Job Title: Spectroscopy Diagnostics Syst. Engineer IO1001

Requisition ID **4300** - Posted - (France, 13067 St Paul Lez Durance Cedex) - **Science and Technology Expertise** - **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.

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: 29/08/2021
Domain: Engineering
Department: Engineering Design
Division: Port Plugs & Diagnostics
Section: Ex-Vessel Diagnostics
Job Family: Scientific Coordination
Job Role: Scientist - 2
Job Grade: P3
Language requirements: Fluent in English (written & spoken)
Contract duration: Up to 5 years

Purpose

As the Spectroscopy Diagnostics Systems Engineer, you will design, oversee design and implement one or more of the X-Ray and Vacuum Ultra Violet (VUV) Spectroscopy 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 X-Ray and VUV systems and supporting hardware under your responsibility.
Finally you will support the coordinated and synchronized integration of the above mentioned diagnostics systems, and potentially others as required, especially in the ports 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 in operation to achieve the ITER goals and to gain the knowledge needed for future reactor design. The Port Plugs and Diagnostic Integration 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,

coordinated in the X-ray and VUV Diagnostics cluster. These diagnostics are used for measurements of the impurity species in the plasma, their spatial distribution, concentration and temperature, fast electron distributions in the plasma, movements and fluctuations of the plasma, plasma radiation and electron temperature.

Major Duties/Roles & Responsibilities

- Designs and implements one or more of the X-Ray and VUV systems such as Hard X-Rray Monitor, Radial X-Ray camera, VUV Spectroscopy (for divertor, edge and pedestal of the plasma), X-Ray Spectroscopy (for core, edge and survey of the plasma) and other related systems as required;
- Identifies and manages diagnostics interfaces with the main tokamak components;
- Ensures that the diagnostics achieve specified requirements and proposes/implements corrective actions as necessary;
- Conducts Design Reviews related to X-Ray and VUV Spectroscopy diagnostics, and other related systems as required;
- Specifies and or reviews R&D packages to be submitted, and oversees the procurement of X-Ray and VUV Spectroscopy diagnostic systems through procurement packages and direct contracts, interacting with the Domestic Agencies (DAs) and IO Procurement and Contracts Division as necessary;
- Ensures the procurement of diagnostic systems by using relevant tools, with the support of Corporate Domain (e.g. project planning, work-breakdown, technical schedule);
- Maintains the systems' data in the relevant ITER databases;
- Communicates with other stakeholders within the ITER project and the international fusion community, in particular for spectroscopy systems, e.g. by organizing or participating in workshops and other meetings;
- Proposes and implements plans for the construction, installation, commissioning and operation of the diagnostic systems for the whole project;
- 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;
- Maintains up to date the documentation for the systems under the defined scope of responsibilities;
- Provides expertise from a physics and engineering perspective to the IO colleagues and within the fusion community (respecting the IO Intellectual Property rules);
- 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, weekends and public holidays.

Measures of Effectiveness

- Ensures that work packages are completed to agreed quality, deadlines and costs;
- Developed and approved accurate design and interface documentation, schematics plans and databases;
- Developed and approved high quality technical documentation for procurement including risks;
- Developed and approved operation and installation plans within the defined schedule and cost;
- Successfully collaborates and communicates well with 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;
- Ensures that data and documents are properly kept, in the correct format and to a high standard of accuracy.

Experience & Profile

- ***Professional Experience:***

- At least 6 years' experience of full project lifecycle management of instrumentation or diagnostics projects, (including the development, integration or operation of diagnostics in nuclear installations or in other complex environments, such as satellites or large scientific projects) within scientific or industrial projects.

- ***Education :***
  - PhD in Physics or Engineering or equivalent in a relevant engineering or science discipline, such as X-Ray or VUV Spectroscopy or instrumentation and control;
  - 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): 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;
  - Specialized domain of work (Diagnostics):
    - Design, supervision of construction, calibration, installation, commissioning and exploitation of X-Ray or VUV Spectroscopy systems as described above;
    - X-Ray or VUV Spectroscopy related modelling including the modelling of plasma emissions and impurity transport is advantageous;
  - Analysis and interpretation of spectroscopic data, including spectral fitting and tomographic inversion methods are advantageous;
  - Systems Engineering and Design control such as functional analysis, requirement management, change control, and design reviews are advantageous.
- ***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 of 1) Nuclear Safety, environment, radioprotection and pressured equipment 2) Occupational Health, safety & security 3) Quality assurance processes. Knowledge of these competencies may be acquired through on-board training at basic understanding level for all ITER staff members;
- 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, Domain Head, or Department/Office 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.