



## OUR ADVANTAGES

### THE DISTEK ADDED VALUE

**Official SpinQ Distributor:** A single European point of contact for direct access to hardware and manufacturer support.

**Elite Training:** From physical principles to quantum algorithms, up to advanced research projects.

**Open and World-Leading Hardware:** Compact, portable quantum processors with an “open” design to eliminate the “black box” effect and show the real experiment.

**Flexible Curriculum:** A complete course system that integrates seamlessly into Physics, Computer Science, and Engineering (STEM).

**Expert Training:** Theoretical and practical training guided by top experts in the field.

### OPERATIONAL SCENARIOS

**New Specializations:** Full support for the creation of new degree programs in Quantum Information Science.

**Academic Upgrade:** Immediate integration into existing physics and engineering laboratories.

**Ecosystem Cooperation:** A cloud platform connecting research, education, and industrial applications, creating an innovative ecosystem in Naples.

### THE INTEGRATED SOLUTION

**EQUIPMENT:** Desktop NMR computers and cloud platforms.

**RESOURCES:** Ready-to-use theoretical and experimental courses.

**FACULTY:** Operational and pedagogical training for staff.

**We work to bring the frontier of quantum computing into the heart of innovation in Naples. The project’s core systems are already available to be tested at our Demo Center.**

**Via Guglielmo Marconi, 15, 80125 (NA)**



### Real, Portable, and Integrable Hardware Systems

The technological evolution of compact quantum systems opens unprecedented research scenarios, bringing computing power directly into the field. We overcome the constraints of large cryogenic centers to offer dynamic tools that are ready to use and fully customizable.

### MULTIDISCIPLINARY AND APPLIED RESEARCH

The versatility of these systems enables exploration of cutting-edge fields where theory becomes immediate practice:

**Cybersecurity and Cryptography:** Testing Quantum Key Distribution (QKD) protocols and post-quantum algorithms on real physical hardware.

**Molecular Simulation and Chemistry:** Study of atomic bonds and new materials through quantum optimization algorithms (VQE).

**Finance and Logistics:** Solving complex combinatorial problems, from shipping routes to investment portfolios.

### INTEGRATION AND FULL CONTROL

Unlike closed “black-box” systems, these products offer an open interface for maximum scientific freedom:

**Hybrid Architectures (Quantum-Classical):** Plug-and-play systems designed to integrate with supercomputers (HPC), IoT network nodes, and existing computing infrastructures.

**Open-Control Hardware:** Direct access to physical parameters and radiofrequency (RF) pulses for the development of new control and error-correction schemes.

**Strategic Mobility:** The compactness of the hardware allows experiments to be conducted in diverse environments, bringing the quantum laboratory wherever innovation is needed.



Unlike traditional cryogenic systems, these processors use **Nuclear Magnetic Resonance (NMR)**. The spins of atomic nuclei act as qubits, manipulated through radiofrequency (RF) pulses to perform precise quantum operations.

### The Advantages of Real Hardware

**Standard Operation:** They operate at room temperature and normal pressure. No more liquid helium or expensive infrastructure.

**Ultra-Compactness:** Systems of approximately ~18 kg with minimal footprint (<0.5 m<sup>2</sup>). Maximum portability for “in-the-field” research.

**Zero Maintenance:** Stable systems, rapid calibration (<3 minutes), and nearly zero operating costs.

**Open-Hardware Design:** A transparent structure that allows analysis of magnets and coils, eliminating the “black box” effect.

### Software Control and Integration

**FPGA Power:** Hardware management via an integrated FPGA chip for full control of quantum states.

**Python Development:** Support for the SpinQit framework, ideal for integrating custom algorithms into existing workflows.

**Multi-Level Access:** Ability to extract data from both the physical level and the circuit level, essential for studying decoherence.



Quick Comparison	Traditional Research Systems	NMR Solution
Environment	Cryogenic (External)	Room temperature
Weight	~6000 kg	~18 kg
Maintenance Costs	Hundreds of thousands of €/year	Zero
Ease of use	Complex (Specialized)	Plug-and-Play