#### Impact

- Optimization of powertrain performance
- Reduced risk of overheating and premature wear
- Efficiency gains in the design of smart cooling systems

### Structural optimization under static and dynamic constraints

Reduce the weight of chassis and components without compromising their resistance to mechanical and vibrational loads, especially in racing.

With QUICK: H-DES enables rapid solving of deformation and structural dynamics PDEs coupled with temperature and vibration effects.

#### Impact

- Exploration of new chassis geometries and composite materials
- Reduction of R&D validation cycles
- Better balance between stiffness, safety, and performance

## Why adopt QUICK now?




Hardware-agnostic



Ready for the quantum era



Accessible and integrated

### Our Vision

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

