



Mechanical Engineer for FCC radiation absorbers and BIDS (SY-STI-TCD-2025-43-LD)

Geneva, Switzerland

Contract

Company Description

At CERN, the European Organization for Nuclear Research, physicists and engineers are probing the fundamental structure of the universe. Using the world's largest and most complex scientific instruments, they study the basic constituents of matter - fundamental particles that are made to collide together at close to the speed of light. The process gives physicists clues about how particles interact, and provides insights into the fundamental laws of nature. Find out more on <http://home.cern>.

Job Description

Introduction

Shape the future of particle physics at CERN! Lead the design and development of advanced radiation absorbers and beam intercepting devices for the Future Circular Collider, collaborating with experts to drive innovation and scientific discovery. Take part!

You will join the Accelerator [Systems Department \(SY\)](#), which is responsible for the beam-related technical systems of the CERN accelerators. The SY teams design, build and operate equipment systems in all CERN accelerators, and are engaged in ambitious forward-looking R&D programmes.

You will join the [Sources Targets Interactions \(STI\) Group](#), which is responsible for the design, construction, operation and maintenance of all [intercepting devices across the CERN complex](#), including studies related to crystal-based beam manipulations. In particular, the [Targets Dumps and Collimators \(TCD\) Section](#) is responsible for the mechanical and operational aspects of CERN's beam intercepting devices (BIDS), including the spallation neutron target of the n_TOF facility, the antiproton production target, the primary targets for the North and East Halls, all beam collimators, dumps and absorbers of the injector complex and the LHC. These are key components in CERN's accelerator complex, used to absorb particles from the high energy particle beams needed for CERN's experimental research programme. The increasingly high particle beam energies and intensities needed to ensure CERN's position as the world leading particle physics research laboratory led to unprecedented challenges in the design of new or upgraded beam intercepting devices.

You will be focused on the development of radiation absorbers for the Future Circular Collider machine and in general for beam intercepting devices for the collider and injector complex.

Functions

As engineer responsible for the development of radiation absorbers and beam intercepting devices (BIDS) for CERN's Future Circular Collider machine, you will:

- Collect the requirements for radiation absorbers and beam intercepting devices from the relevant teams

- Select the requirements for radiation absorbers and beam intercepting devices from the relevant teams involved in the studies, define the design and provide feedback to the project regarding limitations, possible optimisations, cost estimates and integration consideration;
- Organise and lead the work related to the studies, finite element analyses, mechanical & system design and development activities necessary to fulfil the functional requirements;
- Interact with different stakeholders including teams responsible for vacuum, survey, control, civil engineering, impedance, transport & handling, etc., to carry out a coherent design of beam intercepting devices;
- Coordinate and supervise numerical simulations, R&D activities and design work;
- Coordinate the relevant engineering documentation related to the devices to be developed and contribute to the project deliverables;
- Coordinate and execute the prototyping and potential beam test activities, required to support the design and implementation of beam intercepting devices.

Qualifications

Master's degree or PhD or equivalent relevant experience in the field of mechanical engineering, material engineering, nuclear physics, nuclear engineering, nuclear materials or a related field.

Experience:

- Extensive practical and theoretical knowledge of finite element methods (FEM) for nonlinear, static and dynamic, thermal and mechanical analyses, along with hand calculations and use of computer aided design (CAD) in a professional context;
- Setting up and managing projects in a professional context coping with large facilities, including managing documentation, cost estimation, procurement and scheduling;
- Extensive experience in 3D and 2D design, fabrication and assembly of mechanical systems, good understanding of manufacture and assembly techniques, as well as their application to the design process;
- Demonstrated experience in carrying out risk and failure mode analyses together with assessment of equipment breakdowns to inform and guide the design process;
- Proven experience in design and calculation of structures and mechanisms along with the integration of control system elements (mechatronics);
- Experience in technical procurement eventually with in-kind partners is a plus.

Technical competencies:

- Knowledge and application of manufacturing methods and work preparation;
- Knowledge and analysis of materials failure;
- Specification and follow-up of technical aspects of a contract;
- Project management, including the management of operational and maintenance considerations .;
- Assembly of mechanical structures and equipment.

Behavioural competencies:

- Managing self: working well autonomously; taking on activities and tasks without prompting; taking initiative beyond regular tasks and making things happen Remaining objective, focussed and productive in a stressful environment; focusing on solutions rather than problems.
- Achieving results: defining clear objectives, milestones and deliverables before initiating work/ project; delivering high quality work on time and fulfilling expectations.
- Communicating effectively: expressing opinions, ideas and suggestions with conviction and in a logical/structured manner; keeping to the point.

- working in the interest of the Organization, demonstrating motivation for own work, being enthusiastic, involved and energetic in pursuing tasks.

Language skills:

Spoken and written English or French: ability to understand and speak the other language in professional contexts. Ability to draw-up technical specifications and/or scientific reports and to make oral presentations in at least one of the two languages.

Additional Information**Eligibility and closing date:**

[Diversity](#) has been an integral part of CERN's mission since its foundation and is an established value of the Organization. Employing a diverse workforce is central to our success.

This vacancy will be filled as soon as possible, and applications should normally reach us no later than **April 10, 2025 at 23:59 CET.**

Employment Conditions

Contract type: Limited duration contract (5 years). Subject to certain conditions, holders of limited-duration contracts may apply for an indefinite position.

Working Hours: 40 hours per week

This position involves:

- Work in Radiation Areas.
- Interventions in underground installations.
- A valid driving licence.
- Given the occupational health risks associated with this position, the selected candidate must obtain medical clearance before a contract offer is confirmed.

Job grade: 6-7

Job reference: SY-STI-TCD-2025-43-LD

Benchmark Job Title: Mechanical Engineer

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