Job Title: Control Systems Engineer IO1114

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: 26/06/2022
Domain: Science & Operation Domain
Department: Science, Controls & Operation Department
Division: Controls Division
Section: Data, Connectivity and Software Section
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 a Control Systems Engineer, you will implement and maintain the Control, Data Access and Communication (CODAC) Operational Applications System (central supervision and automation, plant configuration, scheduling system, real-time control and data handling).
You will plan and execute the commissioning of CODAC Operational Application System, and demonstrate the achievements of its functions and provide overall support to the ITER Integrated Commissioning and Operation.

Background information:
The ITER Control, Data Access and Communication (CODAC) system interfaces to the ~170 Plant Systems that compose the ITER machine. The Plant Systems are delivered with their Instrumentation and Control (I&C) system by the ITER members. The CODAC provides the necessary applications and services to support commissioning activities and eventually conduct the integrated operation of the ITER machine with a high level of availability. The integration of plant systems started in 2018 and will continue up to the first plasma and beyond. The CODAC Operational Applications consist of middle-layer software components which adapt the technical domain of the various Plant Systems to the Machine Operation domain, the scheduling system, supervision and automation system, plasma control system, data handling system and services for the remote participation.

Key Duties, Scope, and Level of Accountability

- Completes the design modification and implementation of CODAC Operational Applications Systems, in particular, the plant system configuration & Pulse Scheduling Preparation System (PSPS) and Data Handling System;
- Defines the control system requirements and verification methods associated to the pulse scheduling system;
- Communicates with stakeholders in order to identify necessary features to apply into the Operation Application System up to the operation phase;
- Produces the commissioning plans for validating Operation Application System and takes the responsibility for executing those plans, especially for the pulse scheduling system as well as the supervision & automation system and the plasma control system;
- Contributes to preparing, configuring and deploying the software required for plant system integration & commissioning, ITER integrated commissioning and operation (application and framework software);
- Monitors contracts and provides technical follow-up on software development projects contracted;
- Prepares, proposes corrective actions, and follows technical audits and critical project reviews associated to the procurement and construction of plant systems involved in plant configuration, automation, supervision and distributed feedback control;
- 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

- Delivers planned releases of CODAC Operational Application software components through peer reviews and quality audits as per requirements and on time;
- Maintains operational software with a high degree of availability;
- Develops the integration and commissioning plans, based on that, validates the defined functionalities in aligned with the project schedule;
- Proposes and implements solutions and recovery actions for problems encountered to achieve the integration, commissioning and operation schedule for the defined ITER Plant Systems;
- Contributes to execution of ITER integrated commissioning and Operation;
- Maintains accurate documentation related to software components up to date.

Qualifications and Experience

- *Professional Experience:*
    - Minimum 8 years' experience in designing, developing, testing, implementing and maintaining software components involved in a control system for a large scale facility.
- *Education:*
    - Masters' degree or equivalent in computer science, electronics, 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 experience and demonstrated competencies in:*
    - Specialized Domains of Expertise: Software Engineering Dealing with multiple control system stakeholders (physicists, technical domain experts, etc.);
    - Working in Linux environment;
    - Advanced knowledge of C++, python, Java;
    - Experience of relational databases' product (MySQL, Postgre SQL or Oracle) and database performance optimization principles;

- Web technologies and their application design would be an advantage;
- Writing clean, maintainable and easily adaptable software and implementing quality standards for high integrity software (e.g. MISRA, HIC++, …);
- Static analysis tools (e.g., lint, SonarQube or commercial tools) would be an advantage;
- Working with: version control tools (e.g., Subversion, Git); unit testing frameworks (e.g. gtest, …); debuggers and profilers (e.g., gdb, valgrind, …);
- Resolving complex technical issues autonomously and proposing solutions crossing organizational lines and interacting closely with other stakeholders to support decision making.

- *Behavioral Competencies:*
  - Collaborate: Ability to 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 with high level of reliability and autonomy;
  - Manage Complexity: Ability to gather multiple and diverse sources of information to define problems accurately will the ability to set priorities and meet deadlines 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.