Belgian Science Policy Office belspo	*Do you want to help us building our next Big Eye on the sky?* *Are you a young engineer with lots of enthusiasm?* *Are you looking for some hands-on experience* *on top technology projects?* *Then apply to the*	ESO

ESO Belgian National Engineering Graduate Trainees Scheme

As a leader in shaping the future of ground-based astronomy, the European Southern Observatory (ESO) takes an active role in training the next generation of engineers and astronomers. The new National Engineering Graduate Trainee Scheme is a vital element of this strategy which provides recent graduates with on- the- job training opportunities working along senior staff who are experts in their fields.

As a graduate trainee, you will have the opportunity to be involved directly in the construction of the Extremely Large Telescope (ELT) and of the next generation of instruments for the ELT, for the Very Large Telescope (VLT) and for its Interferometer (VLTI). This includes the design, development, and testing of systems and sub-systems at ESO in Garching near Munich, Germany, and their integration in the observatories in Chile. The engineering disciplines cover optical, mechanical, electronics, software as well as systems engineering. Some development project examples include the Phasing & Diagnostics Station (PDS), the Next Generation Detector Controllers (NGC-II), the Wavefront sensing cameras (WFS), the Laser Guide Stars (LGS), and the liquid nitrogen distribution infrastructure at the observatories.

What are we looking for?

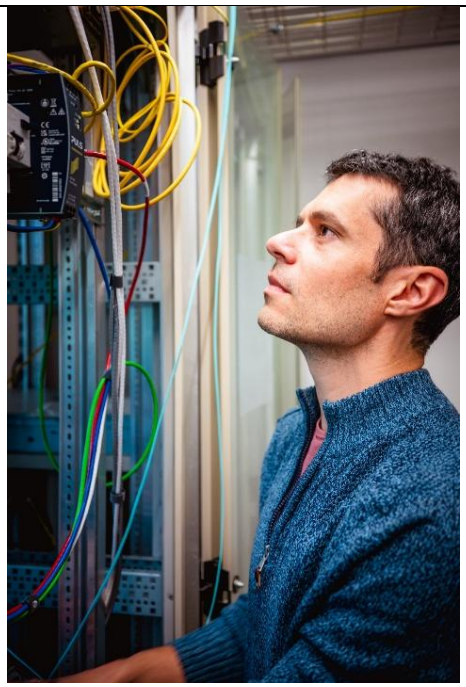
Recent engineering or applied science graduates with great motivation in pushing the telescope & instrumentation technologies to their limits, as well as with desire to be part of the international team which is **building, testing and operating the most powerful astronomical facilities on the Earth**.

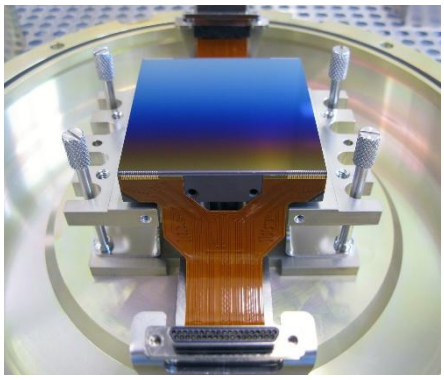
The following domains are of interest to ESO:

- System Engineering
- Software Engineering
- Control Engineering
- Electronic Engineering
- Mechanical Engineering
- Optical Engineering
- Research and Technology Development Projects
- Operations Engineering
- Civil Engineering
- Electrical engineering

Current hot topics of engagement:

