

# Job Title: Control Systems Integration Technician IO1036

Requisition ID **3962** - Posted - (France, 13067 St Paul Lez Durance Cedex) - **Control and Data Acquisition - Extended 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:** 11/07/2021

**Domain:** Science & Operation

**Department:** Science, Controls & Operation

**Division:** Controls

**Section:** Central Control Integration

**Job Family:** Project Engineering

**Job Role:** Technician - 3

**Job Grade:** G4

**Language requirements:** Fluent in English (written & spoken)

**Contract duration:** Up to 5 years

## **Purpose**

In the role of Control Systems Integration Technician, you will support the design, manufacturing and acceptance of a subset of ITER's Plant Systems. Additionally, you will propose, develop and carry out solutions in order to allow, ease, improve, and maintain the central Instrumentation and Control (I&C) functions interfacing with 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.

## **Major Duties/Roles & Responsibilities**

- Collaborates with Plant Systems I&C Responsible Officer(s) and suppliers to perform design and acceptance tests of ITER Plant Systems, supports the deployment of Plant system I&C software and configuration on emulators and production targets;
- Interacts with Machine Operation Stakeholders to support commissioning activities, and implements required changes to Plant System I&C and/or interfacing central I&C functions;

- Proposes and implements adaptive and corrective maintenance actions after the acceptance of the ITER Plant Systems;
- Participates in the fault and failure analysis process, and contributes to the development and implementation of solutions for recovery actions in order to allow, ease, improve, support and maintain central I&C functions, as well as the control system integration software and toolkits;
- Drafts detailed verification procedures as part of the integration of the Plant Systems I&C in the central control system;
- Sets up and maintains test environments to verify I&C systems software deliverables;
- Supports the deployment of Plant system I&C software and configuration on emulators and on production targets;
- Supports the execution of functional and performance verification procedures and generates the associated tests and requirements' compliance reports;
- Provides front-line I&C user support to the Machine Operation team;
- Applies change control procedures to ensure robust configuration control of the ITER operational control system;
- Maintains the Plant System I&C software build, verification and release tools;
- Implements and documents central automation, alarm handling and monitoring software, and operator Human Machine Interface (HMI) software as per I&C needs;
- Participates in the execution of contracts to supply standard equipment, as well as contracts to support integration, verification, 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

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- Executes tasks supporting the integration and verification of Plant Systems I&C in central control system within the defined scope, quality and schedule;
- Implements solutions and recovery actions for problems encountered to achieve the integration, commissioning and operation schedule for the defined ITER Plant Systems;
- Accurately develops, and completes tests and analyses, in compliance with existing procedures for commissioning, operation and maintenance of the integrated ITER control system;
- Keeps documentation related to ITER Plant System I&C interfaces accurate and up to date.

## Experience & Profile

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- **Professional Experience:**
  - At least 5 years' experience working as software developer or technician in large-scale scientific or industrial control systems.
- **Education:**
  - Bachelor 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 acceptance testing, integration and commissioning of heterogeneous I&C systems, including identifying and resolving issues;
  - C++, Python, Linux operating system, and virtualization environments, and administering Linux operating system and SQL databases;
  - Applying high-integrity software quality assurance processes, knowledge of configuration control tools and techniques, and control system software verification and release processes;

- Working on Human Machine Interface (HMI) development is considered advantageous;
  - Network communication protocols for distributed control systems is considered advantageous;
  - National Instruments LabVIEW FPGA, FlexRIO, and CompactRIO platforms 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.
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***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.