Job Title: Visible Spectroscopy Scientist IO1058-IO1059

Requisition ID **6080** - 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: 29/05/2022
Domain: Engineering Domain
Department: Engineering Design Department
Division: Port Plugs & Diagnostics Division
Section: Ex-Vessel Diagnostics Section
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

Two positions

As a special notice for IO vacancies, that is particularly valid for multiple posting, the appointment to a position may be made at a lower grade if the qualifications and professional experience of the selected applicant correspond to that grade; in this case, the duties and responsibilities assigned will be adjusted accordingly.

As a Visible Spectroscopy Scientist/Engineer, you will design, oversee design and implement Visible Spectroscopy 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 Visible Spectroscopy systems and supporting hardware and software under your responsibility.

The position as Visible Spectroscopy Scientist (IO1058) will focus on the scientific aspects of the Visible Spectroscopy systems (such as measurement and operational requirements, analysis of data etc.), whereas

the position as Visible Spectroscopy Engineer (IO059) will focus on engineering aspects (such as supervision of construction, integration, installation, and/or maintenance of the systems).

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 two EVD positions on offer are positions as responsible officers for the scientific and the engineering aspects respectively of one or more of these (EVD) diagnostics, coordinated in the Visible Spectroscopy diagnostics cluster. These diagnostics are used for measurements of plasma emission in the visible waveband to extract parameters such as the impurity content and influx, ion temperature, plasma rotation velocity, internal magnetic field and others.

Key Duties, Scope, and Level of Accountability

- Manages depending on the position, the scientific or engineering aspects, of one or more of the Visible Spectroscopy systems such as Visible Spectroscopy Reference System, H-alpha spectroscopy, Divertor Impurity Monitoring, Charge Exchange Recombination Spectroscopy and Motional Stark Effect spectroscopy, and other related systems as required;
- Manages diagnostics interfaces with the interfacing systems and components;
- Ensures that the diagnostics achieve specified requirements and proposes/implements corrective actions as necessary, specifically related to either scientific or engineering;
- Conducts Design Reviews related to Visible Spectroscopy diagnostics, and other related systems as required;
- Specifies and/or reviews engineering R&D packages (such as, but not limited to, design descriptions and technical specifications, engineering calculations and analyses reports, prototype test plans and reports, maintenance assessments, assembly plans etc.) to be submitted, and oversees the procurement of Visible Spectroscopy diagnostic systems through procurement packages and direct contracts, interacting with the Domestic Agencies (DAs) and IO Procurement and Contracts Division as necessary;
- Plans, implements and follows up direct contracts for scientific and engineering activities in support of Visible Spectroscopy systems;
- Supervises R&D program for the mirror cleaning and diagnostic shutters;
- 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
- Mutually supports the Visible Spectroscopy Diagnostician or Engineer in the implementation of plans for the commissioning and operation of Visible Spectroscopy diagnostics;
- 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;
- 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.

Specific duties for IO1059 Visible Spectroscopy Engineer:

- Analyses and proposes common engineering strategies on design standardization, interface management, qualification methodologies

- Proposes and implements plans and engineering work packages for the construction and installation of Visible Spectroscopy diagnostics, in particular, and of the diagnostic systems for the whole project, in general.

Specific duties for IO1058 Visible Spectroscopy Scientist:

- Analyses and proposes common solutions regarding scientific aspects of the visible spectroscopy diagnostics, such as optical design, ray tracing analyses, influence of stray radiation and other plasma and tokamak environment caused perturbations to the measurements.
- Proposes and implements plans and work packages for the scientific/operational aspects of the diagnostics, such as synthetic diagnostics, modelling of the plasma light, impurity transport and the development of tools for the exploitation of the data.

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 maintenance plans within the defined schedule and cost;
- Provides 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;
- Maintains documentation for the systems accurately and up to date under the defined scope of responsibilities.

Experience & Profile

- ***Professional Experience:***
  - Minimum 6 years' experience of full project lifecycle experience with management of instrumentation or diagnostics projects (including the development, integration, or operation of diagnostics/instruments in other complex environments, such as nuclear installations, satellites, or large scientific projects) within complex international environments or projects.
- ***Education:***
  - PhD or equivalent in either -Applied or Experimental- Physics (for IO1058) or Engineering (for IO1059), 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): 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) required for Visible Spectroscopy Engineer (IO1059)***:
    - Design, supervision of construction, integration, installation, and/or maintenance of Diagnostic systems;
    - Design and Analysis: Assessing submitted designs and analyses, experience with and Engineering Codes and Standards such as ASME and/or RCC-MR, coordinating design and analysis
  - ***Specialized domain of work (Diagnostics) required for Visible Spectroscopy Scientist (IO1058):***

    - Optical modelling and ray tracing is advantageous;
    - Manufacturing techniques for optical elements such as mirror support, polishing and coatings, refractive optics support, polishing and anti-reflective coatings, optical fibre bundle assembly etc. is advantageous;
    - Research and development of the mirror cleaning systems and diagnostic shutters is advantageous;
    - Visible Spectroscopy related modelling including the modelling of plasma emissions and impurity transport is advantageous;
    - Analysis and interpretation of visible spectroscopy data, including spectral fitting and/or subsequent processing for impurity concentration and influx, ion temperature, plasma rotation and/or magnetic field evaluation 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 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.