- Artificial Intelligence (Large Languages Models) applied to software development, information retrieval, requirements management, automation of documentation and optimized operation & maintenance processes.
- Machine Learning (ML) applied to large data set analyses (e.g., predictive maintenance, optimized control in adaptive optics, weather forecast, image analysis for hardware inspections, automatic data reduction of calibration and scientific data to remove artefacts, systematics, and instrument biases).
- Advanced digital tools customization with Machine Learning support for maintenance, inventory and spare parts management for large projects like the ELT.
- Use of AI agents to develop Soft Real Time Cluster software (executable, GUIs,



configuration), based on the library already developed for the ELT (RTC Toolkit).	
   	• Participation to the integration and verification phase of the ELT in Chile in various engineering disciplines incl. the mechanical assembly of more than 800 mirrors with their supporting structures, their micrometric optical alignment, their accurate automatic position control (electronics and software), the arcsecond-precise pointing of a 4600 ton structure, and the compensation of the sub-micrometric atmospheric disturbances at several hundreds Hertz. • Systems engineering of such a complex system of systems, including the maintenance of the work breakdown structures, product trees, interfaces and configuration control of tens of thousands of precise, high-technology sub-systems. • Design, development, installation and testing of advanced electronics systems including PCBs (Printed Circuit Boards), PLCs (Programmable Logic Controllers) and high-speed low-noise read-out systems for advanced optical & infrared detectors. • Several Research & Development (R&D) activities to look into new technologies for future telescopes and astronomical instruments, and to experiment on laboratory test-benches, in the fields of quantum optics, photonics, interferometry, integrated optics, optical and infrared detectors, deformable mirrors ... • Development of end-to-end simulators and numerical models for detectors and full astronomical instruments. • Performing electromagnetic compliance tests and interference studies. • Designing, manufacturing and implementing mechanisms to automate current manual maintenance activities. • Software development to migrate the old VLT software to the new DevOps infrastructure designed for the ELT (alignment of the technologies, development in Linux environment, deployment, configuration management, automatic test environment, virtual machines, C++ and Python). • Reliability, Availability and Maintainability (RAM) and hazard analyses on astronomical

	instruments to ensure the best efficiency of their use on sky.

Qualifications & competence

An interest and basic knowledge in one of the hot topic examples listed above.

A master degree in Engineering or Applied Sciences or a PhDs graduated from 2024 at the earliest.

Team player, critical & analytic thinking, ability to work on own initiative & autonomously.

Nationality

This programme is limited to Belgian Nationals.

Language skills

A good command of English is required

Duration of the contract

1 year renewable once, subject to satisfactory performance evaluation by ESO.

Duty station

ESO HQ in Garching bei München and/or Chile observatories.

ESO values

An important element in any successful employment relationship is harmony in values between an organisation and its people.

The ESO Values are:

ESO strives for **excellence** through **innovation.**

ESO provides **outstanding services to its communities.**

ESO fosters **diversity & inclusion.**

ESO believes in the key role of **sustainability** for its future.

Achieving the above are recognized as only possible on the basis of personal values and attitudes that we expect from our employees: **respect, integrity, accountability, commitment, collaboration, and clear & open communication.**

Applicants to any ESO role are asked to reflect on their affinity with these values and advised they may be asked about them if called for interview.

Diversity

ESO has established diversity as an important value of the Organisation, is committed to providing an equal opportunities environment and is actively seeking to promote a diverse, equitable and inclusive workforce. Please visit https://www.eso.org/public/about-eso/sustainability/dei-at-eso/ for further details.

How to apply?

Send full application including

- Curriculum Vitae,
- motivation letter,
- copies of university transcript and certificate(s) or diploma(s);
- copies of a Belgian ID or passport,
- summary of the candidate ´s master's thesis project (if applicable) and ongoing projects, indicating the title and the supervisor (maximum one page).
- the name of 3 people whom we could ask a reference letter from)

to the address NEGT@belspo.be.

Application deadline

29th of July, end of business

Important financial and social security information

- ESO Contract: Paid Associate with a net (non-taxable, as ESO is an international organisation) monthly salary of 4 349 EUR (in 2026) yearly indexed plus family allowance if applicable.
- Health & Accident Insurance: provided via BELSPO, including coverage of work-related accidents.
- Unemployment benefits: no unemployment benefits from ESO at the end of the contract. Those remain the own responsibility of the Graduate.
- Pension scheme: no contribution imbedded in the ESO contract. The Graduate is strongly encouraged to constitute in a pension fund on his or her side.
- Travel expenses: travels to and from ESO on taking up and termination of the Graduate appointment and while on duty travel for the Organisation will be borne by ESO.