

Vacancy: Optical Engineer

About QSA Technology

QSA Technology is a University of Twente spin-out, born out of over a decade of photonics research at the MESA+ Institute, building photonic fingerprint chips that give quantum and optical communication networks a physics-based, unclonable identity. Quantum key distribution can make a key exchange itself unbreakable — but authenticating who is actually on the other end of the line has remained an open problem, one that current approaches still solve with the same cryptographic assumptions that quantum computers threaten. Our chips close that gap.

Having recently secured new funding, we are moving from lab-validated prototypes toward fielded systems, with our sights set on telecom, satellite, and critical-infrastructure security applications. We are growing our core technical team and running multiple funded international R&D projects alongside academic partners including the University of Twente and TU Eindhoven, with our first field pilot on real operator infrastructure on the horizon.

Our culture: open, entrepreneurial, and independent. As a spin-out, you will have plenty of freedom to develop your own ideas and make a direct impact.

Your Role

As an Optical Engineer, you will be the systems-level bridge in our technical team — connecting our hands-on optical lab work with the software and electronics that turn photonic chips into a working authentication system. You will bring a background in quantum communication or telecom systems that complements the team's existing photonics and hands-on experimental strengths, helping us make the architecture-level calls — detection scheme, channel sharing, readout strategy — that determine whether our chips work as a system, not just as isolated components.

Responsibilities

- Analyzing photonic PUF response data using statistical and machine-learning methods (uniqueness, reproducibility, resistance to modelling attacks)
- Contributing to system architecture: optical channel sharing, interface definitions, and integration with partner quantum key distribution (QKD) systems
- Evaluating architecture-level trade-offs, such as coherent detection versus single-photon counting, and advising on the right choice for each deployment scenario
- Supporting experimental readout-technique research together with academic partners
- Translating experimental optical results into requirements for the software and electronics teams, and translating system requirements back into optical design guidance
- Documenting analysis and design decisions to support product development and subsidy/project reporting

Who We Are Looking For

- MSc or PhD in Physics, Photonics, Quantum Information, or Electrical Engineering
- Background in quantum communication or optical telecom systems (e.g. QKD, DWDM, coherent detection)
- Strong computational skills: signal processing and statistics, comfortable coding in Python or MATLAB

- Able to work confidently with experimental data and translate it into system-level insight
- Independent, entrepreneurial, and hands-on mindset
- Enthusiastic about working in a spin-out environment with freedom and responsibility

Nice to have:

- Machine learning experience, particularly applied to physical/hardware security
- Familiarity with photonic PUFs or hardware authentication concepts
- Optical simulation experience (e.g. Lumerical, COMSOL) as a supporting skill

What We Offer

- The opportunity to shape the system-level architecture of our authentication technology from an early stage
- Work in an innovative spin-out with direct impact
- High degree of independence and room for initiative
- Collaboration with institutes and industrial partners
- An inspiring work environment where pioneering is at the core

Interested?

Send your CV and a short motivation to [add contact email/link] — we would love to hear from you.

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