



## Mechanical Engineer M/F

### Europe

*Do you want to design, build, commission and upgrade mechanical equipment that has to operate under the extreme conditions encountered in the world's highest energy particle physics research centre? Are you a "hands-on" mechanical engineer who likes to combine theory with practice, not afraid of getting your hands dirty? Then you should join CERN and get to grips with the particle beam intercepting devices in the world's largest particle accelerator complex. Take part!*

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11/01/2016

#### Introduction

*Mechanical Engineer in the Engineering Department (EN), Sources Targets and Interactions Group (STI), Targets Dumps and Collimators Section (TCD).*

*As a Mechanical Engineer you will join:*

- *The Targets Dumps and Collimators (TCD) section of the Sources Targets and Interactions Group within CERN's Engineering Department; the TCD section is responsible for the mechanical aspects of CERN's beam intercepting devices.*
- *Beam intercepting devices such as targets, collimators and beam stoppers and beam dumps are key components in CERN's accelerator complex. They are mechanical devices which are used to absorb and/or attenuate particles from the high energy particle beams needed for CERN's experimental research programme as well as to generate secondary particle beams.*
- *Beam intercepting devices combine carefully designed structures required to absorb high density of thermal energy with remotely controlled mechanisms needed to position them precisely and repeatedly under arduous operating conditions such as high temperatures, radiation, and vacuum.*
- *The increasingly high particle beam energy densities and intensities needed to ensure CERN's position as the world leading particle physics research laboratory lead to unprecedented challenges in the design of new or upgraded beam intercepting devices, amongst which the dismantling and disposal.*

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#### Votre mission :

As a Mechanical Engineer in the Targets Collimators and Dumps section you will be responsible for the design, manufacture, assembly, commissioning and in-service support of new beam intercepting devices along with upgrades of the existing and future programs beyond the LHC era. This will involve:

- *Mechanical design studies of precision structures and mechanisms for harsh environments including finite element method (FEM) and hand calculations, design of cooling systems, selection of materials and lubricants along with integration of sensors and actuators required for precise remote control of their movements.*
- *In-depth investigations and tests to determine root causes of operational failures,*

#### Référence

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#### Entreprise

Cern

#### Région

Europe

#### Ville

#### Secteur

Transport Et Manutention

#### Type de contrat

- Temps plein
- CDI

development of repair plans and carrying out repair interventions.

- Industrial procurement activities including: writing technical specifications, carrying out market surveys, issuing price enquiries, managing supply contracts for the production of small series by industrial companies.
- Assembly and test of precision structures and mechanisms - some with accuracies in the micrometer range and specific requirements such as compatibility with Ultra High Vacuum.
- Supervising technical personnel for design, prototyping, production, commissioning and maintenance interventions - also carrying out these tasks yourself in order to fully understand the equipment.
- Ensuring that the equipment under your responsibility is fully documented throughout its life cycle.

### **Votre Profil :**

Master's degree in the field of mechanical engineering, or equivalent.

The experience required for this post is:

- Design and calculation of structures and mechanisms along with the integration of control system elements (mechatronics).
- Carrying out risk and failure mode analyses and feeding the results into the design process.
- In-depth analysis of equipment breakdowns to diagnose root causes and implement repair solutions.
- Practical experience in mechanical assembly, good understanding of machining and assembly techniques, and their application to the design process.
- Project responsibility for the building of the mechanical equipment, including cost estimate and scheduling.
- Use of computer aided design (CAD) and finite element to validate designs along with hand calculations in a professional context.

The technical competencies required for this post are:

- Electro-mechanical design: designing, assembling and installing electro-mechanical systems involving precise positioning.
- Electro-mechanical design: and extreme conditions for materials (often at or beyond the elastic limit).
- Mechanical analysis & modelling: of mechanisms, structures and materials using hand calculations and finite element analysis codes.
- Organisation, planning and control: managing prototype manufacturing inside cern workshops and series production with external suppliers.
- Precision assembly and construction: defining: manufacturing methods, tolerances, processes, preparation and drawing, using international standards.
- Commissioning & maintenance of mechanical equipment & systems.
- Use of Scientific and Engineering software packages.

The behavioural competencies required for this post are:

- 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.
- 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.

- Learning and sharing knowledge: sharing knowledge and expertise freely and willingly with others; coaching others to ensure knowledge transfer.

The language competencies required are:

- English or French: spoken and written, with the ability to draw-up technical specifications and scientific reports, and to make oral presentations in English; as well as the ability to understand and speak French in professional contexts.

### **Conditions d'emploi :**

Employing a diverse and international workforce is a CERN core value and central to our success. We welcome applications from all Member States([link is external](#)) irrespective of gender, age, disability, sexual orientation, race, religion or personal situation.

This vacancy will be filled as soon as possible, and applications should normally reach us no later than 03.01.2016.

By applying here, you allow CERN to consider your application for any position it considers relevant with respect to your profile. Please ensure you update your profile regularly with any relevant information and that you inform the recruitment service if you wish your file to be removed from the database.

### **Note on Employment Conditions**

We offer a limited-duration contract for a period of 5 years. Limited-duration contracts shall terminate by default on their date of expiry.

Subject to certain conditions, holders of limited-duration contracts may apply for an indefinite position.

These functions require :

- Work during nights, Sundays and public holidays.
- Work in Radiation Areas.
- A valid driving licence is required.
- Shift work, when required by the needs of the Organization.
- Stand-by duty, when required by the needs of the Organization.