Job Title: Plasma Control System Engineer IO1028

Requisition ID **3723** - Posted **26/02/2021** - (France, 13067 St Paul Lez Durance Cedex) - **Control and Data Acquisition** - **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: 11/04/2021
Domain: Science & Operation
Department: Science,Controls & Operation
Division: Science
Section: Experiments and Plasma Operation
Job Family: Project Engineering
Job Role: Engineer - 2
Job Grade: P3
Language requirements: Fluent in English (written & spoken)
Contract duration: Up to 5 years

Purpose

As a Plasma Control System Engineer, you will provide expertise and contribute to the final design of the ITER Plasma Control System (PCS) for Pre-Fusion Power Operation Phase 1 (PFPO-1).
You will also support the evaluation of the software implementation of the PCS components to prepare for commissioning and future operation of ITER, and the development, upgrade and maintenance of the Plasma Control System Simulation Platform (PCSSP).

Background

The Plasma Control System (PCS) is the primary tool for the control of the plasmas generated in the ITER device. The PCS controls practically all the required plant systems to execute a pulse, and especially those related to the plasma parameters themselves; from the magnetic configuration to the electron density, thermal stored energy, etc. The PCSSP is the main platform in which the PCS controllers are designed and tested. The accuracy and sophistication of the plasma control to be achieved by the PCS in ITER is a key element for success in achieving ITER's fusion power production goals.

Major Duties/Roles & Responsibilities

- Defines the detailed requirements and specifications for PFPO-1 relevant control functions;

- Designs new controllers and consolidates interfaces for the PFPO-1 PCS;
- Develops procedures for performance assessment of PFPO-1 control functions;
- Coordinates and implements the assessment of the PFPO-1 PCS design;
- Coordinates with other plant systems and diagnostics to ensure that correct models are used for the PCS design and assessment;
- Contributes to the maintenance and upgrade of the PCSSP simulation environment based on Matlab/Simulink, providing advice, developing new components and validation procedures to support the development of the PCS for operation;
- Collaborates with the Controls Division (which is responsible for the actual implementation of the PCS) and provides support for verification and validation tests from PCSSP to the PCS;
- Collaborates across IO and with external stakeholders and networks to exchange and/or confirm relevant information;
- 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

- Systematically delivers robust design and assessment of PFPO-1 control functions;
- Provides high quality PCS controllers to be tested in PCSSP, delivers thorough evaluations and quality documentation for the developed components and test records;
- Ensures good communication with Controls Division during the implementation of PCS;
- Communicates well and maintains high professional standards when interfacing with staff in the area of plasma control from the ITER Organization and ITER Members' R&D institutions and Domestic Agencies.

Experience & Profile

- ***Professional Experience:***
  - At least 8 years' experience in managing the design and implementation of control systems, in particular for plasma control in magnetic confinement devices.
- ***Education:***
  - Masters' Degree or equivalent in Electrical Engineering, Control Engineering, Physics 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 and implementation of real-time control applications;
  - System engineering: interface control, requirement management and validation;
  - Design of integrated control systems: control organization and architecture and use of support functions;
  - Conducting acceptance and commissioning tests of control systems;
  - Technical documentation of specifications, procedures and manuals relating to the design and operation of control systems;
  - Operational experience of tokamak plasma control considered an advantage;
  - High level knowledge and proven practical experience of Simulink, in particular design of Simulink models and testing and verification through Simulink tools;

- Extensive experience of Matlab for algorithm design and implementation (control design and signal processing toolboxes), Graphical User Interface development. Experience of code generation an advantage;
- Good knowledge of other programming languages (C++ an advantage).

- ***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.