Job Title: Mechanical Engineer IO0242 & IO0697

Requisition ID **7100** - Posted - (France, 13067 St Paul Lez Durance Cedex) - **Engineering of Systems** - **New Posting**

The ITER Organization brings together people from all over the world to be part of a thrilling human adventure in southern France—building the ITER Tokamak. We require the best people in every domain.

We offer challenging full-time assignments in a wide range of areas and encourage applications from candidates with all levels of experience, from recent graduates to experienced professionals. Applications from under-represented ITER Members and from female candidates are strongly encouraged as the ITER Organization supports diversity and gender equality in the workplace.

ITER Organization (IO) is an Equal Opportunity/Inclusive organization committed to diversity in the workplace, with diversity and Inclusiveness being one of the ITER Values.

As IO attracts and retains people coming from a vast array of different backgrounds and cultures, bias and exclusion cannot be tolerated. IO believes it is our diverse perspectives and backgrounds that gives unique strength and value to the ITER mission, regardless of race, member nation, gender, religion, status, sexual orientation, or disability - all are welcome and respected at ITER.

Our working environment is truly multi-cultural, with 29 different nationalities represented among staff. The ITER Organization Code of Conduct gives guidance in matters of professional ethics to all staff and serves as a reference for the public with regards to the standards of conduct that third parties are entitled to expect when dealing with the ITER Organization.

The south of France is blessed with a very privileged living environment and a mild and sunny climate. The ITER Project is based in Saint Paul-lez-Durance, located between the southern Alps and the Mediterranean Sea—an area offering every conceivable sporting, leisure, and cultural opportunity.

To see why ITER is a great place to work, please look at this video

Application Deadline: 10/09/2023
Department: Engineering Design Department
Division: Heating & Current Drive Division
Section: Electron Cyclotron Section
Group:
Job Family: Engineering
Job Role: Engineer – 3
Job Grade: P3
Language Requirements: Fluent in English (written & spoken)
Contract Duration: Up to 5 years
Two openings

Purpose

As a Mechanical Engineer, you will be responsible for overseeing the design, manufacturing, testing, installation and commissioning activities related to different components of the Electron Cyclotron (EC) system. In addition, the work will also include integration activities of the EC system in the different buildings from the radiofrequency (RF) building to the Tokamak building.
One position will focus specifically on Protection Important Components (PIC) of the EC system while the other will perform activities on a broader range of components and general integration of the EC system.
For both positions, you will participate in design activities, preparation of technical specifications, supervision of contractors, initiate and follow up procurement activities, follow up manufacturing of EC components for different systems with subsequent support for installation and commissioning.

Background

The EC system will be used at ITER for Heating and Current Drive (H&CD) in a number of plasma
operating scenarios. The EC system heats the electrons in the plasma with a high-intensity beam of electromagnetic radiation. This system is also used to deposit heat in very specific places in the plasma. Power will be provided by powerful, high-frequency gyrotrons (170Gz). The EC system aims to deliver up to 20MW for plasma H&CD applications, with a potential upgrade for additional power. In order to achieve 20MW of delivered power, the EC system has an installed power of 24MW (gyrotrons located outside of the ITER Tokamak building). Transmission lines and dedicated ex-vessel waveguides are integrated in the tokamak building guiding the power to the launchers, mounted in the vacuum vessel, and responsible to finally deposit the power in the plasma, at each required location.

Key Duties, Scope, and Level of Accountability

- Manages the design, procurement, manufacturing, installation and commissioning activities related to specific EC components such as isolation shutter valves, shielding, commissioning components, specific mm-wave components, supporting structures, penetrations to buildings;
- Co-ordinates the EC transverse activities and specifically required components, in collaboration with the relevant internal and external stakeholders;
- Manages protection important activities (PIAs) and supply chain control;
- Documents the design requirements, load specifications, safety functions, requirements propagation and verification, and quality plans as required;
- Ensures design compliance of the EC system with ITER project requirements, other interfacing ITER systems and internal interfaces among the different EC subsystems;
- Monitors the final design development and prototype tests of the EC components;
- Contributes to the installation, operation and maintenance plans for the EC system;
- Provides technical assistance to Technical Responsible Officers (TRO) on:
    - monitoring the final design development, prototype tests and site acceptance tests of EC subsystems;
    - defining the alignment and monitoring requirements associated with the microwave components;
    - following up design work including structural analysis and manufacturing of EC subsystem components;.
- Assists in the monitoring of Quality Programs associated with the sub-system procurements;
- May be requested to be part of any of the project/construction teams and to perform other duties in support of the project;
- May be required to work outside ITER Organization reference working hours, including nights, week-ends and public holidays.

