

Job Title: Control Systems Integration Engineer IO1035

Requisition ID **3961** - Posted **30/04/2021** - (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: 13/06/2021

Domain: Science & Operation

Department: Science, Controls & Operation

Division: Controls

Section: Central Control Integration

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

In the role of Control Systems Integration Engineer, you will ensure that design, manufacturing, and acceptance of a subset of ITER's Plant Systems are properly coordinated and compliant with the integrated ITER control system requirements. Additionally, you will propose, develop, and implement solutions to improve, support and maintain both the central Instrumentation and Control (I&C) functions interfacing with ITER Plant Systems, and the Data Acquisition (DAQ) and/or Real-Time (RT) controllers for the ITER Plant Systems.

Background

The Controls Division is responsible for integrating ~170 plant systems in the central control system. I&C standards have been established and corresponding software frameworks developed. These are based on Siemens S7 series of Programmable Logic Controller (PLC), Peripheral Component Interconnect Express (PCIe) based fast controllers, Ethernet TCP/IP communication and open source software (Linux, Experimental Physics and Industrial Control System – EPICS, Control System Studio, etc.). Integration started in 2018 and will continue up to first plasma in 2025 and beyond.

Central control system of ITER comprises conventional control (CODAC), Central Interlock System (CIS), and Central Safety Systems (CSS).

Major Duties/Roles & Responsibilities

- Plans, organizes and executes the integration and commissioning of the defined scope for ITER's Plant Systems into the central control system;
- Contributes to the development of I&C integration plans and procedures for defined Plant Systems I&C; executes them, generates the associated tests and requirements' compliance reports;
- Interacts with Plant Systems I&C Responsible Officer(s) and suppliers to support the design and acceptance tests of ITER Plant Systems, whilst ensuring compliance to standards developed by the Control Division;
- Reviews and maintains the physical and functional interfaces between Plant System I&C and central control systems;
- Analyzes, defines and implements required changes to Plant System I&C and/or interfacing central I&C functions;
- Ensures that the I&C integration procedures are correctly executed, identifies issues, proposes solutions and implements them accordingly;
- Provides adaptive and corrective maintenance actions after the acceptance of ITER Plant Systems;
- Contributes to the development of test facilities which allow I&C development and verification off line;
- Collaborates with Machine Operation Stakeholders to support commissioning activities, and participates in the commissioning and operation of Plant Systems;
- Ensures the Plant Control Design Handbook documentation is up to date, especially in the areas of Plant System I&C architecture and interface standards;
- Implements and documents for Data AcQuisition and/or Real-Time control software, in addition to Human Machine Interface (HMI) software as per I&C needs;
- Contributes to the management and/or technical oversight of contracts to supply standard equipment, as well as contracts to support integration, commissioning and maintenance activities in close collaboration with the Procurement and Contracts Division;
- 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

- Integrates Plant Systems I&C in central control system within the defined scope, quality and schedule;
- Proposes and implements solutions for problems encountered in a timely manner, to achieve the integration, commissioning, and operation schedule;
- Monitors and supervises properly diagnostics, developments, tests, and analyses in compliance with existing procedures of the integrated ITER control system;
- Maintains excellent relations with stakeholders, as well as physical and functional interfacing systems;
- Keeps documentation related to ITER Plant System I&C accurate and up to date.

Experience & Profile

- **Professional Experience:**
 - At least 8 years' experience working as Control Software Engineer in managing and coordinating the design, installation, and commissioning of large-scale scientific or industrial control systems.
- **Education:**
 - Master degree or equivalent in Electronics, Computer Science, Electro-mechanics 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:***
 - Executing and coordinating the integration and commissioning of heterogeneous I&C systems, including identifying and resolving issues;
 - Using Linux, virtualization environments and real-time operating systems;
 - Using C++ and Field Programmable Gate Array (FPGA) in the context of DAQ and RT control applications;
 - Applying high-integrity software quality assurance processes;
 - Using EPICS and/or other commercial or open-source SCADA systems is desirable;
 - Contract management and execution: defines requirements, monitors execution and manages external parties to ensure implementation and/or delivery within contractual scope (cost, quality, schedule, etc.);
 - Writing and presentation; write, review, and deliver technical documents, transmitting knowledge and data with clarity and precision, adapted to the audience;
 - Working on Human Machine Interface (HMI) development is considered advantageous;
 - Being proficient with platforms such as National Instruments LabVIEW FPGA, FlexRIO, and CompactRIO is considered 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.