Job Title: Control System Architect SCOD-043

Req ID **1060** - Posted **03/12/2019** - (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 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.

Application deadline: 12/01/2020
Domain: Science & Operation
Department: Science,Controls & Operation
Division: Controls
Section: Data, Connectivity & Software
Job Family: Project Engineering
Job Role: Coordinating Engineer
Job Grade: P4
Language requirements: Fluent in English (written & spoken)
Contract duration: Up to 5 years

Purpose

As Control System Architect, you will lead the final design of the Control, Data Access and Communication (CODAC) Operational Applications (central supervision and automation, plant configuration, scheduling system), and the implementation and maintenance of software frameworks and components;
You will plan and execute the commissioning of CODAC Operational Application System, and demonstrate the achievements of its functions.

Background information:
The ITER Control, Data Access and Communication (CODAC) system interfaces to the ~170 Plant Systems that compose the ITER machine. 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 Plant Systems are delivered with their Instrumentation and Control (I&C) system by the ITER members. Integration started in 2018 and will continue up to first plasma in 2025 and beyond. CODAC Operational Applications consist of middle-layer software components which adapt the technical domain of the various Plant Systems to the Machine Operation domain, i.e. provide information gathering and synthesis, translate physics goals to machine parameters and control actions, etc.; and central Scheduling, Supervision and Automation, and Plasma Control systems to prepare and execute planned ahead commissioning and scientific operation campaigns.

Major Duties/Responsibilities

- Leads the final design and development of CODAC Operational Applications Systems in the areas of Plant System I&C Configuration, Monitoring, and Interface adaptation, Central Supervision and Automation, and Pulse Scheduling;
- Contributes to the final design of distributed real-time software architecture for the Plasma Control System;
- Defines the control system requirements and verification methods associated to the control system components of automation, supervision and pulse scheduling;
- Produces the commissioning plans for validating Operation Application System and takes the responsibility for executing those plans, especially for supervision and automation, and pulse scheduling system;
- Communicates with stakeholders in order to identify necessary features to apply into the Operation Application System up to the operation phase;
- Prepares CODAC Operational Application System design reviews, as either a member of the design team or peer review team;
- Monitors contracts and provides technical follow-up of software development projects contracted to external suppliers, assesses their compliance to requirement & quality standards, and solves issues;
- Prepares, proposes corrective actions, and follows technical audits and critical project reviews associated to the procurement and construction of plant systems involved in automation, distributed feedback control and synchronization;
- Evaluates standard tools in the CODAC Core System used for automation, synchronization and plant configuration to propose/implement improvements when needed;
- Takes a leading role in preparing, configuring and deploying the software required for plant system integration and commissioning;
- 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.

Measures of Effectiveness

- Delivers planned releases of CODAC Operational Application software components through peer reviews and quality audits as per requirements and on time;
- Efficiently provides robust procedures, standards, solutions and guidance to during integration, commissioning, operation and maintenance activities;
- Maintains operational software with a high degree of availability;
- Maintains up-to-date documentation related to software components.

Qualifications and Experience

- *Professional Experience:*
  - At least 10 years' experience in the engineering role of designing, developing, testing, implementing and maintaining software components involved in a large scientific research facility.
- *Education:*
  - Master 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:*
    - Dealing with multiple control system stakeholders (physicists, technical domain experts, etc.);
    - Software-intensive distributed real-time data processing and control systems;
    - Using Linux and real-time operating systems;
    - Software engineering and quality assurance;
    - Advanced knowledge of C++, python;
    - Writing clean, maintainable and easily adaptable software;
    - Dealing with contractors, managing the procurement of products and services in a competitive manner;
    - Implementing quality standards for high integrity software (e.g. MISRA, HIC++, …) would be an advantage;
    - Resolving complex technical issues autonomously and proposing solutions crossing organizational lines and interacting closely with other stakeholders to support decision making;
    - Selecting, purchasing, designing, developing, testing, implementing and maintaining software components;
    - Writing reports and procedures on CODAC systems.
- *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, **r**adioprotection 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 lline management and that may jeopardize the achievement of the Project's objectives.