Measure of Effectiveness

- Effectively manages the design, procurement, manufacturing, installation and commissioning activities related to specific EC components such as isolation shutter valves, shielding, commissioning components, specific mm-wave components, supporting structures, penetrations to buildings) to meet the defined quality, cost and schedule requirements;
- Provides all necessary support in a proactive manner for an efficient development of the transverse function systems related to the EC system integration and operation;
- Creates and manages high quality, accurate interface documentation between the EC components and sub-assemblies with the different systems;
- Ensures design compliance of the with ITER project requirements, other interfacing ITER systems and internal interfaces among the different EC subsystems;
- Maintains the systems after delivery properly, implementing additional required control and protection functions, and accurately updating the documentation accordingly;
- Ensures effective communication with the interfacing teams within ITER, Domestic Agencies and with external contractors.

Experience & Profile

- ***Professional Experience:***
  - Minimum 8 years' experience in mechanical engineering for designing, procuring and installing complex mechanical system(s) within complex international environments or projects.
- ***Education:***
  - Master equivalent in Mechanical Engineering or other relevant discipline;
  - The required education degree may be substituted by extensive professional experience involving similar work responsibilities and/or additional training certificates in relevant domains.
- ***Language requirements:***
  - Fluent in English (written and spoken).
- ***Technical competencies and demonstrated experience in:***
  - **Interface Management (identifying, resolving and maintaining technical and functional interfaces):**
    - Ensuring design compliance and technical integration of complex mechanical systems with other interfacing systems.
  - **Design (create technical designs based on project requirements):**
    - Familiarity with CAD models (for example: CATIA V5);
    - Designing as per codes and standards (for example: RCC-MR, SDC-IC, ASME, EN, ASTM);
    - Manufacturing as per codes and standards (for example: RCC-MR, SDC-IC, ASME, EN, ASTM) is an advantage;
    - Developing complex systems with nuclear safety functions is an advantage;
    - Review of Finite Element Analysis is an advantage.
  - **Specialized domains of work and technical expertise (Complex Mechanical Systems):**
    - Mechanical engineering of complex systems in relevant areas (such as thermal-mechanical applications, cooling, tolerance analysis, assembly);
    - Experience in designing and manufacturing electron cyclotron components is an advantage.
    - Experience in designing and manufacturing highly specialized components in the radiofrequency or particle accelerators is an advantage.
  - **Procurement & Project Management:**
    - Management of procurement/contracts for mechanical components, including the ability to project costs and resources for technical projects.
- ***IO Core Behavioral Competencies:***
  - Collaborate: Ability to facilitate dialogue with a wide variety of contributors and stakeholders;
  - Communicate Effectively: Ability to adjust communication content and style to deliver messages to work effectively in a multi-cultural environment;
  - Drive results: Ability to persist in the face of challenges to meet deadlines with high standards;
  - Manage Complexity: Ability to analyze multiple and diverse sources of information to understand/define problems accurately before moving to proposals;
  - Instill trust: Ability to apply high standards of team mindset, trust, excellence, loyalty and integrity.

The following important information shall apply to all jobs at ITER Organization:

- Maintains a strong commitment to the implementation and perpetuation of the ITER Safety Program, ITER Values (Trust; Loyalty; Integrity; Excellence; Team mind set; Diversity and Inclusiveness) and Code of Conduct;
- ITER Core Technical Competencies (Knowledge of these competencies may be acquired through on-board training at basic understanding level for all ITER staff members) :
  1) Nuclear Safety, Environment, Radioprotection and Pressured Equipment
  2) Occupational Health, Safety & Security
  3) Quality Assurance Processes

- Implements the technical control of the Protection Important Activities, as well as their propagation to the entire supply chain;
- May be requested to work on beryllium-containing components. In this case, you will be required to follow the established ITER Beryllium Management Program for working safely with beryllium. Training and support will be provided by the ITER Organization;
- May be requested to be part of any of the project/construction teams and to perform other duties in support of the project;
- Informs the IO Director-General or Department Head of any important and urgent issues that cannot be handled by line management and that may jeopardize the achievement of the Project's objectives.
- For staff expected to perform on-call, shift hours, or other work outside ITER Organization reference working hours, including nights, weekends, and public holidays, the possession of a driving license valid in France is required. No commuting vehicle will be provided by the ITER Organization.