Job Title: Diagnostic Systems Engineer IO0318

Requisition ID **7102** - 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: Port Plugs & Diagnostics Division
Section: Ex-Vessel Diagnostics 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

Purpose

As Diagnostic Systems Engineer, you will design, oversee design, implement and commission diagnostics systems for the ITER machine. You will specify and coordinate work with laboratories and institutes of the ITER Organization (IO) Partners, including any relevant supporting Research & Development (R&D) entities. You also will manage the scope, schedule, safety, quality control and cost for procuring the systems and supporting hardware and software under your responsibility. Finally you will support the coordinated and synchronized integration and commissioning of the above mentioned diagnostics systems, and potentially others as required, especially in the ports and the vacuum vessel, but also in all other relevant parts of ITER machine, such as galleries and diagnostics building.

Background

The aim of diagnostics is to provide the measurements necessary to control the plasma and first wall processes during operation to achieve the ITER goals and to gain the knowledge needed for future reactor design. The Port Plugs and Diagnostic Division provides all the Diagnostics for ITER, along with the

engineering infrastructures and test systems to support these and guides them through design, manufacturing, installation and commissioning, always keeping efficient operation in view.
The Ex-Vessel Diagnostics Section (EVD) prepares 32 diagnostic projects to support ITER Operation. The EVD position on offer is one of a responsible officer for one or more of these (EVD) diagnostics. The purpose of these diagnostics is in particular:

- *to identify all relevant impurities and determine their density profile;*
- *to measure the ion temperature and velocity in the plasma;*
- *to monitor the ion influx in different part of the plasma;*
- *to measure runaway electron current and energy;*
- *to monitor MHD activity and plasma radiated power;*
- *to monitor the interaction of the plasma with the divertor and the first wall*

Key Duties, Scope, and Level of Accountability

- Manages the direct supply of the diagnostic systems;
- Manages diagnostics interfaces with the interfacing systems and components;
- Ensures that the diagnostics achieve specified requirements and proposes/implements corrective actions as necessary;
- Leads the Design Review processes for the relevant diagnostics systems, and other related systems as required;
- Specifies and/or reviews R&D packages to be submitted, and oversees the procurement of diagnostic systems through procurement packages and direct contracts, interacting with the Domestic Agencies (DAs) and IO Procurement and Contracts Division as necessary;
- Communicates with other stakeholders within the ITER project and the international fusion community, e.g. by organizing or participating in workshops and other meetings;
- Proposes and implements plans for the construction, installation, commissioning, maintenance and operation of the diagnostic systems for the whole project lifetime;
- Reports variances on all technical, cost and schedule aspects, analyses the impact(s) and proposes recovery plans;
- Performs and reviews effective risk identification and management of related documentation;
- Performs the change control process, document it and propagates changes to all concerned stakeholders;
- Oversees construction and installation of the relevant diagnostics systems and supervises the work of contractors/technicians;
- Manages commissioning of the relevant diagnostics systems;
- Maintains up to date the documentation for the systems under the defined scope of responsibilities;

Measure of Effectiveness

- Ensures that work packages are completed to agreed quality, deadlines and costs;
- Develops accurate design and interface documentation, schematics, plans and databases within defined quality, scope, schedule and cost;
- Establishes high quality technical documentation for procurement including risks within defined schedule;
- Establishes installation and operation plans within the defined schedule and cost;
- Provide timely support to technical partners in DAs and other IO Departments / Offices;
- Successfully coordinates and synchronizes the integration of diagnostics, especially in the ports but also all other relevant parts of ITER such as galleries and diagnostic building within defined schedule;
- Successfully coordinates the commissioning of diagnostics.

Experience & Profile

- ***Professional Experience:***
  - Minimum 6 years' experience of full project lifecycle management of instrumentation or diagnostics projects (including the development, integration, commissioning and/or operation of diagnostics/instruments in complex environments such as nuclear installations, satellites, or large scientific projects)
- ***Education:***
  - PhD or equivalent in Physics or 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:***
    - Design, development, prototyping and construction of instrument or diagnostics systems;
        - Engineering knowledge in one or more of the following fields: vacuum system development, 2D/3D CAD drawing and designing, optics, data acquisition system development, detector integration and operation, complex system integration;
    - Specialized domain of work (Diagnostics for Magnetically Confined Nuclear Fusion):
        - Supervision of construction, integration, calibration, installation, commissioning and exploitation of diagnostics as described above;
        - Diagnostics related modelling including the development of synthetic diagnostics and the modelling of plasma emissions and impurity transport is advantageous;
        - Experience of the Magnetically Confined Nuclear Fusion context of diagnostics development is an advantage;
        - Analysis and interpretation of plasma physics data;
    - Interface management (identifying, resolving and maintaining technical and functional interfaces):
        - Resolving complex and challenging technical issues;
    - Project management (planning/measuring progress of project work, managing risks and costs):
        - Identifying issues and delays in projects, development of recovery plans and cost, scope and schedule negotiations with international stakeholders;
        - Preparing technical specifications for external subcontractors;
    - Systems Engineering and Design control such as functional analysis, requirement management, change control, and design reviews are advantageous.
- ***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.